Manual for the quetta (ήβ) module

version 0.2.0

Contents

| 1. | Introduction | 1 |
|----|---|-----|
| | Introduction | 1 |
| | 1.2. The Tengwar script | 1 |
| | | |
| 2. | How to use | 1 |
| | 2.1 Requirements | 1 |
| | 2.2. Importing the module | 2 |
| | 2.2. Importing the module | 2 |
| | 2.4. Quenya (ဗ်က္) | . 3 |
| | 2.5. Sindarin (ປ່ຶກ່ຽ່າກ່)—Mode of Gondor | 7 |
| | 2.5. Sindarin (ປົ່ງມື່ງ ໜຶ່ງ)—Mode of Gondor 2.6. The One Ring inscription | 9 |
| 3. | Math mode? | 10 |
| 4. | How to contribute | 11 |
| Bi | bliography | 11 |

1. Introduction

1.1. 'Quetta'?

'Quetta' ($\dot{\mathbf{g}}\dot{\mathbf{p}}$) means 'word' in Quenya [1]¹, one of the fictional languages invented by British writer and philologist J. R. R. Tolkien. It thus seemed fitting for a module aimed at making the process of typing these languages easier.

Words are also, loosely speaking, the base units this module works on, as we shall see in more details below. While its general philosophy is to map each symbol used in Tolkien's elvish languages to letters from the Latin alphabet, a few word-wise substitution rules were implemented so that, in most (but probably not all) cases the correct spelling can be obtained by typing the tet phonetically. For the same reason, the mapping generally works on groups of letters, from individual ones to whole words.

1.2. The Tengwar script

A proper introduction to Tengwar is way beyond the scope of this document. We refer interested readers to Appendix E of the book [2] and online references such as Wikipedia, tolkiengateway.net, omniglot.com, or tecendil.com.

In short, Tengwar (ἡτις) in Quenya mode) is one of the scripts invented by Tolkien, primarily consisting of 36 letters (called tengwar; singular: tengwa (ἡτις)) and diacritics (tehtar (ἡτις); singular: tehta (ἡτις))). There are several ways to relate tengwar to sounds, called modes. This module primarily focuses on the Quenya (ἡτις), or 'classical', mode, and one of the Sindarin (ὑτις) modes, often called mode of Gondor (τις). Support for the other modes described by Tolkien is planned for future versions.

2. How to use

2.1. Requirements

- Typst version 1.11.0 or 1.11.1,
- The Tengwar Annatar fonts version 1.20 (support for other Tengwar fonts is not currently planned).

¹https://www.elfdict.com/w/quetta

2.2. Importing the module

2.2.1. Using Typst's packaage manager

Simply add

```
#import "@preview/quetta:0.2.0": *
```

at the top of your .typ file. This will import the module core functions (quenya and gondor) to the global namespace. Alternatively, the module can be imported without adding functions to the global namespace with

```
#import "@preview/quetta:0.2.0"
```

The aforementioned functions must then be preceded by quetta. to be used.

2.2.2. Manual install

You can download the module by cloning the Git repository and import it by adding

```
#import "<path>/src/quetta.typ": *
```

at the top of your .typ file, where <path> is the path to the cloned repository. Alternatively, the module can be imported without adding functions to the global namespace with

```
#import "<path>/src/quetta.typ"
```

2.3. Design principles

This module provides one main command for each supported mode—at the moment, only quenya and gondor are implemented. These commands take text (possibly including formatting) as input and perform the following sequence of operations (not necessarily in this order):

- 1. Phonetic translation into tengwar and tehtar—for instance, converting quenya to ἡμα.
- 2. Application of spelling rules—for instance, converting $\dot{q}m\ddot{a}$ to $\dot{q}m\ddot{i}$.
- 3. Conversion of numbers in base 12 and conversion to the tengwar number system (see below)—for instance, 144 becomes 22τ.
- 4. Conversion of punctuation symbols—for instance, ? becomes \(\beta \).
- 5. Adjustments to the position of tehtar and to the kerning between some symbols.

Alternative glyphs, when available, can be obtained with the symbol £:



In Quenya mode only, for tengwar associated with a sound starting with 'k', the standard glyphs are obtained using the spelling 'c' for calma (q) or 'qu' for $quess\ddot{e}$ (η), and the alternatives glyphs with a 'k' or 'kw':

```
quenya[c] q quenya[k] d quenya[qu] q quenya[kw] d
```

Formatted text is supported, although it is still somewhat experimental:

For a larger amount of text or more involved formatting, it can be easier to use a show rule as follows:

```
#[#show: quenya
quenya
#h(lem) *quenya*
#h(2em) _quenya_
]
```

```
<u>ရက်ာ့</u>
ရည်ာ့
ရည်ာ့
```

One limitation of the current implementation is that functions changing other style properties such as text color must be called *after* the conversion function. For instance, a centred 16-points italic version of the Quenya word 'tengwar' with a blue-green linear gradient may be obtained as follows:

```
#set align(center)
#text(size: 16pt,
     fill: gradient.linear(blue, green)
     )[#box(quenya[_tengwar_])]
]
```



2.4. Quenya (ဗ်က္ဘာ်)

2.4.1. Generalities

The implementation of the Quenya mode mostly follows Reference [3], summarizing information available in Appendix E of the trilogy [2] and examples provided in other parts of the books. In Tolkien's invented universe, the Quenya language and pronunciation evolved somewhat between its origins and events described in [2]; in this implementation, we aim to stay close to the Second Age conventions. Here are a few basic examples:

A full description of the Quenya mode is beyond the scope of this document. As a first approximation, consonant sounds are represented by *tengwar* as follows²:

| consonant | tengwa | consonant | tengwa | consonant | tengwa | consonant | tengwa |
|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| t | p | p | p | c | g | qu | 9 |
| nd | po | mb | pp | ng | ccy | ngw | ष्प |
| th | ત | f | Ь | h | λ | hw | ਖ |
| nt | લ્લ | mp | рэ | nc | ccl | nqu | ਧੀ |
| n | 133 | m | m | n | 133 | ñw | ಡ |
| r | 13 | v | n | У | ä | w | ជ |

²In these tables, the letter 'u' represents the consonant sound 'w'.

| consonant | tengwa |
|-----------|----------------|
| ñ | ccı |
| rd | ş |
| 1 | \overline{c} |
| ld | 5 |
| s | ٤ |
| ss | દુ |

Different tengwar are used for the same sounds in different situations; see Section 2.4.2. Vowel sounds are generally represented by a *tehta*, placed either on the previous consonant or a short carrier for a short vowel, or a long carrier for a long vowel³:

| vowel | short version | long version |
|-------|---------------|--------------|
| a | î | ĵ |
| e | í | ĺ |
| i | i | j |
| О | î | ĵ |
| u | î | ĵ |

Diphthongs of the form -i and -u are obtained by adding a theta to an 'i-glide' or 'u-glide' symbol:

| ai | oi | ui | au | eu | iu |
|----|----|----|----|----|----|
| ά | á | á | ô | 6 | ö |

2.4.2. Substitution rules

The equivalences mentioned in Section 2.4.1 should give an approximate phonetic transcription from the Latin alphabet to Tengwar in the Quenya mode. But additional substitution rules are required to get the correct spelling; see for instance Reference [3].

- As briefly mentioned above, a short vowel sound following a consonant sound is written as a tehta on the latter. For instance, n'umen~(west) is written m'um, with 'm replacing m'u. This does not apply to long vowels, the second consecutive vowel after a consonant, or (obviously) to a vowel sound at the start of a word.
- If n is followed by a vowel or y and a vowel, it is replaced by $y: n\hat{i} \to \hat{y}$.
- If α follows a consonant, it is replaced by two dots under the corresponding tengwa: $m\alpha \to m$.
- If a single ζ follows a consonant, it is replaced by an 's-hook': for instance, $p\zeta \to p_3$.
- If \mathcal{L} or \mathcal{L} is followed by a short vowel, it is reversed: $\mathcal{L}\hat{\vec{n}} \rightarrow \hat{\vec{\gamma}}$; $\mathcal{L}\hat{\vec{n}} \rightarrow \hat{\vec{\gamma}}$.
- If λ is part of the consonant cluster hl or hr, it is written with a vertical bar as in $hr\acute{v}$ \ddot{v} (winter): y \dot{y} \dot{z} .
- If λ is not part of the consonant cluster hl or hr, nor at the start of a word, it is replaced by \mathcal{A} .
- Two successive identical tengwar with no tehta on the first one are replaced by a single tengwa with a wavy line under it. For instance, the word anna (gift) is written $\mathring{n}\mathring{z}$, with \mathfrak{p} replacing two \mathfrak{p} s. Similarly, in $\mathring{q}\mathring{p}$ (quetta), \mathfrak{p} replaces two \mathfrak{p} s.

 $^{^3}$ We use an acute accent to denote long vowels. For instance, a is rendered as \hat{i} and à as \hat{j} .

The symbol '|' can be used to prevent glyph combination:

2.4.3. Capital letters

There is, as far as I am aware, no standard way to write capital letters in Tengwar. One option is to use a bold font:

2.4.4. Punctuation

The module provides the following punctuation symbols:

| input | , | | - | | ! | ? | (|) | / |
|--------|---|---|---|---|---|---|---|---|---|
| output | | : | ~ | ~ | ſ | B | (|) | Į |

Note: Generally, parentheses in Quenya are denoted by the single symbol \cline{D} —there is no distinction between opening and closing parentheses. We deviate from this convention by mapping the symbol '(' to (and ')' to). The proper Tengwar parenthesis is mapped to '/'.

End-of-paragraph symbols can be obtained by combining commas dashes, and periods:

The decorations ≈ and ≤ are obtained using '>' and '<' (or the French quotation marks '»' and '«'):

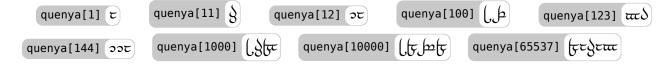
2.4.5. Number system

Quenya uses a base-12 system, with 12 digits listed in the following table:

| | | | | | | | | | 9 | | |
|---|---|---|----|---|---|-----|---|---|----|---|----|
| Э | ۲ | π | ta | l | t | tre | J | ط | حط | 5 | કુ |

In contrast with the usual system, multi-digit numbers are written (from left to right) from least to most significant digit.

Examples:



2.4.6. Example: Namárië

One of the most famous texts in Quenya is the poem Namárië (اَنْوَرْعَوْشُوْ), originally written in Reference [2]⁴ and available for instance in Reference [4]. Below we show the same text without (left) and with (right) the #show: quenya command. We use a spacing between line of 0.7em to clearly separate them (some tengwar have a relatively large vertical extension).

Namárië

Ai! laurië lantar lassi súrinen, yéni únótimë ve rámar aldaron! Yéni ve lintë yuldar avánier mi oromardi lisse-miruvóreva Andúnë pella, Vardo tellumar nu luini yassen tintilar i eleni ómaryo airetári-lírinen.

Sí man i yulma nin enquantuva?
An sí Tintallë Varda Oiolossëo
ve fanyar máryat Elentári ortanë,
ar ilyë tier undulávë lumbulë,
ar sindanóriello caita mornië
i falmalinnar imbë met, ar hísië
untúpa Calaciryo míri oialë.
Sí vanwa ná, Rómello vanwa, Valimar!
Namárië! Nai hiruvalyë Valimar.
Nai elyë hiruva. Namárië!

က်တူ်င်း

ας τός τάς τός τός τός τός τος. ပျက် ရှိကျိုင်က ထုံ မျှီထာ ရှိထိုက ယျှံတဲ့ ထိုင္ဘာ ကျွံတိုင္တာ ကျွံတိုင္တာ က် ၊ိတ်ကွဲ ငံ့ဂုံ-က်ပုံစျိတ် ႞ႜၯ႞ဢ ဗုၕၟႋ ဗႆၷၟ ဗုၕၟႜၮႜ اِسْمِوْا مُرْوَاعِ مُرْوَاعِ مُنْ الْمِشْاءِ الْمِشْاءِ مُرْوَعِيْنَ الْمِشْاءِ مُرْمِيْنَ الْمِشْاءِ مُرْمِي ပြု ထိုက i ပျံ႕ကို ကဲက ပ်င်္ကါတီထိုနီ أَيُ كُنَّ فِي اللَّهِ اللَّهِ اللَّهُ က်ရှိ၏ မျို့ထို ရှိဖျှင် ရှိဖျှင် ရှိထို့ အခိုက် المُضِ عُرْحِهُ مَامْ اللهِ اللهُ اللهِ اللهُ اللهِ اللهُ اللهِ ال ဂံက ဂုံကိုကျွန်ုပ် မြှောက်ကို မြောက်ကို i ဗီඋာထဲဗုဏ်က ဖြော က်ာ λ j၇í أကျိုင်း ရုံငုံရွှာ် ကျွဲမှ သိုင်း ပ်၂ င်္ဂာက ကျီ. စုကြေ င်္ဂာက င်္ဂေ င်္ဂာက ກໍາກຕຸ້ນ໌ໃ ກາລີ ໄດ້ທີ່ລູກູ້າ ກໍວ່າກໍາກ:

⁴Book 2, ch. 8 "Farewell to Lórien"

2.5. Sindarin ($\dot{\mathcal{L}}$ $\dot{\ddot{\mathcal{D}}}$ $\dot{\ddot{\mathcal{D}}}$ $\dot{\ddot{\mathcal{D}}}$ $\dot{\ddot{\mathcal{D}}}$)—Mode of Gondor

The implementation of the Mode of Gondor for the Sindarin language mostly follows Reference [5], to which we refer for more information. In this section, we focus on the differences with the implementation of the Quenya language described in Section 2.4. The most important one is probably the position of tehtar: when applicable, a tehta is placed on the *previous* tengwa in Quenya but on the *following* one in Sindarin.

2.5.1. Generalities

Table of consonants:

| consonant | tengwa |
|-----------|--------|
| t | p |
| d | ညာ |
| th | b |
| dh | લ્લ |
| n | 133 |
| r | n / y |

| consonant | tengwa |
|-----------|--------|
| p | p |
| b | po |
| f | ત |
| v | લ |
| m | 133 |
| lh | 5 |

| consonant | tengwa |
|-----------|--------|
| c / k | 9 |
| g | ष्प |
| kh | ਖ |
| gh | ਜ਼ੀ |
| ng | េធ |
| w | ជ |

| consonant | tengwa |
|-----------|--------|
| s | ٤ |
| SS | દુ |
| h | λ |
| rh | ş |
| hw | d |
| 1 | 7 |

| consonant | tengwa |
|-----------|--------|
| mh | ng |

Table of simple vowels:

| vowel | short version | long version |
|-------|---------------|--------------|
| a | î | ĵ |
| e | í | ĺ |
| i | i | j |
| О | î | ĵ |
| u | î | ĵ |
| у | ï/ λ | j |

Note: This package is mostly case-insensitive. One exception is the letter i in the Mode of Gondor. As an initial i usually, but not always, represents the consonant sound 'y' in this mode, we use I to represent the tengwa λ :

Table of complex vowels:

| | - | | | | | | |
|----|----|----|----|----|----|--|--|
| ai | ei | ui | ae | oe | au | | |
| â | ú | á | ά | á | ô | | |

2.5.2. Examples

The following example, taken from omniglot.com, is a Sindarin translation of Article 1 of the Universal Declaration of Human Rights.

Firiath ennin lîn ar îf vi virwas ar ernais. Sevir channas ar faelas ar bórar lengad anith vi faer gwadoras. The next example is the third version of the King's Letter which would have been part of a dropped epilogue to the Lord of the Rings trilogy, available on glaemscrafu.jrrvf.com.⁵ We use the three symbols ',.,' to end paragraphs to reproduce the symbol :.

Elessar Telcontar; Aragorn Arathornion Edhelharn, aran Gondor ar Hîr iMbair Annui, anglennatha iVaranduiniant erin dolothen Ethuil, egor ben genediad Drannail erin Gwirith edwen. Ar e aníra ennas suilannad mhellyn în phain; edregol e aníra tírad iCherdir Perhael (i sennui Panthael estathar aen) Condir iDrann, ar Meril bess dîn; ar Elanor, Meril, Glorfinniel, ar Eirien sellath dîn; ar Iorhael, Gelir, Cordof, ar Baravorn, ionnath dîn,..,

A Pherhael ar am Meril suilad uin aran o Minas Tirith nelchaenen uin Echuir ,.,

î býaz က ထဲ ထားတွင် ပြင်တြာ မိက စိုက် ၊ ထက်ခို မှာပြ ကင်္ခြာသက် မိက မိမ်က ေ

The third example is the first stanza of the poem A Elbereth Gilthoniel from Reference [2]⁶:

A Elbereth Gilthoniel, silivren penna míriel o menel aglar elenath! Na-chaered palan-díriel o galadhremmin ennorath, Fanuilos, le linnathon nef aear, sí nef aearon!

⁵The Tengwar version shown here slightly differs from the original one by combining $y\lambda$ into y and $y\lambda$ into $y\lambda$ into

2.6. The One Ring inscription

Although the Black Speech is not implemented yet, the One Ring inscription can be reproduced using the Quenya mode as follows:

```
quenya[
   _»Ka|nssangw|ndfrombtaflofkwô, Ka|nssangw|ngwmbetalo«
   #linebreak()#v(0.7em)
   Ka|nssangwthfrquataflofkwô, fNgwa|mbfrossmokii|qufrpetalo_
]
```

Obviously, that's not quite how the ring inscription is supposed to sound. One reason is simply that the Quenya and Black Speech modes have different relations between symbols and sounds: to obtain the same written result, one has to 'transcribe' the phonetic description to how it would be read in the Quenya mode. Another difference is that some of the tengwar forms used in the ring inscription are generally not used in Quenya; we thus use the symbol $\mathfrak k$ to get variants. We also use $\mathfrak k$ to switch between $\mathfrak p$ and $\mathfrak p$. Finally, words are separated with | to avoid repeated consonants being combined. Here is the result, with a colour gradient in the background to mimic a golden surface and on the text to represent incandescence:



The full code for the above example is:

3. Math mode?

Use of tengwar in math mode is not fully supported, although it should work in simple cases. In math mode, you'll need to apply the conversion function to each part of a formula you want to write in Tengwar, which can be made slightly less cumbersome by redefining it to a shorter command:

```
#let q = quenya
  \#q[6] times \#q[7] = \#q[42]
$
#v(1em)
  integral \#q[0]^*q[2] \#q[t]^*q[3] upright(d)\#q[t]
  = [ #q[t]^*q[4] / #q[4] ]_*q[0]^*q[2]
  = #q[2]^*q[4] / #q[4]
  = #q[16] / #q[4]
  = \#q[4]
$
#v(1em)
$
  #q[t]:
    mat(delim: "(",
      RR & -> RR ;
      #q[a] & |-> #q[a]^#q[123])
  (upright(d)#q[t]lr((#q[a]))) / (upright(d)#q[a]) = #q[123 a]^*q[122]
```

$$\int_{\sigma}^{\pi} p^{\pi} dp = \left[\frac{p^{l}}{l}\right]_{\sigma}^{\pi} = \frac{\pi^{l}}{l} = \frac{l^{\tau}}{l} = l,$$

$$p: \left(\mathbb{R} \to \mathbb{R} \atop \hat{\imath} \mapsto \hat{\jmath}^{\pi} \right) \Rightarrow \frac{dp(\hat{\imath})}{d\hat{\imath}} = \pi \delta \hat{\jmath}^{\pi}$$

Writing math-heavy content in tengwar would probably require a specific module, though, as well as a different tengwar font designed for this purpose (or a math font designed to work well with a tengwar font).

4. How to contribute

Any kind of contribution is warmly welcome! Here are a few ways you can help:

- Bug reports: Some text rendering incorrectly in Tengwar? Unexpected formatting? Any other issue with the code or documentation? Please report it! This module was only tested on a very small corpus so far, and identifying any corner case where it does not work as intended is very useful.
- References: There is a lot of content available, both online and in printed books and magazines, about the languages invented by Tolkien, how they relate to his literary works, and their relevance in today's cultural fabric. I am unfortunately not very familiar with them; but if you know good references please let me know and I'll cite them.
- Language help: My knowledge of Tengwar and the languages invented by J. R. R. Tolkien is quite superficial, and I may well have missed or misunderstood some of the rules for writing in Tengwar. If you spot anything that looks wrong, please let me know!
- Implementation: The Typst code is likely not quite as efficient nor as clean as it could be. If you can see better ways to implement something, please feel free to let me now or to submit a pull request with an improved version.
- Feature requests: Any feature request is welcome. I can't promise I'll have the time and knowledge to implement everything that would be nice to have; but if you'd like to see something implemented please let me know—or submit a pull request if you've already implemented it!

ارح أجيده

Bibliography

- [1] "elfdict.com." [Online]. Available: https://www.elfdict.com/
- [2] J.R.R. Tolkien, The Lord of the Rings.
- [3] "Quenya Tengwar A mini course by Eruantalincë." [Online]. Available: https://www.councilofelrond.com/languages/QTL.htm
- [4] "Namárië." [Online]. Available: https://tolkiengateway.net/wiki/Nam%C3%A1ri%C3%AB
- [5] Chris McKay, Tengwar Textbook—Fourth Edition. 2004.