Middle Rymakonian, the language of *Rymako*

uruwi

A complete grammar

28 May 2018

Dedicated to Gufferdk.

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Branch: canon
Version: 0.1
Date: 2017-12-22 (29 dia len)
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1.1 | Phoneme inventory

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

$\mathrm{s} \to \mathrm{s̻}$	$(\blacklozenge\{\mathrm{w}, \mathrm{j}, \mathrm{u}, \mathrm{y}\})$	*NB this is a whistled sibiliant.*
$\mathrm{ŋ} \to \mathrm{ɲ}$	$(\square\blacklozenge)$	
$\mathrm{\theta x} \to \mathrm{\theta}$	$\neg(\blacklozenge\square)[\chi = \varnothing]$	
$C_1[+fr] \to C_1[+v]$	$(V_1\blacklozenge V_2)$	
$\mathrm{ɹ} \to \mathrm{z}$	$(V_1\blacklozenge V_2)$	
$\{\mathrm{y̬}, \mathrm{u̬}\} \to \mathrm{ʉ̬}$		
$V_1[+r] \to V_1[-r]$		
$\mathrm{k} \to \mathrm{c}$	$(\blacklozenge\mathrm{i})$	
$\mathrm{t} \to \mathrm{tʃ}$	$(\blacklozenge\mathrm{i})$	
$\mathrm{r} \to \mathrm{ɾ}$		

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	ɲ	ŋ	
Plosive	p b		t d	c ɟ	k g	ʔ
Fricative	f v	θ ð	s z	ʃ ʒ	x ɣ	
(coärticulated)	fx vɣ	θx ðɣ		fʃ vʒ		
(whistled)			s̻ z̻			
Affricate			ts	tʃ		
Lateral fricative			ɬ ɮ			
Approximant			ɹ	j	w	
Lateral approximant			l			
Tap			ɾ			

Table 1.2: The vowels of Middle Rymakonian.

	Front	Central	Back
High	i	ʉ̹	ɯ
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 ⅃ ʔ ⋒ ⺊ ʕ ٩ Δ⟩ attached to the end of the verbs they encompass. Halfway rod signals are represented by a subscript digit: ⟨$_{⋒}$⟩. Transitions from the ninth rod signal are written ⟨L^{٩} L^{Δ}⟩. 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 ⟨ꞁ^{ꞁ} ꞁ^{ꞁ}⟩, for instance.

Table 1.3: The consonants of Middle Rymakonian in hacm.

	Bilabial	Dental	Alveolar	Palatal	Velar	Glottal
Nasal	ᴅ		n	n^{ɥ}	n^{φ}	
Plosive	d b		ɾ Ω	ɾ^{ɥ} Ω^{ɥ}	ʅ φ	.
Fricative	ɑ u	ȷ^{ɑ} z^{u}	ȷ z	ɩ s	ʅ^{ɩ} φ^{s}	
(coärticulated)	ɑ^{h} u^{h}	ȷ^{h} z^{h}		ɑ^{ɩ} u^{s}		
(whistled)			ȷ^{o} z^{o}			
Affricate			ɾȷ	ɾ^{ɩ}		
Lateral fricative			ɩ^{l} s^{l}			
Approximant			μ	ɥ	o	
Lateral approximant			l			
Tap			ɗ			

Table 1.4: The vowels of Middle Rymakonian in hacm.

	Front	Central	Back
High	c	ɜ	ə
Mid	e		ɔ
Low		ı	

1.3 | Neðam script

The *Neðam* (nez^{u}ɪᴅ / ⋊ϑʔ∞Ŀ) script, which is used for Middle Rymakonian, is a boring old alphabet. The consonants and vowels are shown in tables 1.5 and 1.6, respectively. Rod signals and punctuation are shown in table 1.7.

Interestingly, most glyphs are either made entirely of straight lines or made entirely of curves. In particular, consonants that were in Lek-Tsaro are made of straight lines, although it is ⟨ȷ^{ɑ}⟩ rather than ⟨ȷ^{h}⟩ that corresponds to Lek-Tsaro's ⟨ȷ^{h}⟩. Other consonants, as well as vowels, are made of curves.

Table 1.5: The consonants of Middle Rymakonian in the Neðam script.

	Bilabial	Dental	Alveolar	Palatal	Velar	Glottal
Nasal	Ŀ		⋊	ʌ	Ꞁ	
Plosive	ł ᚨ		† ×	Ꝟ ╓	ǂ ⅄	=
Fricative	ᛠ ∝	ϟ ʢ	↑ ϑ	⅂ ɓ	ϟ Ϛ	
(coärticulated)	⊣ ʎ	σ ʒ		ϒ ϡ		
(whistled)			ϑ ∽			
Affricate			↓	⤵		
Lateral fricative			ℸ ≁			
Approximant			Ƶ	⩓	ᛝ	
Lateral approximant			⊐			
Tap			ʌ̄			

Table 1.6: The vowels of Middle Rymakonian in the Neðam script.

	Front	Central	Back
High	6	∘	9
Mid	∂		ϱ
Low		∞	

Table 1.7: Miscellaneous symbols in the Neðam script.

ɔ 1	ɾ ɹ	ɤ ʔ	ɾ ɱ	ʎ ɬ	ɛ ʕ	ɾ q	ɾ Δ
ɾ ɱ	ɾ Lq	ɾ LΔ	ȣ .	: ,	\ \	‹› []	~ —

1.4 | Phonotactics

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

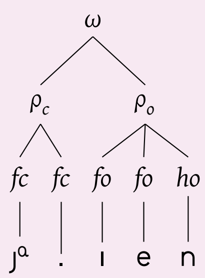
Table 1.8: Categories of phonemes.

Category	Phonemes
Full-open	ı e c ɔ ə u zᵘ z zᵒ s φˢ sˡ ɥ o ɬ ʕ
Half-open	ɜ µ l ᴅ n nᶣ nᵠ q Lq
Neutral	ȷ ȷᵒ ɭˡ uʰ zʰ uˢ 1 ɹ
Half-closed	ɑ ɭ ɿˡ ɗ Δ LΔ
Full-closed	ȷᵅ ɑʰ ȷʰ ɑˡ d b ʃ ɒ ʃᶣ ɒᶣ ɿ φ ʃʲ ʃˡ . ʔ ɱ ɱ

These are converted into *actual categories* as follows:

- 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 ⟨ȷᵅ.ıen < xȷʰı.en⟩:



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:

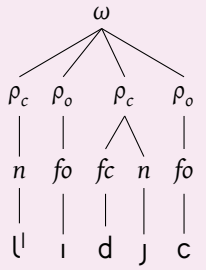
$$
\begin{aligned}
X_1[do]X_2[dc]R[do] &\to X_2X_1R \\
X_1[dc]X_2[do]R[dc] &\to X_2X_1R \\
X_1[dc]X_2[do]?X_3[do] &\to X_1?X_2X_3 \\
X_1[do]?X_2[do]X_3[dc] &\to X_1X_2?X_3 \\
X_1[op \geq 0]X_2[dc]X_3[do]X_4[op \leq 0] &\to X_1X_3X_2X_4 \quad [X_1.op + X_3.op - X_2.op - X_4.op \geq 6] \\
X_1[op \leq 0]X_2[do]X_3[dc]X_4[op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

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, ⟨xjᵅɪ.en⟩ had $4 > \lceil 5/2 \rceil$ phonoruns, so the third rule was applied. This changed the word into ⟨jᵅ.ien⟩, 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 ⟨lˡɪdjc⟩ *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 ⟨lˡɪdj–⟩, 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.

1.4.1 | Prosody

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

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

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

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. α, β, γ and η are also constants such that $\beta < \alpha$, and both γ and η 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 $\eta = 0.61$.

1.5 | Vowel harmony

Middle Rymakonian inherits vowel harmony from Lek-Tsaro. Thus ⟨c e⟩ are front vowels, ⟨ə ɔ⟩ are back vowels and ⟨ı ɜ⟩ 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.

1.6 | Rod signal sandhi

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

- ⟨𝍐⟩ is realised as ⟨𝍉⟩ after ⟨𝍐⟩ or ⟨𝍊⟩.
- ⟨𝍕⟩ is realised as ⟨𝍋ᵠ⟩ after ⟨𝍕⟩ or ⟨𝍋ᵠ⟩.
- ⟨𝍙⟩ is realised as ⟨𝍋ᵝ⟩ after ⟨𝍙⟩ or ⟨𝍋ᵝ⟩.

Rod sandhi does not affect the orthography or phonorun reduction.

2 | Syntax

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 conjunctional 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:

ɾˈezcn ɥeɑɜjlˈı dɔθ
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:

ɥeɑɜjlˈı dɔ ɾˈel, ɣıɾ ɥɔ.
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

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): ⟨ᴅɪᴢɪ⟩ “a person” becomes ⟨ᴅɪᴅɪᴢɪ⟩ “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: ⟨xᴅɪᴢɪ⟩ “person”		
Nominative	ᴅɪᴢɪ (ᴅɪᴢɪ)	ᴅɪᴢɪˈ (ᴅɪᴢɪˈ)
Accusative	ᴅɪᴢɪɴ (ᴅɪᴢɪɴ)	ᴅɪᴢɪɴɪˈ (ᴅɪᴢɪɴɪˈ)
Sentient: ⟨xjᵠɪ.ᴇɴ⟩ “magician”		
Nominative	jᵠɪ.ᴇɴ (jᵠ.ɪᴇɴ)	jᵠɪ.ᴇˈ (jᵠ.ɪᴇˈ)
Accusative	jᵠɪ.ᴇᴢᴄɴ (jᵠɪ.ᴇᴢᴄɴ)	jᵠɪ.ᴇɥᴄˈ (jᵠɪ.ᴇɥᴄˈ)
(Note that the final consonant is preserved only in the direct nominative form.)		
Non-sentient: ⟨xᴅɜɴᵠɔ⟩ “rabbit”		
Nominative	ᴅɜɴᵠɔ (ᴅɜɴᵠɔ)	ᴅɜɴᵠɔ.ə (ᴅɜɴᵠɔ.ə)
Accusative	ᴅɜɴᵠɔᴅ (ᴅɜɴᵠɔᴅ)	ᴅɜɴᵠɔuə (ᴅɜɴᵠɔuə)
Non-sentient: ⟨x.ᴄᴅᴇɴ⟩ “house”		
Nominative	.ᴄᴅᴇɴ (.ᴄᴅᴇɴ)	.ᴄᴅᴇ.ᴄ (.ᴄᴅᴇᴄ.)
Accusative	.ᴄᴅᴇᴢᴄᴅ (.ᴄᴅᴇᴢᴄᴅ)	.ᴄᴅᴇɥᴄuᴄ (.ᴄᴅᴇɥᴄuᴄ)

3.5.2 | Measurable and uncountable classes

Table 3.2: Declensions for measurable and uncountable nouns.

	Direct
Measure: ⟨xɥɜᴅɜ⟩ “day (continuous)”	
Nominative	ɥɜᴅɜ (ɥɜᴅɜ)
Accusative	ɥɜᴅɜɴ (ɥɜᴅɜɴ)
Measure: ⟨xᴅᴇˈ⟩ “volume” (in expressions such as ⟨xᴅᴇˈ–ɥɜjɔ⟩ “cupful”)	
Nominative	ᴅᴇˈ (ᴅᴇˈ)

	Direct
Accusative	ɒezcn (ɒezcn)
Edible: ⟨xʃeɻ.c⟩ “beef”	
Nominative	ʃeɻ.c (ʃeɻc.)
Accusative	ʃeɻ.cn (ʃeɻc.n)
Edible: ⟨xɒɪn⟩ “rice”	
Nominative	ɒɪn (ɒɪn)
Accusative	ɒɪncn (ɒɪncn)
Inedible: ⟨xɻəʃɔ⟩ “gold”	
Nominative	ɻəʃɔ (ɻəɔʃ)
Accusative	ɻəʃɔbe (ɻəʃbɔe)
Inedible: ⟨xɭɪrdɪj⟩ “stone”	
Nominative	ɭɪrdɪj (ɭɪrdɪj)
Accusative	ɭɪrdɪjde (ɭɪrdɪjde)
Abstract: ⟨xɑʰəɒɔ⟩ “empathy”	
Nominative	ɑʰəɒɔ (ɑʰəɒɔ)
Accusative	ɑʰəɒɔnᵠ (ɑʰəɒɔnᵠ)
Abstract: ⟨xɸcɹ⟩ “[the number] five”	
Nominative	ɸcɹ (ɸcɹ)
Accusative	ɸczcnᵠ (ɸczcnᵠ)
	Here, the final consonant is voiced if it is a fricative.

(NB: be sure to change any ⟨ɭ⟩ and ⟨ʃ⟩ into ⟨ʃʯ⟩ and ⟨ʃˡ⟩ respectively before ⟨c⟩.)

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.
Far	The listener.	The person with which the first argument is conversing.
Other	A third entity.	An entity that is neither the speaker, the listener nor the first argument.
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	ʃɪ	ɑczc	ʃɪn	ɑczen
Far	dɔ	bɲɪ	dɔn	bɲɪn
Other	nc	ɭɪzc	ncn	ɭɪzen
Anaph. Sub.	ɲɪ	nᶣcɲc	ɲɪn	nᶣcɲen
Anaph. Obj.	ɲɔ	nᶣəɲɔ	ɲɔn	nᶣəɲɔn
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.

ɒel–ɲɜjɔ–ɑˡɜɲə–ɸcj
volume-cup-water-five
five cupfuls of water

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

ɒel–ɲɜjɔ–ɑˡɜɲə–ɸcj–ʃɪ
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.

ɒɪzɪ–ɭʃəɪ
ɒɪzɪ–ɭəʃɪ
person-old
old people

3.8 | Possession

"X's Y" is translated as ⟨Y=ɒɪ X⟩ (plus phonorun reduction). The possessive construction is also used to create appositives. (Note the head-marking!)

Observe that possession marks the head, and ⟨–ᴅɪ⟩ is a clitic, not an affix, as in the following example:

ᴅʒᴅʒnᵠɔ–ɑˈʒɻə–ᴅɪ ɟʰ.ɪɐn
ᴅʒᴅʒnᵠɔ–ɑˈʒɻə–ᴅɪ ɟʰɪ.ɐn
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:

ɳɥɪzɪᴅɪ ɪ.ɭɭe ɑn ʃɪj
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 ⟨–ɲ⟩ 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 ⟨dɪl̀–⟩ "(S) eats (O)", before and after phonorun reduction.

	Nonpast	Past
Near	dɪl̀ɪn (dɪl̀ɪn)	dɪl̀ɪʃ (dɪɪl̀ʃ)
Far	dɪl̀ɪn (dɪl̀ɪn)	dɪl̀ɜʝ (dɪl̀ɜʝ)
Other	dɪl̀ɪ (dɪɪl̀)	dɪl̀ɜ (dɪl̀ɜ)
Anaph. Sub.	dɪl̀e (dɪel̀)	dɪl̀el (dɪl̀el)
Anaph. Obj.	dɪl̀c.e (dɪl̀.ce)	dɪl̀c.el (dɪl̀.cel)
Generic	dɪl̀c (dɪcl̀)	dɪl̀c (dɪcl̀)

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)	nənɪʃ (nənɪl̀ʃ)
Far	nənɪn (nənɪn)	nənɜʝ (nənɜʝ)
Other	nənɪ (nənɪ)	nənɜ (nənɜ)
Anaph. Sub.	nənɔ (nənɔ)	nənɔl (nənɔl)
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 ⟨ɥ–⟩ is ⟨ɥə⟩.

Table 4.3: Person-tense conjugations for third-conjugation verbs, using ⟨ɥeu–⟩ "(S) spreads (O)", before and after phonorun reduction.

	Nonpast	Past
Near	ɥeucn (ɥeucn)	ɥeucʃ (ɥeucʃ)
Far	ɥeuɪn (ɥeuɪn)	ɥeuʒj (ɥeuʒj)
Other	ɥeuɪ (ɥeuɪ)	ɥeuʒ (ɥeuʒ)
Anaph. Sub.	ɥeue (ɥeue)	ɥeuel (ɥeuel)
Anaph. Obj.	ɥeuc.e (ɥeuc.e)	ɥeuc.el (ɥeuc.el)
Generic	ɥeuʒ (ɥeuʒ)	ɥeuʒ (ɥeuʒ)

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

	Positive	Negative	Interrogative
Telic	–·	–ʃɥe / –lɔ	–lˈɪ
Atelic	–ɒc / –ɒə	–ɹɪ	–ʟʒ

Some examples:

ɒɪlɪn ʟˈɪɾde ʃˈɔzɔ.
eat-NEAR.NONPAST fish flower
Fish eat flowers.

ɒɪlɪn ʟˈɪɾde ʃˈɔzɔ, ɒɪlɪn nɥɪzɪ ɹɪ.
eat-NEAR.NONPAST fish flower, eat-NEAR.NONPAST cat PR.ANAPH_SUB
Fish eat flowers, and cats eat fish.

ɒɪlɪn ʟˈɪɾde ʃˈɔzɔ, lɒɪe ɹɪſɒɪe.
ɒɪlɪn ʟˈɪɾde ʃˈɔzɔ, ɒɪle ɹɪſibe.
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.)

ɒɪlɪneʃɥ ʃˈɔɟɔ ʟˈɪɾde.
ɒɪlɪnʃɥe ʃˈɔɟɔ ʟˈɪɾde.
eat-NEAR.NONPAST-NEG flower fish
Flowers don't eat fish.

dɟcn nc lˈɟclˈɟcɑen, ɟenɪn ʃɪ ebɟ.
dɟcn nc lˈɟclˈɟcɑen, ɟenɪn ʃɪ ebɟ.
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.

dɟcnɪlˈ nc lˈɟclˈɟcɑen, ɟenɪn ʃɪ ebɟ.
dɟcnlˈɪ nc lˈɟclˈɟcɑen, ɟenɪn ʃɪ ebɟ.
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	–1	An action that is currently going on. Also used to distinguish static actions as opposed to dynamic (e. g. *wear* as opposed to *put on*).
Interrupted	1cl1	An action that was interrupted.
Perfect	–J	An action that has already finished. Changes present tense to immediate past. Also used to distinguish dynamic actions as opposed to static (e. g. *put on* as opposed to *wear*).
Gnomic	–ʔ	A general truth or aphorism, or an action done habitually.
Gnomic dubitative	1clʔ	A general truth or aphorism that the speaker considers to be false.
Deontic necessity	–ᗰ	An action that the speaker insists on happening.
Deontic recommendation	–ᗰ	An action that the speaker recommends that happens.
Epistemic necessity	ɭəᗡᗰ	An action that the speaker infers is happening. *(Situational necessitative and potential moods are grouped with their epistemic versions.)*
Deontic potential	–ᖵ	An action that the speaker permits to occur.
Epistemic potential	ɭəᗡᖵ	An action that the speaker infers that might happen.
Unexpected	–ʕ	An action that is unexpected (akin to using “but”).
Comparative	deʕ	Indicates an action of greater intensity than what was described in the previous clause.
Nonexclusive subject	4c1	Indicates that the subject comprises not only of what is explicitly mentioned, but also other things.

Aspect name	Marking	Meaning
Nonexclusive object	cʃʯʔ	Indicates that the object comprises not only of what is explicitly mentioned, but also other things.
Nonexclusive argument	cʃʯʃʃ	Combination of both nonexclusive subject and nonexclusive object.
Temporal universal	–Lᑫ	The statement is always true (“never true” when negative).
Temporal non-universal	jºLᑫ	The statement is not always true (“sometimes true” when negative).
Spatial universal	–Lᐞ	The statement is true (false) everywhere.
Spatial non-universal	jºLᐞ	The statement is false (true) somewhere.

An attached rod signal reverts ⟨jᵃ zᵘ⟩ to ⟨jʰ zʰ⟩, respectively, and might affect phonorun reduction.

An example:

ʃʯlnʃɒc1 ʃı nc, lcnc.elʕ dɜnᵠıuə–μı.
ʃʯlnıʃɒc1 ʃı nc, lcnc.elʕ dɜnᵠıuə–μı.
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
–Lᐞᑫ	$\forall t \forall \vec{x} : P(t, \vec{x})$	$\forall t \forall \vec{x} : P(t, \vec{x})$
–Lᐞ jºLᑫ	$\neg\forall t \forall \vec{x} : P(t, \vec{x})$	$\exists t \exists \vec{x} : \neg P(t, \vec{x})$
jºLᐞᑫ	$\forall t \neg\forall \vec{x} : P(t, \vec{x})$	$\forall t \exists \vec{x} : \neg P(t, \vec{x})$
jºLᐞ jºLᑫ	$\neg\forall t \neg\forall \vec{x} : P(t, \vec{x})$	$\exists t \forall \vec{x} : P(t, \vec{x})$
–Lᑫᐞ	$\forall \vec{x} \forall t : P(t, \vec{x})$	$\forall \vec{x} \forall t : P(t, \vec{x})$
–Lᑫ jºLᐞ	$\neg\forall \vec{x} \forall t : P(t, \vec{x})$	$\exists \vec{x} \exists t : \neg P(t, \vec{x})$
jºLᑫᐞ	$\forall \vec{x} \neg\forall t : P(t, \vec{x})$	$\forall \vec{x} \exists t : \neg P(t, \vec{x})$
jºLᑫ jºLᐞ	$\neg\forall \vec{x} \neg\forall t : P(t, \vec{x})$	$\exists \vec{x} \forall t : P(t, \vec{x})$

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 ⟨ln⟩ *in, on, at (location)* (from Lek-Tsaro ⟨lɪn⟩ *(S) is at (O)*). The sentence *Ryze is hiding from me in the tree* would be translated as:

ln ʃɔuɔl nɐɥɑɐl ʃɪn \ɥɜze
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 ⟨dɥ⟩ (from Lek-Tsaro ⟨dɥcn⟩ *hold, carry*, which also begets ⟨ɥn⟩), but now we have nested obliques, which means we need to use ⟨ln⟩ as a postposition:

ʃɔuɔl ɥn ʃɔzə lnʃ nɐɥɑɐl ʃɪn \ɥɜze
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 ⟨–ʃ⟩, and those that end with an open phonorun receive ⟨–z⟩.

The prefix ⟨ʃʸ–⟩ negates an adposition.

4.2.2 | Conjunctions

Conjunctions are derived from verbs as well; for instance, ⟨ɑn⟩ *and* is derived from Lek-Tsaro ⟨ɑcn⟩ *join*. However, in Middle Rymakonian, conjunctions are infixed:

\ɥɜze ɑn \ʃɪzɜl ɒɪel ʃɐɥc..
\ɥɜze ɑn \ʃɪzɜl ɒɪle ʃɐɥ.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:

\ɥɜze ɑn \ʃɪzɜl ʃɐɥc. ɑn ˩ɪdjc ɒɪel.
\ɥɜze ɑn \ʃɪzɜl ʃɐɥ.c ɑn ˩ɪdjc ɒɪle.
Ryze and Tazyl beef and soup eat-ANAPH_SUB.NONPAST

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

nɥɪzɪ ɑn–lʃəɪ ɒɜnᵠɔ
nɥɪzɪ ɑn–ləʃɪ ɒɜnᵠɔ

cat and-old rabbit
old cats and rabbits

4.3 | Connectors

(This section will refer to section 2.11 of \ɥbl ɒ ɑlɑ /ɾɑˈ\nnᵠlɲ 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 ⟨–ɾ⟩ or ⟨–l⟩ if the type ends with a closed phonorun, and ⟨–ɪ⟩ or ⟨–ʒ⟩ 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 α and β, respectively (NB: it is possible that $\alpha = \beta$)
- there are no clauses between α and β 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*	ɪJ–	Covers both the sequential and parallel connectors of Jbl.
Analogous	2	ɪd–	"For the same reason α is true, β is also true." Also used as an "and" without stating any order.
Subversive	2	ɪΩ–	"α but β."
Augmentative	*n*	ɔᵠˢ–	Later statements apply to a greater extent than earlier statements.
Explanatory	*n*	cɒ–	"θ_1 causes θ_2 causes θ_3 etc."
Conditional	2	cJ–	"If α, then β."

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

ɒiiʃ lˈɪɾde ɾˈɔzɔ ɪjeɪ.
ɒiìʃ lˈɪɾde ɾˈɔzɔ ɪjeɪ.
eat-NEAR.PAST fish flower ORDINARY-⟨e⟩-0
The fish ate the flower.

ɪjeɪ ncɒcʃ ɾdezc ɾɔuɔl.
ORDINARY-⟨e⟩-0 dance-NEAR.PAST child tree
Then the child danced around the tree.

ɪjeɪ ɒìel lˈɪlˈɪɾdeɒ.
eat-ANAPH_SUB.PAST ORDINARY-⟨e⟩-0 DEF~fish-ACC
Then the child ate the fish.

ɒelcl̀ɾ1 φɻənᵠ ɪjez dɔ.
ɒel̀cɾ1 φɻənᵠ ɪjez dɔ.
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 $\text{cmp} : A \times A \times (A \to \mathbb{R}) \times (A \times A \to \{0,1\}) \to \{0,1\}$, 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:

$$\text{cmp}(\text{fish}, \text{cats}, a \mapsto (\#\text{ of flowers eaten by } a), >) \tag{4.1}$$
$$\text{cmp}(\text{fish}, \text{cats}, a \mapsto (\#\text{ of } a \text{ that eat flowers}), >) \tag{4.2}$$

The heart of comparatives in Middle Rymakonian is the quadrivalent verb ⟨ɑɔzɪn *a b f* ⊐⟩. Thus:

ɒilcl̀ɪ ɾˈɔzɔɒ–jᵃcn, ɑɔzɪn lˈɪɾde nɥɪzɪ ɻɔ neſ.
eat-GENERIC-Q flower-ACC-how_many, CMP-NEAR fish cat PR.ANAPH_OBJ >
Fish eat more flowers than cats.

ɒilcl̀ɪ .ə–jᵃcn ɾˈɔzɔ, ɑɔzɪn lˈɪɾde nɥɪzɪ ɻɪ neſ.
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.

Table 4.8: Comparators in Middle Rymakonian.

⊐	Comparator
$>$	neɾ
$<$	ɑɔl
$=$	ɾenᵠ
$\geq$	ʃʏıl
$\leq$	ɒcɟ
$\neq$	.ɜɟ
$\approx$	ɥeɟ
$\gg$	ɑʰe
$\ll$	ɷın

4.5 | Ditransitive-like constructions

In English, some verbs such as *give* take two objects: the item being given and the recipient of the item. Because of Middle Rymakonian's heritage, this is translated into a compound statement:

ɾɪɪᵠɾ ɾɪ ˀˡɥcˀˡɥcɷen, nebel \ɥɜzen.
ɾɪᵠɪɾ ɾɪ ˀˡɥcˀˡɥcɷen, nebel \ɥɜzen.
lose-NEAR.PAST PR.NEAR DEF~book, give_to-ANAPH_SUB.PAST Ryze-ACC
I gave the book to Ryze.

4.6 | Transitivisation

Verbs that are used intransitively (i. e. have no object passed at this time) can be turned into a causative form with the prefix ⟨ᵠc–⟩:

ʃˀcɾdcɾ ɑɥeɑɥenʸe.
fall-NEAR.PAST DEF~coin
The coins fell.

ɾɪ cᵠɾˀcɾdɜ ɑɥeɑɥenʸe.
ɾɪ ᵠcɾˀcɾdɜ ɑɥeɑɥenʸe.
PR.NEAR TRANS-fall-OTHER.PAST DEF~coin
I dropped the coins.

Due to historical sound changes:

- An initial fricative or lateral fricative followed by a vowel is voiced.
- An initial ⟨ɥ⟩ followed by a vowel turns into ⟨z⟩.
- A word that started with ⟨nᵠ⟩ in Lek-Tsaro but ⟨nʸ⟩ in Middle Rymakonian has the initial consonant revert to ⟨nᵠ⟩.

Note that the word order changes to SVO. (In this case, HCAs fall before S.) In addition, the verb is conjugated for its object, rather than the subject as expected. If

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, ⟨ſcɾdcn⟩ 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:

ſcɾdcſ ɑɸeɑɸenʸe ɸıſı.
fall-NEAR.PAST DEF~coin grass
The coins fell on the grass.

ſı cɸſcɾdɜ ɑɸeɑɸenʸe, ſcɾdel ɸııſbe.
ſı ɸcſcɾdɜ ɑɸeɑɸenʸe, ſcɾdel ɸıſıbe.
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 ⟨ȷ–⟩ (v3) can take a noun as an object, in which case it can mean identity or membership. (Location is expressed with ⟨ſ–⟩ (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 ⟨ȷcn⟩ 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 ⟨ɭˡɛɒɾ–⟩ “large” and ⟨ləɾ–⟩ “old”.

Person	Declined form	
Nouns	ɭˡɛɒɾɪ (ɭˡɛɒɪɾ)	ləɾɪ (ɭɾəɪ)
Near	ɭˡɛɒɾɪɻ (ɭˡɛɒɪɻɾ)	ləɾɪɻ (ɭɾəɪɻ)
Far	ɭˡɛɒɾɪɻ (ɭˡɛɒɪɻɾ)	ləɾɪɻ (ɭɾəɪɻ)
Other	ɭˡɛɒɾɛɻ (ɭˡɛɒɛɻɾ)	ləɾɔɻ (ɭɾəɔɻ)
Anaph. Sub.	ɭˡɛɒɾɪɻ (ɭˡɛɒɪɻɾ)	ləɾɪɻ (ɭɾəɪɻ)
Anaph. Obj.	ɭˡɛɒɾɛɻ (ɭˡɛɒɛɻɾ)	ləɾɔɻ (ɭɾəɔɻ)
Generic	ɭˡɛɒɾcɻ (ɭˡɛɒcɻɾ)	ləɾəɻ (ɭɾəəɻ)

Note that a final ⟨–ɟ⟩ or ⟨–z⟩ in a stem becomes whistled in the generic form.

6 | Tree mode

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 〈nʸıϥ〉 is used, and disabled at the end of a sentence.

6.2 | Branch-switching

The aforementioned particle 〈nʸıϥ〉 marks the beginning of the right branch of the tree. The right branch is ended by the particle 〈nʸıΔ〉, which causes the next clause to join the left and right branches.

(N. B. 〈nʸıϥ〉 and 〈nʸıΔ〉 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 〈nʸıϥ〉 or the right predecessor 〈nʸıΔ〉. This is done by marking the pronoun with 〈–ϥ〉 or 〈–Δ〉.

Likewise, verbs can be modified with 〈–ϥ〉 or 〈–Δ〉 to indicate which branch the subject came from.

6.4 | Errors

The following are ungrammatical:

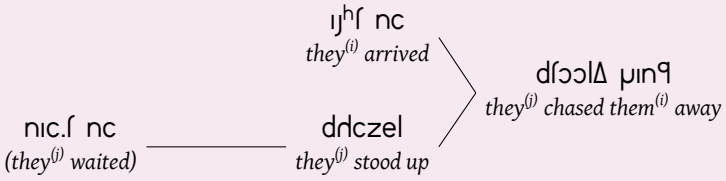
- Using the particle 〈nʸıΔ〉 or the branched anaphoric pronouns when tree mode is disabled
- Using the particle 〈nʸıΔ〉 other than to close a corresponding 〈nʸıϥ〉
- Using the unbranched anaphoric pronouns in clauses with two predecessors

- Using the branched anaphoric pronouns in clauses with one predecessor
- Starting a new branch with ⟨nʸɪʔ⟩ when the current branch is empty

6.5 | Example

ɪjʰɾ nc, nʸɪʔ nɪc.ɾ nc, dɾɑczel, nʸɪʌ dɾɔɔlʌ ɲɪnʔ.
jʰɪɾ nc, nʸɪʔ nɪ.cɾ nc, dɾɑczel, nʸɪʌ dɔɾɔlʌ ɲɪnʔ.
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$^{(i)}$ arrived, they$^{(j)}$ stood up and chased them$^{(i)}$ 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	μзᴅ
1	1	ɑзl
2	˩	ſıȷ
3	ʔ	Ωᶣɔn
4	ɱ	ɑˡɪμ
5	Ɬ	φcȷ
6	ʕ	ᴅɥe
7	q	ʆcȷ
8	Δ	dən
9	L	ɿˡed
10	F	bзnᵠ
11	7̵	nə
12	£	ɩe
13	♯	ȷᵅcd
14	A	ɥɪn
15	∀	ſᶣel
16	10	.ɪμ
17	11	ɩˈel
18	1˩	ɩˈelɑзl
19	1ʔ	ɩˈelſıȷ
33	˩1	ɑᴅɪɿ
34	˩˩	ᴅɪl
119	qq	ᴅlʆ
256	100	ſᶣɩˈɑɔ
323	1ɱʔ	ɿˡɪzɪſɪn

base 10	base 16	word
4199	10ʕ9	ʅ.ɔlə

Note that digits above 9 use capital hacm letters.

7.2 | Double-digit numerals

Numerals of the form $x \cdot 16$ with $1 \leq x < 16$ are formed by concatenating ⟨.ɪµ⟩ x. For instance, $128 = 80_{16}$ is written ⟨.ɪµdən⟩ → ⟨.ɪµədn⟩.

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 ⟨µ⟩ y ⟨µ⟩ (before PR). For instance, $89 = 59_{16}$ is written ⟨φcȷµʅˡedµ⟩ → ⟨φcȷµʅˡdeµ⟩.

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 listen in table 7.1, are formed by concatenating y ⟨ɾɥlˡɑɔ⟩ x. This is done after phonorun reduction. For instance, $2018 = 7E2_{16}$ is written ⟨ɥɪnµʃɪȷµɾɥlˡɑɔcɾȷ⟩.

Note that there is no special case for $y = 0$; $512 = 200_{16}$ is written ⟨µɜɒɾɥlˡɑɔʃɪȷ⟩.

7.4 | Larger numerals

Multiples of 4096 (up to 65536) are written by concatenating ⟨.lel⟩ x before phonorun reduction: $8192 = 2000_{16}$ is written ⟨.lelʃɪȷ⟩. The exception is 4096 itself, which is ⟨ɪ.lle⟩.

Then other numerals up to 65536 are written as a conjunctional phrase: $10000 = 2710_{16}$ is written ⟨.lelʃɪȷ ɑn .ɪµɾɥlˡɑɔcɾȷ⟩ – $2 \cdot 4096 + 16 + 7 \cdot 256$.

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 ⟨–ne⟩ or ⟨–nɔ⟩ to the noun. In addition, any final fricatives or lateral fricatives after a vowel are voiced, and a final ⟨ɥ⟩ after a vowel is changed to ⟨z⟩.

Examples:

- ⟨lˡɥcɷenˀ⟩ *book* → ⟨lˡɥcɷeneˀ⟩ *literature*
- ⟨lˡɔlɪ⟩ *cart* → ⟨lˡɔlɪnɔ⟩ (→ ⟨lˡlɔɪnɔ⟩) *transportation*
- ⟨ɒcɥ⟩ *hand* → ⟨ɒczne⟩ *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 diminuitive). ⟨ɾˡc–⟩ or ⟨ɾə–⟩ are prepended to nouns that begin in ⟨j⟩, ⟨l⟩ or ⟨jˤ⟩, or ⟨jc–⟩ or ⟨jə–⟩ otherwise. In addition, an initial fricative or lateral fricative before a vowel is voiced, and an initial ⟨ɥ⟩ before a vowel is changed to ⟨z⟩.

Examples:

- ⟨ɒɪzɪ⟩ *person* → ⟨jcɒɪzɪ⟩ *child*
- ⟨ɸɔzə⟩ *fruit* → ⟨jəɸɔzə⟩ (→ ⟨jɸəɔzə⟩) *unripe fruit*
- ⟨jɐɾlɭcn⟩ *essay* → ⟨ɾˡczɐɾlɭcn⟩ *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	–enᵠ / –ɔnᵠ
Patient	–ed / –ɔd
Location	–eɥ / –ɔɥ
Instrument	–ɪʃ
Causer	–eɷᶣd / –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 ⟨–ʃ⟩.

The following words are derived from ⟨nəb–⟩ (v2) *to steal*:

- Agent: ⟨nəbɔnᵠ⟩ → ⟨ɔnᵠbnəc⟩ *thief*
- Patient: ⟨nəbɔd⟩ → ⟨nəɔbd⟩ → ⟨bdnəɔc⟩ *stolen goods*
- Location: ⟨nəbɔɥ⟩ → ⟨ɔɥbnəc⟩ *site of theft*
- Instrument: ⟨nəbɪʃ⟩ → ⟨nəɪbʃ⟩ → ⟨bʃnəɪc⟩ *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 ⟨–dʒɷ–⟩ 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.

- ⟨ɷeɒ–⟩ *sleep* → ⟨ɷeɒɪdz–⟩ *be woken up forcibly* (→ ⟨ɸcɷeɒɪdz–⟩ *wake someone up forcibly*)
- ⟨ɒez–⟩ *ride, board* → ⟨ɒezɪdz–⟩ *be forcefully ejected from a ride* (→ ⟨ɸcɒezɪdz–⟩ *eject someone from a ride*)
- ⟨neɥɑ–⟩ *hide* → ⟨neɥɑdʒɷ–⟩ *be uncovered* (→ ⟨ɸcneɥɑdʒɷ–⟩ *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
\ɥɜze	Personal (native)
\ʃɪzɜl	Personal (native)
\ɥeɒcn	Personal (foreign)
dɥeɒe–\oɪlɪ.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 ɔᵉ
e	e eᵓ cᵓ
c	c cᵊ
ɔ	ɔ əᵓ
ə	əᶜ 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
[AEɤɸϵ dɾlβɪ ʃɔɑɔl]	Place	The trees *covered* the ground
[ɒəʃɪ ɸɤEÐE ɥcl–\lɐɳe]	Place	The *city* remembers the Šedri (Šedrŷ) star
[ɑc ɭɥɪʃə–ɒɪ ɟcl ɟəɥ ɟʰɪ.en–ɒɪ ɟcl ɭɪɲe, ɸoeɟc.el ɸɤEÐEÐ]	Place	The *city* was founded by the warrior of the sun and the wizard of the moon
[ɒezɪ \ΨƎTƆF ɟɜl–lˈel]	Personal	*Gulto* takes care of 17 foxes

An example of usage:

[ɒəʃɪ dɥeɒe ɥcl–\lɐɳe], n.l bɪnen–.clɟɥɪ ɟʰe DIDIZI ɥɪ.
(name), in_time year-next go-ANAPH_SUB DEF~person PR.ANAPH_SUB
He will go to Muta Pröme Ryk-Šedrŷ 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 $transporation going to $station	The $transportation going from $station
Causer	The driver of said $transportation	

In addition, the aspect marker <–ɭ> 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. <dɥɐɒe–\oılı.c> → <%oılı.–> (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: <[ɒəʃı ɸӾƐÐE ɥcl–\lɐɲɥe]> → <%ɥcl–\lɐɲɥe–ɒəʃ–> (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: <[AEӾΨϵ dɾlıβı ʃɔɑɔ]> → <%dɾlıβı–neɥɑ–> (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 <=ɒı>
- <dɾlıβı> *ground*, <ʃɔuɔl> *tree*, <lıɾlıj> *stone* or <ɾ'ızcj> *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. <ncjɑı> *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:

$$y = y_s + y_m \tag{10.1}$$

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

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

where:

$$\begin{aligned} \tau &= 2 \cdot \pi \\ A_s &\approx 0.675 \\ A_{sa} &\approx 0.0532 \\ A_m &\approx 1.267 \\ A_{ma} &\approx 0.176 \\ y &= \text{offset of sea level in metres} \\ t &= \text{time since HAT in local synodic days} \end{aligned}$$

An exact solution to $dy/dt = 0$ is not known to exist. However, the solutions to this equation can be found numerically. Consult Section A.1 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* ⟨ɥɜɒɜ⟩ (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:

$$l_m/l_t \approx 29.80148 \tag{10.4}$$
$$\approx 4053/136 \tag{10.5}$$
$$l_y/l_m \approx 9.80299 \tag{10.6}$$
$$\approx 7215/736 \tag{10.7}$$

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	ɑəbə
1	ɥɜ.ɐɒ
2	ʃɹɪɸɔl
3	ɒzɜjɪ
4	ɭɦezɪɒ
5	ʃɔɒɜʃ
6	nʸɜzəʃ
7	lcbclɪ
8	bɔɒəɭ
9*	.czezɪ

10.3 | Days within a month

The first nine tidal days have their own names, as follow:

Table 10.3: Day names.

Day #	Year number plus month number Even	Odd
1	ɟ^{o}əμɪɿ	ɟɪlμɔ.ə
2	zɪ͏ʅʃɪ	ɑʒɺ.cneɑɪ
3	ɾcɑɿɪ	ʅ^{l}ɪzɪl
4	ᴅɪzeφ^{s}c	ɿ^{l}ɪɟdez
5	dɪɿμɔ	nɥez
6	u^{h}ɪμΩɪɿ	ucnʃ^{ɟ}ɪ
7	ɺɪμʅc	dec.ʒɑ
8	ᴅclcɟ^{ɑ}	ɿɑɪΩɪɿ
9	μɪz^{h}əlɔ	.czcᴅ

The days after those are referred to by number (one-indexed): the thirteenth day would be called ⟨μʒᴅʒ–ɟ^{ɑ}cd⟩.

10.4 | Years

The lengths of the year follow a 736-year cycle as specified in Figure 10.1. The code used to generate this table can be found in Section A.2.

Figure 10.1: Table of year lengths in a cycle.

```
   0123456789 |     0123456789 |     0123456789 |     0123456789
 0 XXXXX9XXXX |  19 XX9XXXX9XX |  38 9XXXX9XXXX |  57 XXX9XXXX9X
 1 9XXXX9XXXX |  20 XXX9XXXX9X |  39 9XXXX9XXXX |  58 XXX9XXXX9X
 2 9XXXX9XXXX |  21 XXX9XXXX9X |  40 9XXXXX9XXX |  59 XXX9XXXX9X
 3 9XXXX9XXXX |  22 XXX9XXXX9X |  41 X9XXXX9XXX |  60 XXXX9XXXX9
 4 9XXXX9XXXX |  23 XXX9XXXX9X |  42 X9XXXX9XXX |  61 XXXX9XXXX9
 5 9XXXX9XXXX |  24 XXX9XXXX9X |  43 X9XXXX9XXX |  62 XXXX9XXXX9
 6 9XXXX9XXXX |  25 XXX9XXXX9X |  44 X9XXXX9XXX |  63 XXXX9XXXX9
 7 X9XXXX9XXX |  26 XXX9XXXXX9 |  45 X9XXXX9XXX |  64 XXXX9XXXX9
 8 X9XXXX9XXX |  27 XXXX9XXXX9 |  46 X9XXXX9XXX |  65 XXXX9XXXX9
 9 X9XXXX9XXX |  28 XXXX9XXXX9 |  47 XX9XXXX9XX |  66 XXXX9XXXXX
10 X9XXXX9XXX |  29 XXXX9XXXX9 |  48 XX9XXXX9XX |  67 9XXXX9XXXX
11 X9XXXX9XXX |  30 XXXX9XXXX9 |  49 XX9XXXX9XX |  68 9XXXX9XXXX
12 X9XXXX9XXX |  31 XXXX9XXXX9 |  50 XX9XXXX9XX |  69 9XXXX9XXXX
13 X9XXXXX9XX |  32 XXXX9XXXX9 |  51 XX9XXXX9XX |  70 9XXXX9XXXX
14 XX9XXXX9XX |  33 XXXXX9XXXX |  52 XX9XXXX9XX |  71 9XXXX9XXXX
15 XX9XXXX9XX |  34 9XXXX9XXXX |  53 XX9XXXXX9X |  72 9XXXX9XXXX
16 XX9XXXX9XX |  35 9XXXX9XXXX |  54 XXX9XXXX9X |  73 9XXXX9
17 XX9XXXX9XX |  36 9XXXX9XXXX |  55 XXX9XXXX9X |
18 XX9XXXX9XX |  37 9XXXX9XXXX |  56 XXX9XXXX9X |

9: 9 months
X: 10 months
```

10.5 | Eras

Years are grouped further into *eras* ⟨ˋlɪɥɪ⟩, which change on major historical events. The start of a new era resets the month and year cycle. Eras can also start in the middle of a year of the previous era; thus, the start of the year is different for each era. The *crossover date* of an era is the date of the era that coincides with the first day of the next; in other words, it is the date immediately after the last day of the era.

Table 10.4: The months of the year.

Name	Crossover date	Days between	Cumulative
lɪɥɪ–μɜlɔ	ᙁ lɗezɪᴅ ⅋AԀ	889726	889726
lɪɥɪ–lʃəɪ	1ʔ ʃɪφɔl ΔL٩	642508	1532234
lɪɥɪ–lɪɉnedɜ	Δ ɭcbclı ɈɛԀ	207366	1739600
lɪɥɪ–ncl^{l}el	(to present)		

The first day of ⟨lɪɥɪ–ncl^{l}el⟩ coincides with the founding of the (not yet named).

11 | Quoting direct speech

Direct speech is not quoted as-is, but rather it is converted into a stack code. A *quotative* begins with ⟨ɭdɑ⟩. 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 $g(r) = (\text{ɪ}, \text{ɕ}, \text{ɜ}, \text{e}, \text{ə}, \text{ɔ})[r]$[1].

q corresponds to one of 86 consonant clusters. Let

$$P = (\text{ʃ}, \text{ɟ}, \text{d}, \text{ɑ}, \text{ɭ}, \text{ɳ}^{\text{l}}, \text{ɑ}, \text{b}, \text{z}^{\text{o}}, \text{ʊ}, \text{ɸ}, \text{ɑ}^{\text{h}}, \text{ɟ}^{\text{h}}, \text{ɑ}^{\text{l}}) \quad \text{(14 entries)} \tag{11.1}$$

$$N = (\text{ɲ}, \text{ɲ}^{\text{ɥ}}, \text{ɒ}, \text{ɲ}^{\text{ɸ}}) \quad \text{(4 entries)} \tag{11.2}$$

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

$$M = (\text{ʃ}^{\text{l}}, \text{ɸ}, \text{s}^{\text{l}}, \text{ɭ}, \text{ʃ}^{\text{ɥ}}, \text{s}, \text{ɑ}^{\text{ɥ}}) \quad \text{(7 entries)} \tag{11.4}$$

Then:

$$f(q) = \begin{cases} . & \text{if } q = 0 \\ P[q-1] & \text{if } 1 \leq q < 15 \\ N[q-15] & \text{if } 15 \leq q < 19 \\ P[\lfloor (q-19)/4 \rfloor] \sim L[(q-19) \bmod 4] & \text{if } 19 \leq q < 75 \\ L[q-75] & \text{if } 75 \leq q < 79 \\ M[q-79] & \text{if } 79 \leq q \end{cases} \tag{11.5}$$

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:

[1] 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_8, 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 $\langle n-$ DI $n_a\rangle$ to the stack.
004 – 007	none	If bit 1 of *opcode* is set, then pop o from the stack. If bit 0 of *opcode* 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 : *Byte*, *root* : *Char*$[n]$	Reads a size n of one byte and then n raw Middle Rymakonian characters *root*. Pushes Root(*root*, *opcode* mod 8) onto the main stack.
020	n : *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 : *Byte*	Pop a noun n from the stack and push it back with the following properties depending on the various bits of x: • Bit 0: Inverse if set, direct if not set. • Bit 1: Definite if set, indefinite if reset.
022	x : *Byte*	Pop v from the stack as a verb and push it back with the following properties depending on the various bits of x: • Bit 0: Past if set, nonpast if reset. • Bit 1: Atelic if set, telic if reset. • Bit 2: Negative if set, positive if reset. • Bit 3: Interrogative if set, affirmative if reset.

Opcode (octal)	Additional parameters	Effect
023	$x : Byte, y : Byte, z : Byte$	Pop v from the stack as a verb and set its associated aspects according to the various bits of x, y and z: • x: – Bit 0: Imperfect – Bit 1: Perfect – Bit 2: Gnomic – Bit 3: Deontic necessity – Bit 4: Deontic potential – Bit 5: Unexpected – Bit 6: Left branch – Bit 7: Right branch – Bit 8: (unused) • y: – Bit 0: Interrupted – Bit 1: Deontic recommendation – Bit 2: Gnomic dubitative – Bit 3: Epistemic necessity – Bit 4: Epistemic potential – Bit 5: Comparative – Bit 6: Temporal universal – Bit 7: Temporal non-universal – Bit 8: Spatial universal • z: – Bit 0: Nonexclusive subject – Bit 1: Spatial non-universal – Bit 2: Nonexclusive object – Bit 3: Nonexclusive argument – Bit 4: Set if both temporal and spatial aspects exist and the spatial marker comes first; otherwise, this bit is not set.

Opcode (octal)	Additional parameters	Effect
024	x : *Byte*	Push a verb v such that $[v, a, b] \equiv cmp(a, b, f, \sqsupset)$, where the free variables are set according to the bits of x: • Bit 0: set if f refers to the anaphoric object, reset if anaphoric subject. • Bit 1 – 4: index into $(>, <, =, \geq, \leq, \neq, \approx, \gg, \ll)$ for $\sqsupset$.
025	nothing	Pop o as an adjective and s as a noun and push the clause $[\text{J}\!\!-, s, o]$.
026	nothing	Pop o as a noun and s as a noun and push the clause $[\text{J}\!\!-, s, o]$.
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 : *Byte*	Push a connector according to the bits of x: • Bits 0 – 2: the type of the connector (0 = ordinary, 1 = analogous, 2 = subversive, 3 = augmentative, 4 = explanatory, 5 = conditional). • Bit 3: the parity (0 = even, 1 = odd). • Bit 4: if set, pop a seqid from the stack. Otherwise, do not pop anything and consult bits 5 – 8 instead. • Bits 5 – 8: one of 16 intrinsic seqids. These depend on the dialect, but in the standard dialect these are ⟨ɪ d e ɾ c ɑ ɔ ɸ ə ɭ z ʃ ʊ jʰ ɪɻ dɻ⟩. Unused if bit 4 is not set.
061	none	Pop a connector c and a clause α and push α with c attached.
100	none	Pop a literal and push it with information that it is a nominal name.
200	none	Pop roots b and a from the stack and push the concatenation of a and b on the stack with the attribute being the bitwise xor of those of a and b.
700	x : *Byte*$[4]$, a : *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 | Limitations

The quoting sublanguage has a few limitations compared to Middle Rymakonian proper:

- A sentence with a copula and an adjective as the "object" cannot have any attributes attached to the copula. The workaround is to refrain from using in-

struction 025 and instead create a normal sentence (via 007) whose object is a dummy noun (e. g. ⟨ᴅɪzɪ⟩, ⟨ᴜcl⟩) modified by the adjective.

- It is not possible to specify the order of the subject relative to the object. Some nonstandard dialects have extensions that allow this; for instance, the Myðun dialect reserves instruction 633 to be equivalent to 007 but with inverted S-O order. Other dialects might provide an instruction to explicitly mark accusative arguments if needed, as Middle Rymakonian itself does.

11.5 | 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:

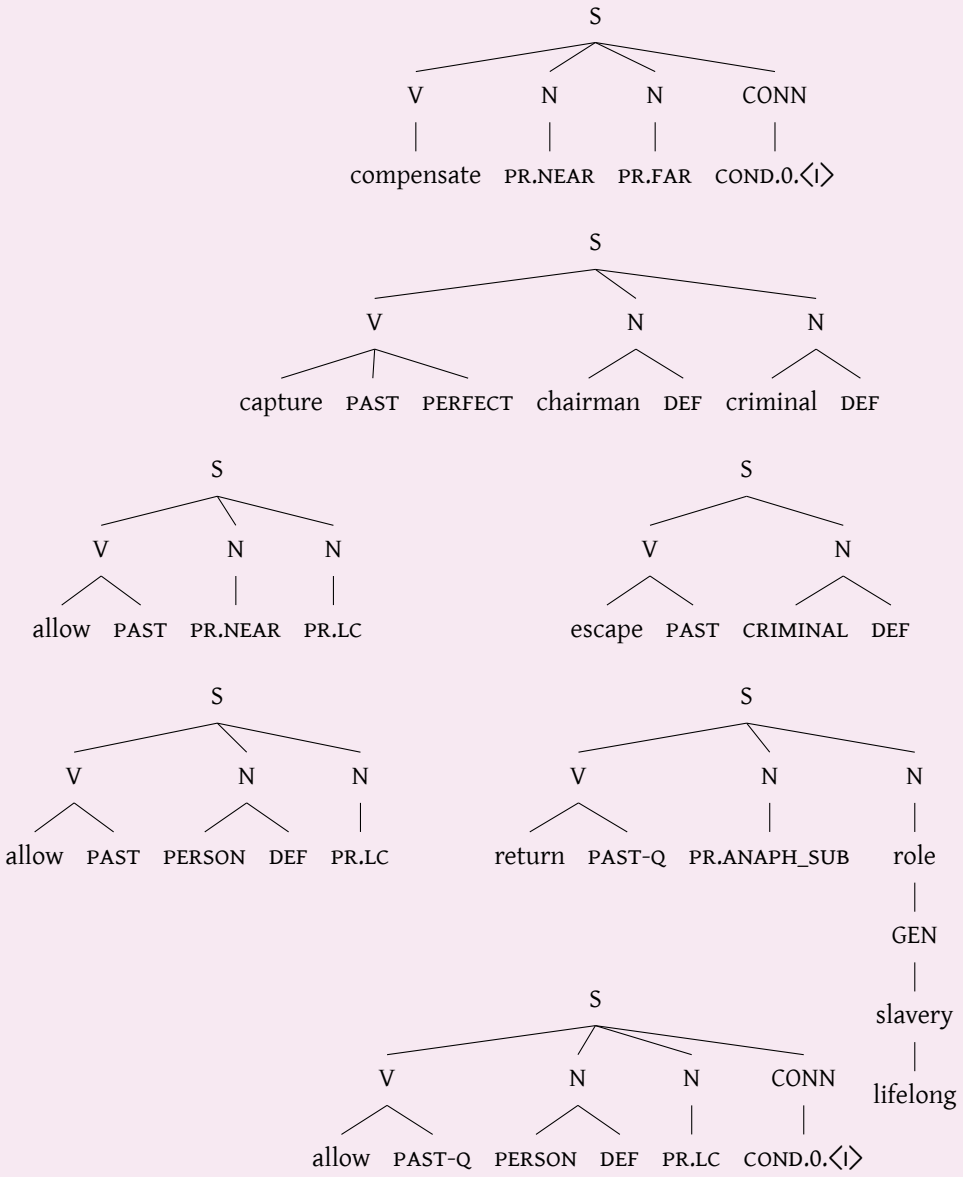
- The chairman captured the criminal.
- We had let the above happen.
- The criminal escaped.
- The man had allowed the above to happen.
- The man would returned to his proper role of lifelong slavery.
- We would let the above happen.

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

The seven clauses together thus form the word ⟨lɑʃɜ.enebdɪ.cjə.ɪjə.cʃcbɪ.ɔbcʃe.eɑəzdɪ.cdc.ɜ.ɪ.ɪʃɜʃcnɪbəjənᵠjɔ.ɜʃɜ.ɔɑˡɔʃɔnᵠjɔ.ɜʃcʃə.cɾdɪ.cjə.ɪɑɪʃcʃɜ.eʃɪɸdɪ.cʃɜ.ɔɑˡɔʃɔnᵠjɔ.ɜʃɪʃə.cɾdɪ.cʃɜ.əɒɪzɪjɔ.ɜɑɪʃcʃə.cɒdɪʃejə.əje.ɔjlɔɑlje.əoiᵖɪjɪ.əənən.c.eʃcʃə.cɾdɪʃeʃɜ.əɒɪzɪjɔ.ɜɑɪʃcbɪ.ɔbc⟩. (See `7_1/listings/example-nestedquote.qasm` for how this was derived.)

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

Figure 11.1: ASTs for the clauses at the deepest nesting level. NB: We translate *role* as ⟨jɔal⟩, which has a connotation of normalcy, so we need not explicitly state that it is "proper".



- 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.

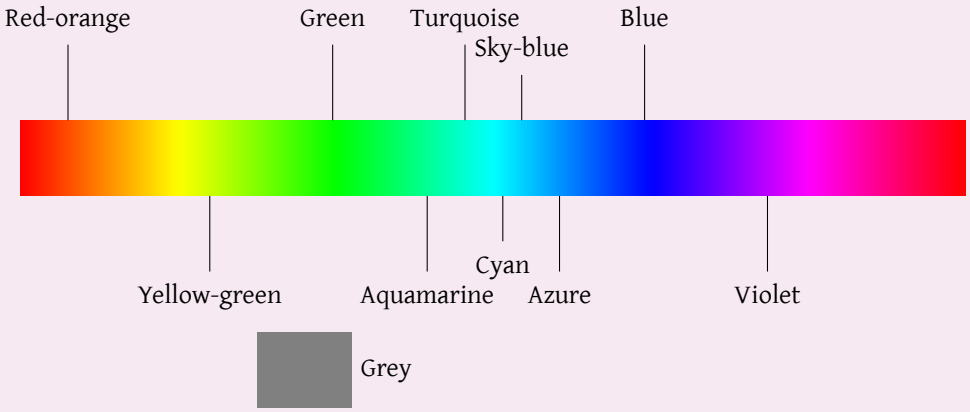
For the sake of brevity, we will not show the ASTs for these clauses, but see `7_1/listings/example-quote.qasm` for how this is derived. The part outside the quotation is straightforward. Thus we have:

```
ɒesɪʃ .cɒcɥ–nc ʃɪ, ɥeuc.el ɥɪ ʃe.eɒəndɪ.cdc.c.ɪ.ɪʃɜ.ɜneʃɔ.əbɪneɑˡo
ə.c.ɪ.ɪ.ɪjɪ.ɜ⟩ejə.ɪʃɜʃɜulɪɯcɒcɾuəʃcʃe.eɒəndɪ.cdc.c.ɪ.ɪʃɜ.ɜneʃɔ.əbɪneɑˡo
ə.c.ɪ.ɪ.ɪjɪɑˡoə.c.ɪ.ɪ.ɪ.ɜɥc.ɜ⟩ejə.cjəʃɪʃcʃəʃcucɥlɪjʃdɪ.cdc.ɜjə.ɪʃɜ.ədɾenˀˡɔʃ
ɜʃɪɑclɒɪdˀˡɔʃɜʃɪɒɪɾdc.ɪuəje.ɔɒɪlnɪjɔ.ɜʃcʃɜ.eɥeudɪ.cdc.ɜjə.ɪjə.əʃɜ⟩leʃɜ.e
nebdɪ.cjə.ɪjə.cʃcbɪ.ɔbcʃe.eɑəzdɪ.cdc.ɜ.ɪ.ɪʃɜʃcnɪbəjənᵠjɔ.ɜʃɜ.ɔɑˡɔʃɔnᵠ
jɔ.ɜʃcʃə.cɾdɪ.cjə.ɪɑɪʃcʃɜ.eʃɪɸdɪ.cʃɜ.ɔɑˡɔʃɔnᵠjɔ.ɜʃɪʃə.cɾdɪ.cʃɜ.əɒɪzɪjɔ.ɜ
ɑɪʃcʃə.cɒdɪʃejə.əje.ɔj⟩ɔɑlje.əoɪᵱɪjɪ.əənən.c.eʃcʃə.cɾdɪʃeʃɜ.əɒɪzɪjɔ.ɜɑɪʃ
cbɪ.ɔbcʃcʃə.cɾlʃɜʃulɪɯcɒcɾuəɑɪɑcʃɜ.czˀ⟩ɔʃcbɪˀləbcʃɜ.əuenjdɪ.cjɪ.ɔ.ɪɑɪ
zˀˡɔʃɜʃɪɒɪɾdc.ɪuəjə.əʃcbɪ.əbcʃɜ.eˀˡɪ.dɪ.cʃɜ.ɔɑ3lʃɔjɔ.cjə.əʃcbɪ.əbcbɪˀləbc
ʃɜ.eɒesdɪ.cɑɪjə.cʃcʃɜ.eɒesdɪ.əʃɜ.eɒcɑˡɔɑcjə.cʃc.
```

12 | Miscellanea

12.1 | Colour

Middle Rymakonian has eleven non-derived colour terms:



Note that “grey” refers generically to a loss of chroma. There is no distinction between a decrease in saturation and a decrease in value.

Middle Rymakonian works with colour *transitions*, not static colours, and uses abstract nouns to represent them. See table 12.1.

Table 12.1: Colour transitions in Middle Rymakonian. Each row represents a different starting colour; each column represents a different ending colour.

	RO	YG	Gn	Aq	Tu	Cy	SB	Az	Bl	Vi	Gy
RO	ʅ^{l}ɪȷ	ᴅeʅ	ɷ^{ɥ}en	ɑɪl	ȷ^{ɑ}cµ	dɜl	beʃ	ᴅɪl	ɑ^{l}ɔd	ʃen^{φ}	ᴅc.cᴅ
YG	ᴅɔʃ	µəᴅ	ʅ^{l}ɔd	ɷɜl	n^{ɥ}cȷ	ʃeʅ	n^{ɥ}ɪµ	ɑ^{h}eʃ	ʃ^{ȷ}en	ɥed	dəɔ
Gn	ʃ^{ɥ}ɔn	ɑ^{l}ɔdɔ	ɭ^{l}eʅ	ɺɜᴅ	φɔʃ	nəl	bɔn	ɭeʃ	ȷɜlɜ	ȷ^{ɑ}əȷ	ʅɔz
Aq	ȷ^{ɑ}ɪµ	ʃɜµ	µɜᴅ	ocʅ	ᴅcµz	.əʅ	ʃ^{l}ɔµ	ʅµɔȷ	noed	ɺɪd	beɪ
Tu	ɑəl	n^{ɥ}əȷ	ʅeʅ	ɷ^{ɥ}ɜµ	ᴅɥen	µcȷ	ʅ^{l}ɔᴅ	ʃɥel	ȷ^{o}cʃ	ɷəµ	ɺɜ.ɔ
Cy	bɜµ	ɷɔʃ	ncµ	.cʃ	ɺəȷ	bɺeʅ	ʃ^{l}cl	n^{ɥ}ɪʅ	ɑµcn	bəʃ	nɔz
SB	dɔʅ	n^{ɥ}ɪl	den	ʃ^{l}el	ɑ^{l}eᴅ	ʃ^{l}əµ	oɪd	ȷ^{ɑ}ɔµd	den	ɺcd	ʃ^{ȷ}ʅɔ
Az	ᴅɪµ	ȷɔʅ	ɭɔd	φɺeȷ	ɷoɔµ	n^{ɥ}ɪʃ	ɑµeʃ	ɑocȷ	ʃcµ	µɜd	oɪ
Bl	heʃ	ʃ^{ȷ}ɔn	ɑ^{h}ɜµ	nɥɔʃ	ɑ^{h}c.əʅ	ȷ^{ɑ}µən	bɔn	ɷəl	ʅ^{l}ɪʅ	ʅɜn^{φ}	ɥəɔ
Vi	ɷɔn^{φ}	oɔʃ	ɑ^{h}cȷ	ɷµɪʃ	ʃcl	dcʅ	µəʃ	ɺcʃ	φɜn^{φ}	ʅ^{l}ɔn	ɑɪ
Gy	ɷɔ	bɜ	ʅe	dɜ	µe	ȷc	ʃ^{ȷ}ɪ	ɥɪɥɪ	ɑ^{h}e	ȷ^{ɑ}c	.cȷ

A | Listings of programs

A.1 | workfiles/7/tides.sage

```
# How many values to output

limit = int(sys.argv[1]) if len(sys.argv) > 1 else 1000

# :P

tau = 2 * pi

t = var("t")

# Constants

A_s = 0.675; A_sa = 0.0532; A_m = 1.267; A_ma = 0.176; l_m = 30.80152

# Solar component
y_s2 = A_s * (1 + A_sa * cos(tau * t)) * cos(2 * tau * t)
# Lunar component
y_m2 = A_m * (1 + A_ma * cos(tau * t / l_m)) * cos(2 * tau * t / l_m -
    2 * tau * t)
y = y_s2 + y_m2
yp = diff(y, t)

# High and low tides occur at values of t where dy/dt = 0.

i = 0
time = 0
print(0)
while i < limit:
  try:
    time2 = find_root(yp == 0, time + 0.000000001, time + 0.35)
    print(time2)
    time = time2
    i += 1
  except:
    time += 0.01
```

workfiles/7/tides.sage

A.2 | workfiles/7/bins.pl6

```
# CONSTANTS

constant \MONTHS_PER_YEAR_CYCLE = 7215;
constant \YEARS_PER_YEAR_CYCLE = 736;
constant \AVG_MONTHS_PER_YEAR = MONTHS_PER_YEAR_CYCLE /
    YEARS_PER_YEAR_CYCLE;

# COMPUTATION
# For each year, take as many months as are needed
# in order to cycle to the next.

my $c = 0;
my @k;

for 0 ..^ YEARS_PER_YEAR_CYCLE -> $i {
  my $need = 1 - ($c - floor($c));
  my $objs = ceiling($need * AVG_MONTHS_PER_YEAR);
  @k[$i] = $objs;
  $c += $objs / AVG_MONTHS_PER_YEAR;
}

# DISPLAY

my \cols = 4;
my $len = @k.elems;

say ("    0123456789" xx cols).join(" | ");

my \total-rows = ceiling($len / 10);
my \rows = ceiling(total-rows / cols);

for 0 ..^ rows -> $j {
  for 0 ..^ cols -> $p {
    print(" | ") if $p != 0;
    my $q = $j + rows * $p;
    next if $q >= total-rows;
    printf("%3d ", $q);
    for 0 ..^ 10 {
      my $i = 10 * $q + $_;
      if $i >= $len { print " "; }
      else {
        print "0123456789XE".substr(@k[$i], 1);
      }
    }
  }
  say "";
}
```

workfiles/7/bins.pl6

Romanisation

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

Table A.1: The consonants of Middle Rymakonian.

	Bilabial	Dental	Alveolar	Palatal	Velar	Glottal
Nasal	m		n	ñ	ŋ	
Plosive	p b		t d	ť ď	k g	.
Fricative	f v	þ ð	s z	š ž	h ħ	
(coärticulated)	fh vħ	þh ðħ		fš vž		
(whistled)			ŝ ẑ			
Affricate			c	č		
Lateral fricative			ś ż			
Approximant			r	j	w	
Lateral approximant			l			
Tap			ř			

Table A.2: The vowels of Middle Rymakonian.

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

The digraphs ⟨fh vħ þh ðħ fš vž ts tš⟩ correspond to coärticulated 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 ⟨9^7 9^8⟩. Proper words are preceded by a backslash ⟨\⟩.

⟨ŋ⟩ 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⟩.

B | List of glossing abbreviations

An asterisk indicates that this value is unmarked.

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

Abbr	Definition
CMP	Comparative
Comparators are glossed using their respective operator symbols.	
Transitivisation	
TRANS	Transitivised
Tree mode	
BRANCH	Create a new branch (<ᑎᖏᕫ>)
JOIN	Join two branches (<ᑎᖏᐃ>)
LEFT	Refer to left branch (<–ᕫ>)
RIGHT	Refer to right branch (<–ᐃ>)

C | Quoting assembler

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

Table C.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	`nop`	
001	`modadj`	
002	`modnoun`	
003	`modgen`	
004 – 007	`sentence [s|ns] [o|no]`	`s` denotes subject and `ns` denotes no subject from the stack. `o` and `no` are analogously defined for objects.
010 – 017	`literal <0-7|v1-3|nsent|nnonsent|nmeas|nedib|nined|nabst|dfront|dback>` *literal*	The literal is surrounded by double quotes and uses romanisation from hacm. Superscript letters are denoted by caret characters.
020	`pronoun <near|far|other|anaph_sub|anaph_obj|generic> [nd|du]`	
021	`setnopt [dir|inv] [indef|def]`	
022	`setvopt [nonpast|past] [telic|atelic] [pos|neg] [nq|q]`	

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 *seqid* 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 *seqid* is not –, then a literal instruction is generated before this instruction.
061	`attachconn`	
100	`setnname`	
200	`concat`	
700	`pushint` *`a`*	
701	`add`	
702	`sub`	
703	`div`	
704	`mul`	

D | Listings of programs

D.1 | 7_1/listings/example-nestedquote.qasm

```
# Clause #1
  literal v1 "neb" # = compensate
  setvopt past
  pronoun near # Subject
  pronoun far # Object
  sentence # Join sentence
  conn conditional 0 "a" # connector
  attachconn
# Clause #2
  literal v2 "fuz" # = capture
  setvopt past
  setaspect perf
  literal nsent "nabusun^g" # = chairperson
  setnopt def
  literal nsent "f^xoton^g" # = criminal
  setnopt def
  sentence
# Clause #3
  literal v3 "c" # = allow
  setvopt past
  pronoun near # Subject
  pronounlc # Object
  sentence
# Clause #4
  literal v1 "tag" # = escape
  setvopt past
  # In this sense, the O is the escaper.
  literal nsent "f^xoton^g" # = criminal
  setnopt def
  sentence ns # Omit the subject
# Clause #5
  literal v3 "c" # = allow
  setvopt past
  literal nsent "maza" # = person
  setnopt def
  pronounlc # Object
  sentence
# Clause #6
  literal v3 "m" # = return to
  setvopt past q
  pronoun anaph_sub # Subject
  literal nabst "skofl" # = role; Object
```

```
  # Push a node representing "lifelong slavery"
  literal nabst "wat^sa" # = slavery
  literal dback "unun" # = lifelong
  modadj # Modify
  # Attach it by genitive
  modgen
  sentence
# Clause #7
  literal v3 "c" # = allow
  setvopt past q
  literal nsent "maza" # = person
  setnopt def
  pronounlc
  sentence
  conn conditional 0 "a" # connector
  attachconn
```

7_1/listings/example-nestedquote.qasm

D.2 | 7_1/listings/example-quote.qasm

```
# Clause #1: I have known Vladimir for 12 years.
  literal v2 "mun" # = know (a person)
  setvopt past
  setaspect imp
  literal 0 "ne" # preposition
  literal nmeas "bane" # = year
  pushint 12
  modnoun
  adptov
  pronoun near # Subject
  literal 0 "vladimic" # Object
  setnname
  sentence
# Clause #2: You have known Vladimir for 12/2 years.
  literal v2 "mun" # = know (a person)
  setvopt past
  setaspect imp
  literal 0 "ne" # preposition
  literal nmeas "bane" # = year
  pushint 12
  pushint 2
  div
  modnoun
  adptov
  pronoun far # Subject
  pronoun anaph_obj # Object
  sentence
# Clause #3: Maria could have taken the opportunity to quit the
    Assembly without repercussions.
  literal v3 "virlast" # = leave (an organisation)
  setvopt past
  setaspect epis_pot perf
  literal dfront "pcen" # = by opportunity
  modverb
  literal dfront "filmap" # = without repercussions
  modverb
  literal 0 "maci.a" # name
  setnname
```

```
  literal nabst "malna" # = assembly
  setnopt def
  sentence
# Clause #4: She could have announced (...).
  literal v1 "rev" # = say
  setvopt past
  setaspect epis_pot perf
  pronoun anaph_sub
  quote example-nestedquote.qasm
  sentence
# Clause #5: Vladimir let either one of the above happen.
  literal v3 "c" # = allow
  literal 0 "vladimic" # Subject
  setnname
  # Object:
  pronounlc
  pronounllc
  literal 0 "z" # = or
  conj
  # End
  sentence
  conn subversive 0 "p"
  attachconn
# Clause #6: She dared to listen to Vladimir.
  literal v1 "vens" # = listen
  setvopt past
  literal dback ".adaz" # = dare to
  modverb
  literal 0 "maci.a" # name, Subject
  setnname
  pronoun anaph_sub # Object
  sentence
  conn explanatory 0 "a"
  attachconn
# Clause #7: Therefore, she was ridiculed by her brothers.
  literal v1 "k^xa." # = ridicule
  setvopt past
  literal nsent "fqlto" # = sibling (du)
  setnopt inv
  pronoun anaph_sub # Object
  sentence
  conn explanatory 0 "a"
  attachconn
  conn subversive 0 "p"
  attachconn
# Clause #8: I found the above surprising.
  literal v1 "mej" # = surprise
  setvopt past
  pronounlc
  pronoun far
  sentence
# Clause #9: I do not find it surprising right now.
  literal v1 "mej" # = surprise
  setvopt neg
  literal dfront "mif" # = now
  modverb
  pronounllc
  pronoun far
  sentence
```

7_1/listings/example-quote.qasm

E | Dictionary

An entry looks like this:
ᴅìl– *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 ⟨nᵠ–⟩ 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.

| .

.ɪΩɪz– *desc(b)* dare to

.ɪpcnjʰ– *v1* (S) returns to (O) (literally)
.cʃjp– *desc* new, next
.cnɑ– *desc* hot
.cɒcp *nabst* confidence
.cɒen *nnonsent* house

ʃ

ʃɾezc *nsent* child (young person)
ʃpɪnᵠ *nnonsent* cloud
ʃɪφ– *v1* lose an object
ʃɪφ– *v1* (S) loses, frees (O); (O) escapes
ʃɔuɔl *nnonsent* tree
ʃɔɒɪβɪ *nnonsent* bed
ʃɔɒɔp *nnonsent* bedroom
ʃɔlə *nedib* ice
ʃɔləʃˤ *nedib* frost
ʃepˌc *nedib* beef

ʃˤ

ʃˤɪzcj *nnonsent* river
ʃˤɪll– *v1* (S) fights (O)
ʃˤcɾd– *v3* (S) falls on (O)
ʃˤcpd– *v3* (O) breaks (S)
ʃˤɔzɔ *nnonsent* flower
ʃˤel *nsent* who?

β

βlɔp– *desc* handsome, beautiful
βcjʰ– *v1* (S) follows (O)
βɔzə *nnonsent* fruit

l

lʃɪɒ *nnonsent* window
ln *pp* in, on, at (location)
lnl– *v1* (S) lives in (O)
lpɪl *nnonsent* stairs
lɪjnedɜ *nnonsent* mirror
lɪjᵅɪ *n* path, course (of a moving object)
lɪn *nmeas* 1/23 of a tidal day
lɪɑc *nnonsent* moon
lɪɾɪj *nined* stone
lɔn– *desc* entire, complete
leφˢɪ *nnonsent* tooth
ləʃ– *desc* old

lˤ

lˤpcɑen *nnonsent* book
lˤɪ.– *v1* ridicule
lˤɪ.ɪp *nabst* joke
lˤɪjde *nnonsent* leaf
lˤɪjdezɜl *nnonsent* spark
lˤɔlɪ *nnonsent* cart
lˤel– *v1* transgress, commit a crime

ɭ

ɭcn– *v1* (S) shoots an arrow to (O)

ɭˡ

ɭˡɪdjc *nedib* soup
ɭˡɪɾde *nnonsent* fish

j

j– *v3* copula
j– *v3* (S) is (O) (O) can also be the compounding form of the descriptor.
jlɔɑl *nabst* role (connotation of normalcy)
jɔɒenʃe *nabst* dawn, wee hours
je.– *v1* (S) describes (O)
jeʃˤe *nnonsent* land, country
jen– *v1* (S) is worried by (O)
jeɾɪlcn *nsent* essay
jɜl *nnonsent* fox

jᵅ

jᵅɪ.en *nsent* magician
jᵅɪz– *v3* (S) creates, makes (O)
jᵅcn *nabst* how many?

ɟʰ

ɟʰ *pp* toward
ɟʰ– *v1* (S) goes toward (O)
ɟʰz *pp* written by

n

nˌl *pp* in, on, at (time)
nˌɥ *pp* through
nɥɪzɪ *nnonsent* cat
nɪˌ– *v3* (S) waits for/until (O), temporal verb, if
nɪˌez– *v3* (S) covers, spans (O)
nɪbəjənᵠ *nanim* chairperson
ncɟ *nnonsent* face
ncɟɑɪ *nnonsent* birch
ncɒ– *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)
neɥɑ– *v3* (S) hides from (O)
nezᵘɪɒ *nnonsent* rose
nən– *v2* (S) kills (O), (O) dies
nəb– *v2* steal

nᵘ

nᵘɔz– *v1(ŋ)* (S) thinks, ponders about (O)

u

ucl *nnonsent* inanimate object
ucɥlɪɟ– *v3* leave, resign from (an organisation)
uenɟ– *v1* hear, listen to

ɑ

ɑn *conj* and
ɑɑɪɟl *nnonsent* stick, rod
ɑɥenᵘe *nnonsent* coin
ɑzl– *v2* (S) intersects (O) meet = paths intersect
ɑc.cl *nabst* centre, origin
ɑcɟn *pp* according to
ɑcz– *v1* (S) shines on (O)
ɑcze *nabst* light
ɑczelɪɑc *nabst* moonlight
ɑclɒɪd– *desc* without repercussions
ɑeo– *v3* jump
ɑəz– *v2* capture, arrest
ɑɜlʃɔ *ndsent* sibling
ɑɜlleφˢɪ *nnonsent* key

ɑˡ

ɑˡ– *v3* do what?
ɑˡɪze *nabst* quote, words, speech
ɑˡɔʃɔnᵠ *nsent* criminal
ɑˡɜɥə *nedib* potable water

ɑʰ

ɑʰəɒɔ *nabst* empathy

ɒ

ɒ– *v2* (S) returns, regresses to (O) (figuratively)
ɒl *pp* far away from
ɒln *pp* inside
ɒzɪdɥ *nsent* nobleman, gentleman
ɒɪl– *v1* (S) eats (O)
ɒɪlɪz *nabst* void
ɒɪlɪz– *desc* empty
ɒɪn *nedib* rice
ɒɪz *nnonsent* corpse
ɒɪzɪ *nsent* person
ɒɪlnɪ *nabst* organisation, group, assembly
ɒcl ɪ *desc* far
ɒcnɪ *nnonsent* border, boundary
ɒcɑ– *desc* current, now
ɒcɥ *ndnonsent* hand
ɒczne *nabst* technique
ɒɔʃ– *v2* (S) produces, makes (O)
ɒɔnᵠ *nnonsent* head
ɒɔd– *v2* (S) dreams of (O)
ɒɔsɔnᵠ *ndsent* parent
ɒelɪn *nmeas* hour
ɒejl– *v1* (S) buries (O) in the ground
ɒenʃ– *v1* begin, start

ɒeɸ– *v1* (S) receives (O)
ɒed– *v3* err, miss
ɒebɥ– *v1* (S) resembles (O)
ɒebc *nabst* shape, structure
ɒebcdelbe *nabst* grammar
ɒebed *nabst* dream
ɒez– *v3* (S) raises, takes care of, tends to (O)
ɒez– *v1* (S) boards, rides (O)
ɒes– *v3* (S) gives birth to (O), (O) is born (S) is not necessarily the mother; this can be either parent
ɒes– *v1* surprise, impressed
ɒel *nmeas* volume
ɒelɳ– *v3* (S) imitates (O)
ɒəlɔnᵠ *nsent* servant
ɒən– *v2* know (a person)
ɒɜnᵠɔ *nnonsent* rabbit

ɑ

ɑnɔɸ *nnonsent* wall
ɑɥiu– *desc* weak
ɑcɾ– *v1* (S) hits, strikes (O)
ɑɔz– *v2* comparative verb
ɑeɒ– *v1* (S) sleeps
ɑeɒ– *v1* (S) sleeps
ɑə.ɔn– *desc* sick, ill
ɑəzɔ *nnonsent* pathway, street, road

ɸ

ɸɾcɾd– *v3* (S) lowers their own (O)
ɸɥiɳ– *v1* (S) raises their own (O)
ɸɥə.ɪ *nnonsent* earth, soil
ɸɥənᵠ *nnonsent* frog

d

dʃj– *desc* healthy, well (not sick)
dʲʰʃ– *v1* (S) mates with (O)
dɸcɟ *nabst* ability, potential, possibility
dɾiɾʃɥinᵠ *nnonsent* mist, fog
dɾiɾʃᵝɪ *nabst* ground, floor
dɾcz– *v1* stand, get up
dɾen– *desc* by opportunity
dɥ *pp* with (comitative)
dɥ– *v3* hold, carry, instrumental verb
dɥiu– *v1* (S) passes (O)
dɥeɒe *nnonsent* city
diʃɥ– *v1* (S) sits at (O)
diɳɥɔ *nnonsent* pecan
dɔʃ– *v2* (S) chases away (O), (O) flees from (S)
dezᵘ– *v1* disagree, protest, disapprove of
delbe *nabst* sentence, utterance
dɜnᵠɪ *ndnonsent(b)* knee

b

bine *nmeas* year
beɸˢɪ *nedib* sea

ɥ

ɥ– *v1* (S) sees (O), because, (S) illuminates (O)
ɥiᵝ– *v1* (S) enslaves (O)

ɾ

ɾ– *v3* (S) allows (O)

ɥ

ɥɭd *pp* with (colour) hair
ɥn *pp* with (instrumental)
ɥu *pp* in front of
ɥiʃɪ *nined* grass
ɥiɳ– *v1* (S) climbs, rises in (O)
ɥiɳdɔ *nnonsent* hair
ɥeu– *v3* (S) spreads (O)
ɥeu– *v1* (S) says a phrase (O)
ɥeɑ– *v3* (S) speaks to (O), (S) asks (O)
ɥelɳɪ *nnonsent* place
ɥelɳiuc.cɭ *nnonsent* hometown, home village, (figurative) Rymako
ɥəʃɔ *nined* gold
ɥəz– *v2* (S) ties (O) in a knot
ɥɜɭ *nnonsent* star
ɥɜɭɔ *nabst* nighttime

ɲɜjɔ *nnonsent* cup
ɲɜɒɜ *nmeas* (tidal) day (continuous)

z

z *conj* or

o

oɪβɪ *nabst* slavery

oɪβɐnᵠ *nanim* slave

l

ɳɐɷ– *v3* (S) obeys (O)

ə

ənən– *desc* lifelong, permanent