The Ŋarâþ Crîþ v9 grammar

+merlan #flirora

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Table 1: Version information.

Chapter 1

What is Ŋarâþ Crîþ?

Ŋarâþ Crîþ ([ŋa⁵ɹa²θ kɹi¹θ]; Cenvos: ᴎᴌʎᴄ ᴎ\ʌ𝑿ᴦ; lit. *forest language*) is an artistic constructed language by +merlan #flirora[1] ([me⁵ɹla²n fli¹ɹo⁵wa⁴]; Cenvos: 𝑿ʎ√ʎ|𝑿√ᴀ ᴇ𝑿𝑿ʎᴉᴀ). Originally called Necarasso Cryssesa, it is now on version 9.

The development of the language can be classified into four phases:

- In the first phase (2013 – 2014; VE¹ENCS – VE⁴ENCS), Necarasso Cryssesa was head-initial and had an SVO word order. The language was meant to have an elvish aesthetic. Successive versions of the grammar added more elaborate morphology.

- The second phase (2014 – 2016; NCS5 – NCS6) made drastic changes to the phonology and grammar in order to make it more like Japanese. For example, these versions had head-final word order and cases, and they lost articles and gender.

- After a hiatus, the author revisited the language, renaming it to Ŋarâþ Crîþ, with more radical changes than even NCS5. ŊCv7 lasted from 2019 to 2021. In particular, the phonology was reworked, adding consonant mutations; agreement was made more plentiful; and gender was re-added (albeit not with a sex distinction).

- Lastly, the current phase consists of ŊCv9, which is the subject of this website. (Version 8 was skipped because 8 is *not* a lucky number.)

Learn more about the history of Ŋarâþ Crîþ[2] (main site).

1.1   Changes from Ŋarâþ Crîþ v7

1.1.1   Phonology and orthography

The phonology of ŊCv9 is mostly a successor of ŊCv7's phonology.

In the area of phonotactics, I have found that I dislike ⟨ŋ⟩ as a coda, although I like it in the onset position. Therefore, [[ŋ]] is no longer a valid coda, and final [[m]] is drastically rarer.

ŊCv9 adds [[f]] and [[ɬ]], as well as several consonant clusters, as valid codas. Most of the complex codas come from an abandoned ŊCv7 fork (also confusingly named "ŊCv9"), while [[f]] and [[cþ]] are genuinely new. Of course, more conversion rules must be added to handle the appearance of complex codas mid-word.

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[1] `https://flirora.xyz`
[2] `https://flirora.xyz/langdocs/reason4v7.html`

The "circumflexed vowels", ⟨î ê ô â⟩, were pronounced with creaky voice in ŊCv7. Therefore, they were often pronounced with a low pitch as well. I have taken advantage of this pronunciation to make ŊCv9 a tonal language. After all, about half of the world's languages are tonal, but the proportion among my conlangs is much lower.

ŊCv9 adds four true letters, ⟨w x y z⟩, which are not used natively but are reserved for Cenvos orthographies of foreign languages.

Additionally, Project Elaine has revised Ŋarâþ Crîþ's morphophonology: layer 0 is now viewed structurally as paths through a finite state machine. Bridges are resolved when they are formed from concatenation. In addition, Project Elaine adds the operation of STEM FUSION.

The properties of kerning and ligation were not documented in ŊCv7 but are in ŊCv9.

1.1.2   Morphology

In general, ŊCv9 has more complex morphology than ŊCv7. ŊCv9 inflection can be automated with f9i, as is done to produce inflection tables for dictionary entries.

The ablative, allative, prolative, and semblative cases from ŊCv7 were removed, decreasing the number of cases from 12 to 8. At the same time, the generic and singulative numbers were added, along with the concept of CLAREÞ, which governs which numbers make sense for each noun.

In ŊCv7, the inflectional paradigm of a noun could be deduced from the ending of its lemma. This is not possible in general in ŊCv9. There is also no way to regularly derive non-lemma stems from the lemma form. The inflection of nouns has been organized into six main paradigms, most of which are further divided into sub-paradigms.

In comparison to ŊCv7, ŊCv9 has more complex verb inflections. VITREOUS verbs in ŊCv9 resemble the traditional Ŋarâþ Crîþ inflections in finite verbs. While verbs in ŊCv7 were marked for aspect using eclipsis only, ŊCv9 adds different set of person–number affixes for distinguishing aspect in order to make imperfective and perfective forms distinct when the initial consonant is not eclipsable. RESINOUS verbs, on the other hand, exhibit more fusion in the finite forms, as well as having certain forms that vitreous verbs do not.

Unlike ŊCv7, which has a single paradigm for participle forms, ŊCv9 has three GENERA according to the distinctions made in head gender and number, each of which is divided into one or more SPECIES. Nominalized forms were uniformly made from a case particle plus the infinitive in ŊCv7, but some of these forms in ŊCv9 have been replaced with synthetic forms.

RELATIONALS in ŊCv9 function like ŊCv7's postpositions, but they mark for attachment (either adnominal or adverbial) and can be used predicatively.

The long numerals up to six are now declined for both case and gender, while they were marked for case only in ŊCv7.

1.1.3   Syntax

Most of the changes in syntax are either clarifications or new features. The datum, however, has been formalized in ŊCv9.

1.1.4   Lexicon

As inspired by the Shaleian[3] language, the ŊCv9 dictionary makes an effort to provide more precise definitions for words rather than simply providing translations.

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[3]https://ziphil.com/

Because of the additional restrictions to word forms in ŊCv9, some words are altered from their ŊCv7 forms.

Chapter 2

The principles of Ŋarâþ Crîþ

This chapter expands on ideas presented in "The reason of Ŋarâþ Crîþ's existence"[1] and "The obvious choice is almost always the wrong choice"[2].

Ŋarâþ Crîþ v9 has the following goals:

1. **Aesthetics** according to +merlan #flirora, above all other criteria.

2. **Integrability into art** such as visual art, literature, and music.

3. **Precision**: the grammar, along with the dictionary, should leave as little doubt as possible on how to use the language.

4. **Practicality**: the language must be reasonably feasible to use.

The following, on the other hand, are explicit non-goals for Ŋarâþ Crîþ v9. They are not necessarily to be avoided – in fact, they may be desirable in some quantity, but they will not be pursued either.

- **Simplicity and orthogonality** were valued in Necarasso Cryssesa but are not in Ŋarâþ Crîþ.

- **Density** in either speech or writing.

- **Naturalism**: although the language is spoken in a fictional world, it is not important for it to be completely naturalistic.

- **Unambiguity**: ambiguity is acceptable as long as it does not detract from practicality too much. In some cases, special constructions may be added to resolve any ambiguities.

2.1   Aesthetics according to +merlan #flirora

The aesthetics of a language has three parts: PHONAESTHETICS, GRAPHAESTHETICS, and GRAMMAESTHETICS.

As phonaesthetics pertains to the sound of a language, graphaesthetics pertains to its writing. Both of these can easily be appreciated, although the latter might often be overlooked.

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[1] https://flirora.xyz/langdocs/reason4v7.html
[2] https://ncv9.flirora.xyz/diary/0C66-obvious.html

Grammaesthetics pertains to the grammar of a language. By convention, it also covers the language's vocabulary. Unlike phonaesthetics and graphaesthetics, which can be evaluated by hearing or seeing the language in question, grammaesthetics requires one to study the language to appreciate. As a result, most people have a weaker sense of grammaesthetics than of the other two aspects.

One's sense of aesthetics is frequently influenced by the prestige of the languages and dialects that one knows, and this applies to me as well. However, I still use mine to guide the development of Ŋarâþ Crîþ because I do not believe in condemning someone's aesthetic preferences solely for being based on (let alone matching) societal prejudices.

In my case, the aesthetics of Ŋarâþ Crîþ has been influenced by Japanese, Welsh, and Irish, as well as other languages such as Latin or Finnish. While Spanish, a language I studied in school at the time, was influential in the earliest stages of Necarasso Cryssesa, its mark on the language waned as it evolved. In terms of features themselves, my preferences, not all of which are in Ŋarâþ Crîþ, are as follows:

- having [θ], [ɫ], [ɹ], and [x], as well as back unrounded vowels

- not having [b] or [u]. [ʉ] is preferable to [u].

- no tenuis stops: either aspirated or voiced

- [ŋ] at onsets but not at codas

- avoiding repeated sounds

- angular strokes in scripts

- mixed logographic and phonetic writing systems

- fusion or agglutination over isolation

- no sex-based grammatical gender; personal pronouns not distinguished by sex or gender

- no negative concord

- no politeness levels (e.g. T–V distinction, honorific forms)

2.2   Quasi-naturalism

The main reason that I avoid making naturalistic languages is the requirement for diachronic conlanging. While I respect those who create naturalistic languages, this part thereof is not enjoyable for me.

In his commentary on his "mklang"[3], Isoraḳatheð writes that "it's possible to make a naturalistic language using mklang, and in any case a[n] 'almost-but-not-quite-human' language is something that is largely unexplored in language creation". While Ŋarâþ Crîþ proper started out as a revision of Necarasso Cryssesa, it has become such a language that resembles a natural language but has several features that no natural language would have. Naturalism in languages can be analyzed into several elements that can be borrowed back into a not-quite-human language.

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[3]`https://www.reddit.com/r/conlangs/comments/7de032/mklang_the_way_i_make_languages/`

2.2.1 Complexity

When discussing languages, 'complexity' can refer to different ideas. The first division is between COMPLEXITY OF DESCRIPTION and COMPLEXITY OF USE. Complexity of description relates to describing and consequently learning the language. In contrast, complexity of use describes the amount of computation needed to use the language, such as to evaluate the truth condition of a sentence or to form a sentence with a given truth condition. Both of these ideas can apply to the whole language as well as to individual features within it.

Complexity of description can further be divided into INTRICACY and VOLUME. Intricacy arises from treating the cells of a paradigm in many different ways, while volume arises from treating many of them in the same way. These two quantities can be seen as the amount of code and the amount of data required to describe the language, although this analogy relies on distinguishing code and data. Indeed, different descriptions of the same linguistic feature might have different intricacy–volume balances. For instance, one description might describe the suffixes for a large set of word forms using a complex set of rules, while another might list all of the suffixes themselves.

Given a certain amount of intricacy, there is a lower bound on volume. The theoretical upper bound is too high to be relevant, but once the volume exceeds the threshold for the intricacy, the language starts seeming artificial or incoherent.

The goal of practicality also puts limits on the various types of complexity – most notably, complexity of use. Intricacy, being correlated with complexity of use, is limited as well. Volume mainly affects the acquisition of the language rather than its use, but excessive volume can also lead to excessive complexity of use. Practicality also imposes a lower bound on all of these, since a language that is too simple will not be able to express all ideas.

Necarasso Cryssesa and another conlang of mine, Ḋraħýl Rase, tended toward the lower end of complexity, or rather, left a large amount of complexity undescribed. Later conlangs, such as Lek-Tsaro and Jbl, went in the opposite direction but introduced too much complexity of use.

Version 7 and early version 9 of Ŋarâþ Crîþ recognized the limits on complexity of use but introduced too much volume instead. Project Caladrius and Elaine, which were enacted on cþD15 (2022-06-14), collectively shifted the complexity of noun declension away from volume toward intricacy.

2.2.2 The concept of *fliþe*

An important concept in Ŋarâþ Crîþ is that of FLIþE, which translates to *gap* or *difference*. When pertaining to language, this word can be translated roughly as *asymmetry*. More precisely, a property of a linguistic feature (such as words of a certain part of speech, or phonemes, or inflectional paradigms) has *fliþe* if it applies to some members of that feature but not to other related members that one would expect it to apply to.

For instance, ⟨menat⟩ *to see* is semitransitive but the related verb ⟨crešit⟩ *to hear* is transitive. This is an example of *fliþe* on case frame in verbs. As another example, the basic color terms in Ŋarâþ Crîþ are divided between nouns and verbs, with only two colors being assigned both parts of speech. This is an example of *fliþe* on part of speech in color terms.

An example in English, namely on case in pronouns, would be the use of oblique personal pronouns in coordinate noun phrases in subject position.

Fliþe is related to the concepts of irregularity, non-orthogonality[4], and redundancy of fea-

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[4] https://en.wikipedia.org/wiki/Orthogonality_(programming)

tures.

2.2.3   Redundancy

In Necarasso Cryssesa, redundancy was seen as irrational and avoided. Ŋarâþ Crîþ, on the other hand, does not have such an irrational fear of redundancy.

One must distinguish two different kinds of redundancy: REDUNDANCY OF MORPHEMES and REDUNDANCY OF FEATURES. Redundancy of morphemes involves multiple morphemes in an utterance coding for the same information, of which agreement is one such type. This sense is what most people mean by *redundancy* when talking about language. Redundancy of morphemes has the role of a sort of "error correction", making it easier to understand text from a noisy channel.

In comparison, redundancy of features refers to the existence of multiple features whose uses overlap or could overlap. For example, Ŋarâþ Crîþ has adpositions, serial verb constructions, and auxiliary verbs. These overlap in what they could be used for; in other words, a language with only one of these features is possible. Having all three adds a layer of complexity about which construction to use for a given meaning.

2.2.4   Ambiguity

Natural languages also have ambiguities, which novice conlangers tend to be afraid of. The difficult part of adding ambiguity to conlangs is determining how much and what kinds of ambiguity are manageable. In addition, an ambiguous phrase needs disambiguated equivalents.

2.2.5   Plausibility

Another consideration in adding a feature is how plausible it is. Namely:

- How often would the feature in question come into use?

- Is there an evolutionary reason for speakers of this language to want this feature?

- How would this feature have evolved?

- How much burden (e.g. loss of density or increased complexity) does this feature incur when using this language?

2.2.6   Can there be a super-naturalistic conlang?

Sometimes, I have strived to make Ŋarâþ Crîþ a 'super-naturalistic' language – one that is more complex than a naturalistic language. Although it is certainly not yet at that point, the question of whether such a language is possible is intriguing. The closest one that comes to my mind is Ithkuil[5], although its unfamiliarity might bias it toward seeming complicated.

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[5]http://ithkuil.net/

2.3 What Ŋarâþ Crîþ will never have

Ŋarâþ Crîþ will never have the following features:

1. **Productive reduplication**: This goes directly against the goal of aesthetics.

2. **An emphatic morpheme**: One does not simply emphasize a word using a suffix. Try moving it near the end of the sentence.

3. **A (unified) negative morpheme**: Ŋarâþ Crîþ has various negative auxiliary and suppletive verbs. Nominal negation (i.e. *other than*) is expressed with the noun ⟨aliþ⟩.

4. **A word for *very***: Either take it out or expand your vocabulary.

5. **A T–V distinction**: Don't even ask for it.

Part I

Background

This part is an overview of the place in which Ŋarâþ Crîþ is spoken.

Note that the ſtate of Necarasso Cryssesa v6 and Ŋarâþ Crîþ v7 in Njôro is not necessarily identical to their ſtate as described on Earth[6], nor is the evolution of Necarasso Cryssesa in Njôro the same as on Earth.

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[6]`https://gitlab.com/Kyarei/uruwi-clongos/`

Chapter 3

The world

TERGIA is a G-type star measuring 0.973 solar masses.

NJÔRO is a habitable planet orbiting Tergia with a semimajor axis of 1.068 AU and an eccentricity of 0.0548. It has a radius of about 6415 km, a mass of 1.01 earth masses, and an axial tilt of 17.8°. The planet has a day length of roughly 24.32 hours, and a year is 403.21 times as long (= 408.61 Earth days). The northward equinox occurs at a mean anomaly of 104.2° relative to the periapsis. Its major satellite has a radius of 1503 km and orbits Njôro 670,200 km away at a period of 62.85 Earth days.

Compared to the Sun and the Earth, Tergia has a lower mass and Njôro orbits farther from it. As a result, Njôro has a lower average temperature than that of Earth, at about 10.1℃. In addition, the eccentricity of Njôro's orbit significantly contributes to variations in solar insolation; since the perihelion is near the southward solstice, the northern hemisphere experiences less extreme changes in temperature than the southern hemisphere.

The planet has four major continents:

- CRÎÞJA (originally referring to the federation that occupied most of its territory) is on the northwest corner of the map. Nearby are the islands MEÐAC·ADIR (to the northeast), VASACEL (to the northwest), and and ŊEŁPAS (to the west), as well as the ELÞANA ARCHIPELAGO between itself and (unnamed-a). Farther to the east of Meðac·adir are the islansd (UNNAMED-B3) and (UNNAMED-B4).

- (UNNAMED-A1) lies almost entirely in the southern hemisphere, southeast of Crîþja.

- (UNNAMED-A2) is to the north of the eastern part of (unnamed-a) and to the west of Crîþja.

- (UNNAMED-A3) lies directly to the south of Crîþja. To its east are the (UNNAMED-B1) and (UNNAMED-B2) islands.

The map is not yet finished but a preview[1] is available.

3.1   The species

As of (year), Njôro contains about 750 million sapient individuals in total.

The dominant sapient species inhabiting Njôro is the NAVA. For most purposes, *navo* can be regarded as humans, but their biology has several differences. Most notably, *navo* lay eggs

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[1] https://gitlab.com/Kyarei/ncv9/-/blob/master/map_data/map_master.svg

instead of giving live birth; in addition, the young are fed by mouth instead of receiving milk. As a result, *navo* lack any nipples or breasts; additionally, their reproductive organs are different from those of humans. *Navo* also grow horns during the first six years of life but shed them afterwards until they completely disappear by the age of twelve.

3.1.1 Other species

Navo are not the only sapient species on Njôro.

Vasosôr (singular: *vasor*) are anthropomorphic reptiles. They are bipedal and about 170–190 cm tall, with tails about 50 cm long. They mainly reside in or around Aširel and Farlarþ. They number about 1.8 million, and most live nomadic lifestyles.

3.2 History

History, at least within Crîþja, can be divided into the following eras:

- Saegelþe is an apocryphal era that has no definite distance to the other eras but is said to have lasted between 65536 and 16,777,216 years. Between the end of Saegelþe and the start of Evonmiron lies the first inter-era period.

- Evonmiron (c. −1000 − 0) marks the beginning of Crîþol civilization as we know it.

- Minem·eða (0 − 677) starts with the invention of the first version of the Cenvos script, which was used to write Necarasso Cryssesa, though earlier scripts existed.

- Naresa (677 − c. 1400) began with the Naresa Reformation, when Enacssyr Malfa (ƝCv9: +enacþir #malfa), the daughter of the previous monarch Enesor (ƝCv9: #enesor), forcibly took power from the existing monarchy, making sweeping reforms to the government and society as well as to the language. The resulting regime was eager to silence any opposition, although the heavy-handed rule subsided over the next few centuries.

- Cenþed·rełes (c. 1400 − 1800) – exploration into nearby areas

- (unnamed-e5) (c. 1800 − 2100) – industrialization and stuff.

- Asenmeva (c. 2100 − 2561) – futuristic technology; ended with the Venesos Gating Event, which caused a global civilizational collapse.

- Senârmortos (2561 − 3041) – aftermath of the Venesos Gating Event.

- Nerita (3041 − 3497) – started with the alliance between Asoren and Viriþis, forming what would later be the Federation of Crîþja.

- (unnamed-e9) (3497 − 3612) – dissolution of the federation, with many wars ensuing.

- (unnamed-e10) (3612 − ?).

Chapter 4

Ŋarâþ Crîþ in the world

4.1   The history of Ŋarâþ Crîþ

Languages play an important part of history, and Ŋarâþ Crîþ is no exception.

One of the major langauge families in Crîþja is the Sylvic languages, which can be traced back to present-day central Oripel in c. −1600. The family contains the following languages:

- South Sylvic (c. −700)

- East Sylvic (c. 300)

    - Near-East Sylvic (c. 1100)
    - Far-East Sylvic (c. 1100)

- West Sylvic (c. 300)

    - P-West Sylvic (c. 677)
        * **Necarasso Cryssesa**
    - C-West Sylvic (c. 677)

The South Sylvic branch diverged from the rest of the languages around the year −700. The rest of the family split into the East and West branches around 300.

In present-day Oripel and Arcelis, the West Sylvic languages were spoken. These included Necarasso Cryssesa, which would eventually become a prestige language in the region. Around the year 300, Necarasso Cryssesa, like many other West Sylvic languages, was largely head-initial and had two sex-based genders. Unsurprisingly for that time, the society of its speakers was quite patriarchial in ways that would be distasteful to mention in this grammar.

However, by c. 600, the vernacular variety of the Necarasso Cryssesa began to shift toward a head-final word order and gain a primitive case system, while the prestige register remained head-initial.

In 669, Enacssyr Malfa, who was the daughter of Enesor, the then-reigning king of Cressja, fled an arranged marriage and led a revolt against the ruling class. Her movement eventually seized the capital city in 677, leading to what would be known as the Naresa Reformation. Along with making sweeping reforms to the government and society (often in a heavy-handed manner), she enacted major changes to the language. The New Form (trespo tegen), as it was called, was based on the vernacular register and was head-final, but it additionally omitted grammatical gender and standardized the case system. These changes also spread to most

of the West Sylvic languages, which would be known as P-West Sylvic languages, with the holdouts being classified as C-West Sylvic languages.

Necarasso Cryssesa underwent further changes until 1500, but it evolved surprisingly little after that point.

Necarasso Cryssesa was written with the Old Cenvos Script, which was invented in the year 0 by a person now referred to as ⟨#{nensâħa roħaliþ}⟩ *Protector of the Stars*. This script originally was unicameral, but it later gained lowercase letters.

In Ŋarâþ Crîþ, Necarasso Cryssesa is called ⟨ŋarâþ crîþ⟩, as Ŋarâþ Crîþ is considered a continuation of Necarasso Cryssesa despite the vast differences between the two languages. When the two languages must be distinguished, Necarasso Cryssesa is called ⟨nema ŋarâþ crîþ⟩, where ⟨nema⟩ is borrowed from Necarasso Cryssesa ⟨nema⟩ *old* (and not the homophonous word meaning *anything*).

The stages of Necarasso Cryssesa are assigned the integers from 1 to 6, inclusive, with 0 sometimes being used for its hypothetical predecessors. Strangely, the earliest stage refers to a time before the Sylvic family split; in fact, stage 1 coincides with the term Nevasa. The start of the Naresa era marks the start of 5, and the start of the Cenþed·rełis era marks the start of 6.

Meanwhile, the East Sylvic languages spread to the east. The first East Sylvic speakers migrated across the Anares Mountains around 1100, creating a split between the Near-East Sylvic and the Far-East Sylvic languages.

Ŋarâþ Crîþ v7 started to take shape in the late Senârmortos era and became codified with the Asoren–Viriþis alliance. The origin of Ŋarâþ Crîþ is unclear, but it is thought to have originated as a creole between Necarasso Cryssesa and Far-East Sylvic languages, with some influence from non-Sylvic languages and hardcore standardization.

During the Nerita Era, Ŋarâþ Crîþ spread throughout Crîþja, becoming either the dominant language or a minority but prestige language.

Toward the end of the Nerita era, Ŋarâþ Crîþ v7 started to evolve into daughter languages (desorin; sg. desoren) in each region. However, Ŋarâþ Crîþ continued to be used as a learned language, as well as a *lingua franca* within the area. The (Society of Ŋarâþ Crîþ) was founded in 3645 to regulate the language, eventually creating Ŋarâþ Crîþ v9.

A surge of nationalism across the continent in the 3800s sparked an interest in the vernacular languages, elevating their status. As a result, some of these languages gained official or co-official status in their respective countries.

4.2   Ŋarâþ Crîþ as spoken today

The current Ŋarâþ Crîþ-speaking core consists of five countries: Sadun (⟨*@sadon⟩), Viriþis, Asoren, Renselis, and Irnines, with the periphery including Lalaþne, Cfârneþf·lantis, Venoscrîþ, and eastern Aviro and Cþaliso.

This grammar focuses mostly on the standard dialect of Ŋarâþ Crîþ, which is the prestige variety in all countries that recognize Ŋarâþ Crîþ as an official language. Technically, standard Ŋarâþ Crîþ has some differences across different areas, but these differences are minor enough that for the most part, it can be treated as a single variety.

In addition to the standard register, there are many national and regional varieties used for colloquial speech, often coexisting with and influenced by other languages in the area. These form a continuum with standard Ŋarâþ Crîþ.

In Asoren, colloquial Ŋarâþ Crîþ varieties can be classified into northern, southern, and

inland groups. The Viriþian dialects can be classified into coastal and inland groups, with northern Asorenese dialects being similar to coastal Viriþian, and the inland Asorenese and Viriþian dialects being similar as well.

The coastal–inland distinction is also present in Sadun but is less pronounced than in Asoren or Viriþis.

Renselian dialects are also divided into coastal and inland groups, with an additional group for the area south of the Teriþos River.

In contrast, the dialects in Irnines are divided into central and peripheral dialects, based on whether they are spoken within the Irneþsarta mountain range or outside it. The peripheral dialects also form a dialect continuum with each other.

4.2.1   Other languages in Ŋarâþ Crîþ-speaking areas

Alongside Ŋarâþ Crîþ exist other languages spoken in these areas. These are classified primarily into DESORIN (sg. *desoren*) and TECTER (sg. *tectol*). *Desorin*, as previously mentioned, refer to languages that are descended from Ŋarâþ Crîþ v7, while *tecter* refer to languages that were spoken in the area before Ŋarâþ Crîþ was introduced, some of which are still spoken today.

In Asoren, the vernacular ŊARÂÞ ASOREN (also spoken in Viriþis as ŊARÂÞ VIRIÞIS) became the official language in some areas, but Ŋarâþ Crîþ remained official in others. As a result, different areas within the same country have different official languages, and the languages spoken in the household have typically followed whatever the official language is.

The capital of each nation (Cþeflje for Asoren and Vargiel for Viriþis) are officially bilingual. The government of Asoren has made several other cities bilingual, with some controversy.

[TODO: cover other *desorin* in terms of sociolinguistics]

In all of the regions, the case system of ŊCv7 was simplified or even lost completely, and the dual number was often lost. In some of the *desorin*, the celestial and terrestrial gender were merged into a 'non-human' gender.

4.3   Languages spoken elsewhere

Ŋarâþ Crîþ is only one of the four current hypercentral languages in Njôro (that is, there is no single language with as much influence as English has in this world), with the others being:

- (UNNAMED-L1) – isolating and head-initial; uses logographic script; base-? numeral system

- (UNNAMED-L2) – both positional and cased nouns; many light verb constructions; base-? numeral system

- (UNNAMED-L3) – ?; base-? numeral system

Almost all education systems teach at least one of these languages as a foreign language.

Part II

Orthography and phonology

The phonology and orthography of Ŋarâþ Crîþ can be divided into eight layers in two modes (WRITING and SPEAKING):

- LAYER 0 is the underlying morphographemic representation. Content in this layer exists structurally instead of linearly. In this grammar, text in this layer is written in double square brackets: ⟦tanc-a⟧.

- LAYER 1 is the graphemic representation. This representation is subsequently exported to the spoken and written modes. Text in this layer is written with angle brackets: ⟨tanca⟩.

- LAYER 2w is the surface glyphic representation. This represents the sequence of Cenvos glyphs that is written, observing required ligatures and final forms. Text in this layer is written with double angle brackets: ^{2}⟨tanca⟩; for a more interesting example, ⟨mencoc⟩ becomes ^{2}⟨$\overline{\text{men}}$co$\overline{\text{c\$}}$⟩.

- LAYER 2w* is an intermediate layer between 2w and 3w, in which discretionary ligatures are introduced to 2w text. For instance, ^{2}⟨#flirora⟩ can be realized as ^{2*}⟨#fli$\overline{\text{rora}}$⟩.

- LAYER 3w is the topological representation, showing optional ligatures as well as stroke order variations. Text in this layer is written with double angle brackets: ^{3}⟨t$_{1\alpha}$a$_{1\gamma}$n$_{1\alpha}$c$_{1\alpha}$a$_{1\alpha}$⟩. More interestingly, ^{2}⟨$\overline{\text{men}}$co$\overline{\text{c\$}}$⟩ could become ^{3}⟨me$_{1\alpha}n_{1\alpha}c_{1\alpha}$$\overline{\text{o}_{1\alpha}\text{c\$}_{1\alpha}}$⟩.

- LAYER 4w is the presentational representation, adding to 3w variations in the strokes themselves and how strokes within a glyph are joined. Text in this layer is written with double angle brackets: ^{4}⟨t$_{1\alpha}$a$_{1\gamma}$n$_{1\alpha}$c$_{1\alpha}$a$_{1\alpha}$⟩.

- LAYER 2s is the phonemic representation. We use slashes for this, as usual: /tanka/.

- LAYER 3s is the phonetic representation, or what is pronounced. We use square brackets for this, as usual: [t^{h}a^{4}ŋc^{h}a^2].

The conversions from 0 to 1, 1 to 2w, and 2s to 3s are functional: each valid input corresponds to exactly one output. The conversion from 1 to 2s is almost so, except when a ⟨&⟩ is present. In the opposite direction, the conversions from 4w to 3w, from 3w to 2w*, and from 2w* to 2w are functional. Furthermore, for any conversion, it can be determined whether a given input can be converted into a given output without external information.

In addition, the conversion between 1 and 2w is bijective: valid layer-1 and layer-2w representations can be paired with each other.

Chapter 5

Layers 1 and 2w: Cenvos and its romanization

Rather than starting at layer 0, we start at layers 1 and 2w.

Cᴇɴᴠᴏs, the native script of Ŋarâþ Crîþ, is written from right to left. This script can be analyzed on two levels: ɢʀᴀᴘʜᴇᴍᴇs, which constitute the abstract level and ɢʟʏᴘʜs, which are the characters being written. For instance, Cenvos has one grapheme romanized as ⟨c⟩ that corresponds to two different glyphs: the non-final form **c** (denoted as ²⟨c⟩) and the final form ᒋ (²⟨c̄$⟩). As another example, the sequence ⅎ (⟨me⟩ = ²⟨m̄e̅⟩) consists of one glyph but two graphemes.

In this grammar, we primarily use the romanization, whose symbols largely map one-to-one with Cenvos graphemes. Cenvos has four kinds of graphemes:

- Tʀᴜᴇ ʟᴇᴛᴛᴇʀs are graphemes that represent sounds.

- Mᴀʀᴋᴇʀs, while considered letters, do not represent sounds. Instead, they indicate that the words affected are treated specially. They occur on the level of a word and do not actively participate in morphology.

- Pᴜɴᴄᴛᴜᴀᴛɪᴏɴ includes the clause-end punctuation ⟨.⟩, ⟨;⟩, ⟨?⟩, and ⟨!⟩; the clitic boundary mark ⟨'⟩; the lenition mark ⟨·⟩; the grouping brackets ⟨{}⟩; and the quotation marks ⟨«»⟩.

- Dɪɢɪᴛs can be used to write short numerals.

Of course, there is also the space.

The letters ⟨w⟩, ⟨x⟩, ⟨y⟩, and ⟨z⟩ are USR ʟᴇᴛᴛᴇʀs. These are used in foreign languages written in Cenvos to represent phonemes that are not approximated by the phonology of Ŋarâþ Crîþ. Each foreign orthography is free to assign them as it pleases.

Cenvos has two graphemes that change form at the end of the word: ⟨c⟩ and ⟨ŋ⟩, as well as several ligatures. We do not distinguish these forms in the romanization.

The marker ⟨*⟩ is used for foreign words, such as loanwords and foreign names. ⟨#⟩ is used to prefix given names (Subsection 13.12.1). ⟨+⟩ is used to prefix surnames passed by native conventions (i.e. from parent to child within the same gender); ⟨+*⟩ marks a surname passed using non-native conventions. Place names (Subsection 13.12.2) are prefixed with ⟨@⟩. ⟨#⟩, ⟨+⟩, ⟨+*⟩, and ⟨@⟩ can all be used with ⟨*⟩, in which case ⟨*⟩ occurs first. Note that ⟨+*⟩ is a single letter of its own and not a ligature.

Cen	Name	Rom	Cen	Name	Rom	Cen	Name	Rom
			True letters					
c	ca	c	⅃	ma	m	v	ar	h
⌐	e	e	⅄	a	a	o	ħo	ħ
⊇	na	n	∥	fa	f	⋈	ên	ê
Γ	ŋa	ŋ	ϛ	ga	g	⅃	ôn	ô
⋀	va	v	⋏	pa	p	\	ân	â
⅃	o	o	⋏	ta	t	⅃̣	uħo	u
s	sa	s	λ	ča	č	⅃	cełaŋa	w
⋇	þa	þ	⌐	în	î	⅄	avarte	x
⌐	ša	š	/	ja	j	⅃	priþnos	y
⅃	ra	r	∣	i	i	⅄	telrigjon	z
⋊	la	l	x	da	d			
⋪	ła	ł	x	ða	ð			
			Final forms and ligatures (layer 2w)					
Γ		$\overline{c\$}$	⅃		$\overline{me}$	⅞		$\overline{ww}$
F		$\overline{\eta\$}$	⅃		$\overline{mm}$	⅄		$\overline{xx}$
⅃		$\overline{ee}$	⅄		$\overline{j\hat{a}}$	⅃		$\overline{yy}$
⅃		$\overline{em}$	⅄		$\overline{\hat{a}j}$	⅄		$\overline{zz}$
			Markers					
¬	carþ	#	⅃	njor	+*	✳	nef	*
⌐	tor	+	↓	es	@	⋀⋁	sen	&
			Punctuation					
⌐	gen	.	·	ŋos	'	⅃	fos	«
⌐	tja	;	.	łil	·	◀	þos	»
⋁	šac	?	⋎	rin	{	⅃	jedva	/
⌐	cjar	!	⋀	cin	}	⅃	mivaf·ome	-
‹	vas	:						

Table 5.1: The graphemes of Ŋarâþ Crîþ. (The columns are read from left to right.)

At the start of a word, ⟨&⟩ indicates reduplication of an unspecified prefix of the rest of the word. For instance, ⟨&cên⟩ can be pronounced as if it were ⟨cêcên⟩ or ⟨cêncên⟩. (⟨&⟩ occurs after all other markers in this case.) This usage is not productive in standard Ŋarâþ Crîþ, but it appears in a few words, as well as in some idiosyncratic cases. At the middle or the end of a word, or alone, it indicates ellipsis of part or all of the word, most often to abbreviate or censor a word. Lastly, ⟨&{}⟩ is used similarly to the ellipsis in Western punctuation.

Markers can be applied to multi-word strings by surrounding the string with the grouping brackets ⟨{}⟩. In legal language, ⟨{}⟩ are also used around phrases to resolve ambiguities.

The sentence punctuation ⟨.⟩, ⟨?⟩, and ⟨!⟩ are used as expected. ⟨;⟩ is used to separate two independent clause phrases within the same sentence.

The quotation marks, ⟨«»⟩, are used around quotations, direct or indirect. A ⟨.⟩ at the end of a quotation embedded within another sentence is omitted. In legal language, ⟨«»⟩ are used in contracts around terms that refer to specific entities or places.

⟨:⟩ is used for the following functions:

- listing separate elements of a symbolic identifier, in which case it is not surrounded by spaces,

- separating the usual end of an independent clause from a postposed adjunct, in which case it is preceded by a space,

- or separating principal parts of a lexical entry, in which case it is surrounded by spaces on both sides.

⟨'⟩ is used to separate clitics from the rest of the word to which they are attached. ⟨·⟩ indicates lenition; it could be described as a "letter modifier". It is also used as a decimal point: officially, it is used after the most significant digit of an inexact numeral when written with digits, but it also used unofficially to write non-integers.

⟨/⟩, as its derivation from ⟨i⟩ suggests, is used to separate the number of *mjari* from the number of *edva* when writing currency amounts.

The morpheme boundary marker, ⟨-⟩, is sometimes used metalinguistically to mark a morpheme boundary, but it is not strictly a part of layer 1.

Spaces are placed in the following places:

- between orthographic words, but not between a clitic and the word to which it is attached

- after (but not before) ⟨.⟩, ⟨;⟩, ⟨?⟩, and ⟨!⟩

- before ⟨«⟩ and after ⟨»⟩ (but not on the other sides)

- around ⟨&{}⟩

[TODO: cover mentions of letters within the language, corresponding to v7 p17 "When letters or markers are referred to, … but the effects on other glyphs are not standardized"]

Digits are interchangeable with short-form numerals, but not with long-form numerals. They are also written right-to-left in Cenvos, with the most significant digit first: ꛓꚇꚓ is 0x2A3 = 675.

Cen	#	Cen	#	Cen	#	Cen	#
Ϭ	0	⟋	1	४	2	၇	3
⌐	4	✝	5	∂	6	h	7
ο	8	⨏	9	๖	A	�	B
⟨	C	∫	D	४	E	ⅾ	F

Table 5.2: The digits of Ŋarâþ Crîþ. (The columns are read from left to right.)

Letter	Hex	Dec	Letter	Hex	Dec	Letter	Hex	Dec
True letters								
c	0	0	m	20	32	h	11	17
e	1	1	a	9	9	ħ	12	18
n	2	2	f	A	10	ê	101	257
ŋ	2B	43	g	B	11	ô	104	260
v	3	3	p	C	12	â	109	265
o	4	4	t	D	13	u	13	19
s	5	5	č	DE	222	w	−1	−1
þ	55	85	î	E	14	x	−2	−2
š	5E	94	j	6E	110	y	−3	−3
r	6	6	i	F	15	z	−4	−4
l	7	7	d	10	16			
ł	77	119	ð	155	341			
Markers								
#	14	20	+*	16	22	*	19	25
+	15	21	@	17	23	&	1A	26

Table 5.3: Letter numbering in Ŋarâþ Crîþ. (The columns are read from left to right.)

5.1 Letter numbering

Sometimes, an integer must be assigned to each letter. In this case, the assignment shown in the table below is used. Note that numbers are not assigned fully sequentially. Furthermore, this function is valid only for layer 1 graphemes.

The LETTER SUM of a word is the sum of all of its letters. This value is used in some of the noun declension paradigms.

It is theorized that letter numbers were assigned in the following manner:

- The basic true letters inherited from NECARASSO CRYSSESA (i.e. those corresponding to ⟨c e n v o s r l m a f g p t î i d h⟩) received sequential numbers from zero. The number of ⟨m⟩ was changed due to superstitions against the number eight.

- ⟨ŋ þ š ł č ð⟩ received numbers based on what letter pairs (or triplets in the case of ⟨ð⟩) they were based on.

- ⟨ê⟩, ⟨ô⟩, and ⟨â⟩ were numbered as 256 + base glyph number.

- The other letters and the markers received sequential numbers after ⟨h⟩, skipping 0x18.

Numquote	Meaning
B{}	Contains parenthetical information: provides supplementary information. The sentence should still be grammatical without the parenthetical content.
1{}	Lists an alias of a referent mentioned by name.
2{}	Surrounds a key-value list. Used as such: ⟨2{3{&{}} 4{&{}} 3{&{}} 4{&{}}}⟩
3{}	Used for listing a key inside ⟨2{}⟩.
4{}	Used for listing a value inside ⟨2{}⟩. When not directly inside a ⟨2{}⟩ numquote, marks a list: elements are delimited by spaces, and ⟨{}⟩ can be used to insert multi-word elements.
9{}	Used to contain abbreviated quantities in the traditional currency system.
*9{}	Used to contain abbreviated quantities in a currency system other than the traditional one.

Table 5.4: Numquotes in Ŋarâþ Crîþ.

5.2 Collation

The true letters and the markers are collated in their respective order, except for ⟨&⟩, which is ignored. Lenited letters are treated as their respective base letters, except when two words differ only by the presence or absence of a lenition mark, in which case the lenited variant is collated after the base letter: ⟨saga⟩ < ⟨sag·a⟩ < ⟨sada⟩ < ⟨saħa⟩. Numerals are collated after all letters.

In a directory of personal names, entries are collated on surnames, with given names considered only when surnames are identical. Headings in such a list include the prefix up to and including the first true letter: ⟨+merlan #flirora⟩ would be found under ⟨+m⟩.

Ordered items can be labeled using numerals (starting from 0) or letters. In the latter case, only the letters ⟨c e n v o s r l m a f g p t î i d h⟩ are used.

5.3 Numquotes

A digit immediately preceding text surrounded by quotation or grouping marks constitutes a NUMQUOTE. The digit is usually not pronounced in this case. Numquotes are mainly used for secondary purposes that lack any dedicated punctuation.

5.4 Backreferences

Sometimes, repeated sections of a text are notated using BACKREFERENCES. A BACKREFERENCE DEFINITION consists of two *ŋose*s followed by a string of letters (the IDENTIFIER) and a space, and then a phrase inside a ⟨{}⟩ pair. The text inside the delimiters will be transcluded using a BACKREFERENCE itself, which consists of two *til*s followed by the same identifier.

Chapter 6

Layer 0: the assemblage structure

The phonotactics of Ŋarâþ Crîþ can be expressed in terms of a state machine with five states: *s* (SYLLABIC), *g* (GLIDE), *o* (ONSET), *n* (NUCLEAR), and *ω* (TERMINAL). Each transition defined in the state machine has a set of accepted payloads.

A word, or rather the phonotactically relevant part thereof, starts in the syllabic state and ends in the terminal state.

- The SYLLABIC STATE, *s*, is reached between syllables. In this state, an initial can be accepted to transition to the glide state.

- The GLIDE STATE, *g*, is reached immediately after an initial. This state can accept a medial to transition to the onset state.

- From the ONSET STATE, *o*, a vowel (also called a nucleus) leads to the nuclear state.

- From the NUCLEAR STATE, *n*, a simple coda can be accepted to transition back to the syllabic state. Alternatively, a simple or complex coda may be accepted to transition to the terminal state.

- The TERMINAL STATE is the end state for a word and marks the end of the final syllable. There are no transitions from this state.

The payloads associated with a transition are strings of MANIFESTED GRAPHEME PHRASES. A manifested grapheme phrase is either a true letter not followed by a lenition marker (PLAIN LETTER), any of ⟦p t d č c g m f v ð⟧ followed by a lenition mark (LENITED LETTER), or, word-initially, one of the digraphs ⟦mp vp dt nd gc ŋg vf ðþ lɫ⟧ (ECLIPSED LETTER). All other graphemes are ignored for the purposes of phonotactics.

A manifested grapheme phrase has a BASE LETTER. The base letter of a plain letter is itself. The base letter of a lenited letter is the letter without the lenition mark. The base letter of an eclipsed letter is the second letter of the digraph.

A vowel is any of ⟦e o a î i ê ô â u⟧. ⟦j⟧ is a semivowel. All other manifested grapheme phrases are consonants.

An EFFECTIVE PLOSIVE is a manifested grapheme phrase whose base letter is any of ⟦p t d c g⟧. An EFFECTIVE FRICATIVE is a manifested grapheme phrase whose base letter is any of ⟦f v þ ð s š h ħ⟧.

A HATTED VOWEL is one of ⟦î ê ô â⟧. All other vowels are UNHATTED VOWELS.

An INITIAL is the beginning of a syllable and consists of one of the following:

- nothing at all
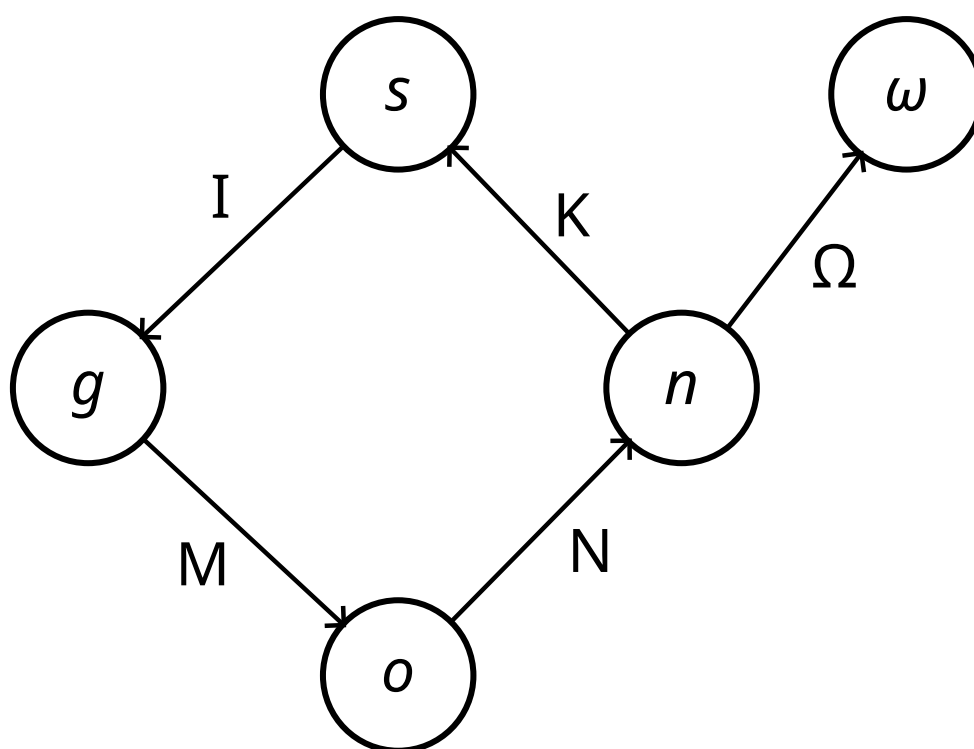
Figure 6.1: The finite state machine describing the phonotactics of Ŋarâþ Crîþ.

- a single consonant

- an effective plosive or fricative plus ⟦r⟧ or ⟦l⟧

- any of ⟦cf cþ cs cš gv gð tf dv⟧; that is, a plosive plus a fricative of the same voicing, such that the plosive has a more retracted place of articulation than the fricative

The set of valid initials is denoted by the capital Greek letter iota, I.

A MEDIAL may either be empty or ⟦j⟧. The set of medials is denoted by the capital Greek letter mu, M.

The set of vowels is denoted by the capital Greek letter nu, N.

A coda is either a SIMPLE CODA or a COMPLEX CODA. A simple coda is one of ⟦s r n þ rþ l t c f cþ ł⟧ or nothing at all. A complex coda is one of ⟦st lt ns ls nþ łt m⟧, with ⟦-m⟧ used only in a handful of function words. The set of all simple codas is denoted by the capital Greek letter kappa, K, and the set of all simple or complex codas is denoted by the capital Greek letter omega, Ω.

An ONSET is an initial plus a medial. A BRIDGE is the coda of one syllable plus the onset of the following syllable.

For disambiguation, this grammar uses the following symbols in place of the hyphen to show the state at the juncture: ⟦÷⟧ on s, ⟦←⟧ on g, ⟦→⟧ on o, and ⟦¬⟧ on n. The colon is also sometimes used to clarify syllable boundaries.

6.1   Validation

Valid morphemes have addditional criteria that they must satisfy:

- All bridges must be valid.

- ⟦j⟧ cannot precede ⟦i⟧, ⟦î⟧, or ⟦u⟧.

- ⟦h⟧ cannot occur word-initially.

- Conversely, eclipsed letters may only occur word-initially.

A bridge is CANONICAL if it follows the maximal-onset principle; that is, if the onset has the maximal number of consonants for the given sequence of manifested grapheme phrases. For instance, ⟦¬n÷t→⟧ and ⟦¬r÷þl→⟧ are canonical, but ⟦¬c÷þ→⟧ and ⟦¬rþ÷l→⟧ are not (as they can be regrouped as ⟦¬∅÷cþ→⟧ and to ⟦¬r÷þl→⟧).

A bridge is VALID if it can arise as the result of REPAIRING a canonical bridge. Bridge repair is intended to change a bridge that is awkward to pronounce into one that is less so. It has the following properties:

1. Except when the coda is ⟦¬ł⟧, lenition in the onset does not affect whether bridge repair preserves the bridge.

2. The presence of ⟦j⟧ in the onset has no influence on bridge repair.

3. All bridges with a coda that is empty, ⟦¬r⟧, or ⟦¬l⟧ are unaffected by bridge repair.

4. If a bridge with a complex initial *I* is not changed by bridge repair, then the bridge with an initial containing only the first consonant of *I* is also unchanged.

Importantly, bridge repair is not idempotent: ⟦¬sð·→⟧ is repaired to ⟦¬ss→⟧, but ⟦¬ss→⟧ is repaired to ⟦¬þ→⟧. In addition, bridge repair might yield the pseudo-coda ⟦¬ŋ⟧, which changes the preceding medial and vowel.

The following sections describe the rules for bridge repair. A bridge that is modified by one rule might be further changed by later rules.

6.1.1   Coalescence of ⟦¬tš←⟧

The bridge ⟦¬tš←⟧ is changed to ⟦¬č←⟧.

6.1.2   Fortition of ⟦h←⟧ and ⟦ħ←⟧

The onset ⟦h←⟧ is fortited to ⟦c←⟧ after ⟦¬s⟧, ⟦¬þ⟧, ⟦¬rþ⟧, ⟦¬t⟧, ⟦¬c⟧, ⟦¬f⟧, ⟦¬ł⟧, or ⟦¬cþ⟧. ⟦hr←⟧ and ⟦hl←⟧ are fortited analogously.

The onset ⟦ħ←⟧ is fortited to ⟦g←⟧ after ⟦¬t⟧, ⟦¬c⟧, ⟦¬f⟧ or ⟦¬ł⟧. ⟦ħr←⟧ and ⟦ħl←⟧ are fortited analogously.

6.1.3   Metathesis of ⟦t⟧ before ⟦c⟧ or ⟦g⟧

⟦¬tc←⟧ and ⟦¬tg←⟧ are metathesized to ⟦¬čt←⟧ and ⟦¬cd←⟧, respectively. Likewise, ⟦¬tcr←⟧, ⟦¬tcl←⟧, ⟦¬tgr←⟧, and ⟦¬tgl←⟧ are metathesized to ⟦¬čtr←⟧, ⟦¬čtl←⟧, ⟦¬cdr←⟧, and ⟦¬cdl←⟧.

Similar bridges with lenited onsets, such as ⟦¬tc·←⟧ and ⟦¬tg·r←⟧ are treated analogously, with the resulting onset remaining lenited.

⟦¬t⟧ is deleted before ⟦cf←⟧, ⟦cþ←⟧, ⟦cš←⟧, ⟦cš←⟧, ⟦gv←⟧, and ⟦gð←⟧, devoicing the last two of these.

6.1.4   Nasal assimilation

For these rules, ⟦m·←⟧ is counted as a nasal, even though it is pronounced as a fricative.

⟦¬t⟧ before a nasal onset assimilates to ⟦¬n⟧.

⟦¬c⟧ before a nasal onset assimilates to the pseudo-coda ⟦¬ŋ⟧ (Subsection 6.1.12). As a special case, ⟦¬cŋ←⟧ is repaired to ⟦¬:ŋ←⟧ instead.

6.1.5   Denasalization of ⟦ŋ←⟧

After ⟦¬s⟧, ⟦¬þ⟧, ⟦¬rþ⟧, ⟦¬f⟧, ⟦¬ł⟧, or ⟦¬cþ⟧, ⟦ŋ←⟧ is denasalized to ⟦g←⟧.

6.1.6   Fortition of onsets after ⟦¬ł⟧

At the beginning of onsets following the coda ⟦¬ł⟧, the consonants ⟦þ⟧, ⟦t·⟧, and ⟦s⟧ are replaced by ⟦t⟧, and ⟦ð⟧ and ⟦d·⟧ are replaced by ⟦d⟧.

6.1.7   Devoicing of ⟦v←⟧ and ⟦ð←⟧

After ⟦¬þ⟧, ⟦¬rþ⟧, ⟦¬t⟧, ⟦¬c⟧, ⟦¬f⟧, ⟦¬þ⟧, and ⟦¬cþ⟧, ⟦v←⟧ devoices to ⟦f←⟧ and ⟦ð←⟧ devoices to ⟦þ←⟧. Additionally, ⟦ð←⟧ is devoiced after ⟦¬s⟧.

This process occurs analogously for the onsets ⟦vr←⟧, ⟦vl←⟧, ⟦ðr←⟧, and ⟦ðl←⟧, except that ⟦¬þ⟧ is deleted before ⟦vr←⟧ and ⟦vl←⟧ instead (leaving the onset voiced). Additionally, ⟦¬rþCR←⟧ onsets (with R = ⟦r⟧ or ⟦l⟧ and C = ⟦v⟧ or ⟦ð⟧) are corrected to ⟦¬RC←⟧.

As usual, similar rules apply to lenited onsets: ⟦v·⟧ devoices to ⟦f·⟧, and ⟦ð·⟧ is replaced with a copy of the preceding consonant, except in ⟦¬łð·r←⟧ and ⟦¬łð·l←⟧, where the ⟦ð·⟧ is deleted.

6.1.8 Assimilation of ⟦s⟧ after ⟦þ⟧

After a ⟦þ⟧, ⟦s⟧ is replaced with ⟦þ⟧. Additionally, ⟦ss⟧ is coalesced into ⟦þ⟧, unless it is not followed by a consonant and the latter ⟦s⟧ arose from a ⟦ð⟧ in the previous step.

6.1.9 Replacement of ⟦¬ł⟧ by ⟦¬l⟧ in certain onsets

Before stop–fricative onsets, as well as before any onset that does not start with ⟦t⟧, ⟦d⟧, ⟦l⟧, ⟦r⟧, ⟦n⟧, ⟦c⟧, or a lenited version of one of these consonants, the coda ⟦¬ł⟧ becomes ⟦¬l⟧.

6.1.10 Degemination before another consonant

⟦þ⟧, ⟦t⟧, ⟦c⟧, and ⟦f⟧ are degeminated before another consonant in the onset; for instance, ⟦¬ffr←⟧ is corrected to ⟦¬fr←⟧, and ⟦¬ccs←⟧ is corrected to ⟦¬cs←⟧. ⟦td⟧ is degeminated to ⟦d⟧, and ⟦cg⟧ is degeminated to ⟦g⟧.

This rule also applies when the second instance of the degeminated consonant is lenited, in which case the first copy of the consonant is elided: ⟦¬tt·l←⟧ → ⟦¬t·l←⟧.

6.1.11 Partial coda elision of bridges with ⟦¬rþ⟧ and ⟦¬cþ⟧ codas

If the coda is ⟦¬rþ⟧, then it becomes ⟦¬r⟧ before a fricative followed by ⟦r⟧ or ⟦l⟧, or before the onsets ⟦cf←⟧, ⟦cþ←⟧, ⟦cs←⟧, ⟦cš←⟧, ⟦tf←⟧, and ⟦dv←⟧. Before any other two-letter onset, it becomes ⟦¬þ⟧.

If the coda is ⟦¬cþ⟧, then it is maintained before the onsets ⟦þ←⟧, ⟦š←⟧, ⟦m·←⟧, ⟦t←⟧, ⟦ħ←⟧, ⟦m·←⟧, or ⟦t·←⟧. Before ⟦cf←⟧, ⟦cþ←⟧, ⟦cs←⟧, ⟦cš←⟧, or ⟦tf←⟧, or before any of the onsets consisting of ⟦þ⟧, ⟦š⟧, or ⟦ħ⟧ followed by ⟦r⟧ or ⟦l⟧, the onset loses its first consonant, and ⟦cs←⟧ additionally becomes ⟦þ←⟧. In all other cases, the coda becomes ⟦¬þ⟧.

6.1.12 The pseudo-coda ⟦¬ŋ⟧

Nasal assimilation might produce the pseudo-coda ⟦¬ŋ⟧ instead of an actual (simple) coda. In this case, the preceding vowel becomes ⟦o⟧ for ⟦a o u⟧, ⟦jo⟧ for ⟦e i⟧, ⟦ô⟧ for ⟦â ô⟧, and ⟦jô⟧ for ⟦ê î⟧, with any glides merging with the preceding glide. The pseudo-coda itself becomes ⟦¬r⟧.

This operation on a glide–vowel pair is common in Ŋarâþ Crîþ and is referred to as the ξ-TRANSFORMATION.

6.2 Concatenation

Concatenating two morphemes invokes repair processes to maintain validity invariants. In addition, there are environments that may naturally (if rarely) occur within a morpheme but

are repaired away when created by appending morphemes.

Deduplication, which occurs on concatenation, affects fricatives in the onset position that precede a non-hatted vowel followed by a homophonous manifested grapheme phrase:

1. The onset ⟦f⟧ or ⟦tf⟧ followed by a non-hatted vowel then ⟦f⟧ or ⟦p·⟧ is replaced with ⟦t⟧.

2. The onset ⟦þ⟧ or ⟦cþ⟧ followed by a non-hatted vowel then ⟦þ⟧ or ⟦t·⟧ is replaced with ⟦t⟧. In addition, a preceding ⟦þ⟧ or ⟦cþ⟧ coda is replaced with ⟦s⟧, and a preceding ⟦rþ⟧ coda is replaced with ⟦r⟧.

3. ⟦h⟧ followed by a non-hatted vowel then ⟦h⟧ or ⟦c·⟧ is replaced with ⟦p⟧.

4. ⟦v⟧ followed by a non-hatted vowel then ⟦v⟧ or ⟦m·⟧ is replaced with ⟦n⟧.

5. ⟦ð⟧ followed by a non-hatted vowel then ⟦ð⟧ or ⟦d·⟧ is replaced with ⟦ŋ⟧.

6. ⟦ħ⟧ followed by a non-hatted vowel then ⟦ħ⟧ or ⟦g·⟧ is replaced with ⟦g⟧.

These environments of duplicate consonants are called oginiþe cfarðerþ.

Overall, concatenation invokes the following processes in order:

1. Any new instances of ⟦j⟧ before ⟦i⟧, ⟦î⟧, or ⟦u⟧ are elided.

2. Deduplication rules are applied.

3. Newly formed bridges are canonicalized and repaired.

Note that deduplication happens before any canonicalization; for instance, appending the syllables ⟦reþ÷⟧ and ⟦÷eþ⟧ together gives ⟦reþeþ⟧, not ⟦reteþ⟧ (although appending the stem ⟦reþ→⟧ to the suffix ⟦←eþ⟧ *does* give ⟦reteþ⟧).

6.3   Stem fusion

In Ŋarâþ Crîþ, a stem consists of one or more syllables followed by an onset. In addition, the final onset of a stem must not contain a lenited consonant.

Stem fusion describes a set of related processes on a stem. Stem fusion with a null consonant turns a stem into a word (with a terminal end). Stem fusion with a non-null consonant combines a stem with one of ⟦t⟧, ⟦n⟧, or ⟦þ⟧ into another stem.

For some stems, stem fusion is c-invariant; that is, it yields a common sequence of syllables followed by whatever the fusion consonant is.

> ### Notation used to describe stem fusion
>
> - $\mathcal{S}_{xy}$ is the set of all morphemes with start type x and end type y, with x and y being one of s (syllabic), g (glide), o (onset), n (nuclear), or ω (terminal).
>
>   - $\mathcal{S}_{xy}^n$ is the subset of $\mathcal{S}_{xy}$ whose elements undergo n cycles from x back to x.
>   * Ex: $\mathcal{S}_{xx}^0$ contains only the empty string for all boundary types x.
>   * Ex: $\mathcal{S}_{sg}^0$ is the set of all initials.
>   * Ex: $\mathcal{S}_{no}^1$ includes ⟦stafc⟧ but not ⟦þþj⟧ or ⟦tatag⟧.

- Given $\alpha \in \mathcal{S}_{xy}$ and $\beta \in \mathcal{S}_{yz}$, $\alpha : \beta \in \mathcal{S}_{xz}$ is the result of appending α and β, performing repair processes as necessary.

  - Ex: if $\alpha =$ feva $\in \mathcal{S}_{ss}$ and $\beta =$ ve $\in \mathcal{S}_{ss}$, then $\alpha : \beta =$ fenave $\in \mathcal{S}_{ss}$.

  - This operation is also defined for $\alpha \in \mathcal{S}_{xo}$ and $\beta \in \mathcal{S}_{gz}$, in which case the glides at the end of α and the start of β are merged.

  - The exact semantics of this operation depends on the types of α and β, not only their values.

  - $\alpha\beta$ is the result of appending α and β *without* performing any repair processes.

- We also define the following sets:

  - $I = \mathcal{S}^0_{sg}$ is the set of all initials.

  - $M = \mathcal{S}^0_{go} = \{\varepsilon_M, j\}$ is the set of all glides.

  - $N = \mathcal{S}^0_{on}$ is the set of all vowels.

  - $K = \mathcal{S}^0_{ns}$ is the set of all simple codas.

  - $\Omega = \mathcal{S}^0_{n\omega}$ is the set of all codas, simple or complex.

  - $\Gamma = \mathcal{S}^0_{ng}$ is the set of all coda–onset pairs. The glide is not included because stems ending in $[\![j]\!]$ are treated specially in stem fusion.

  - Π is the set of effective plosives and fricatives – that is, the set of consonants that can form an initial when followed by $[\![l]\!]$ or $[\![r]\!]$.

  - $T \subset \mathcal{S}_{so} \setminus \mathcal{S}^0_{so}$ is the set of valid stems. A stem must contain at least one syllable, and its final onset must not contain a lenited consonant.

- A superscript expression containing a slash is interpreted as a substitution of each element on the left side with the corresponding element on the right side. Square brackets denote strings of more than one character.

  - For example, $x^{\text{snt}/\eth[\text{nd}]\text{c}}$ means '*x, but with $[\![s]\!]$, $[\![n]\!]$, and $[\![t]\!]$ replaced with $[\![\eth]\!]$, $[\![nd]\!]$, and $[\![c]\!]$, respectively*' (with any other value of x unchanged).

- Given a stem $\tau \in T$, $\tau^\varepsilon \in \mathcal{S}_{s\omega}$ is the result of fusing τ with a null consonant, and $\tau^\theta \in \mathcal{S}_{so}$ is the result of fusing τ with a non-null consonant $\theta \in \{n, t, \þ\}$.

  - We use a shorthand for C-invariant rules: a rule such as $\tau \rightsquigarrow \sigma$, where $\tau \in T$ and $\sigma \in \mathcal{S}_{ss}$, is interpreted as the rules $\tau^\varepsilon = \sigma_{s\omega}$ and $\tau^\theta = \sigma : \theta$.

  - Another shorthand used in this document is $\tau \curvearrowright \tau'$, which implies $\tau^\varepsilon = (\tau')^\varepsilon$ and $\tau^\theta = (\tau')^\theta$.

- The following variables are used: $\Sigma_{xy} \in \mathcal{S}_{xy}$, $\gamma \in \Gamma$, $\iota \in I$, $\nu \in N$, $\kappa \in K$, $\omega \in \Omega$, $\theta \in \{n, t, \þ\}$.

- Each set of rules is presented first in mathematical notation then paraphrased (roughly) in plain English.

  - Earlier rules take precedence over later ones.

6.3.1 Stems ending in ⟦j⟧

$$\Sigma_{si}j \rightsquigarrow \Sigma_{si} : i \qquad\qquad \text{(FinalJ)}$$

Fusion with any stem that ends with ⟦j⟧ is C-invariant, with the ⟦j⟧ replaced with ⟦i⟧.

From now on, any explicit instances of ε_M will be omitted.

6.3.2 Onset aliasing

$$(\Sigma_{ss}\iota)^\varepsilon = (\Sigma_{ss} : s)^\varepsilon \qquad\qquad \text{if } \iota \in \{t, d\}, \kappa \neq ł \qquad \text{(Alias)}$$

When fusing a stem that has an onset of ⟦t⟧ or ⟦d⟧ with an empty consonant, pretend that the onset is ⟦s⟧ instead. This does not apply when the coda is ⟦¬ł⟧, as ⟦¬łs→⟧ resolves to ⟦¬łt→⟧.

6.3.3 Valid codas

$$(\Sigma_{sn}\gamma)^\varepsilon = \Sigma_{sn} : \gamma_\Omega \qquad\qquad \text{if } \gamma \in \Omega$$
$$(\Sigma_{sn}\gamma)^\theta = \Sigma_{sn} : \gamma_K : \theta \qquad\qquad \text{if } \gamma \in K \qquad \text{(ValidCoda)}$$

If the final bridge of a stem can be interpreted as a valid simple coda (if the fusion consonant is not null) or as a valid coda (if the fusion consonant is null), then reinterpret it as one and append the fusion consonant.

6.3.4 Degemination

$$\Sigma_{sn}\kappa\iota \rightsquigarrow \Sigma_{sn} : \delta(\kappa) \qquad\qquad \text{if } \kappa = \iota \text{ and } |\kappa| = 1 \qquad \text{(Degeminate)}$$

where $|\kappa|$ is the number of manifested grapheme phrases in κ and

$$\delta(\kappa) = \begin{cases} l & \text{if } \kappa = r \\ þ & \text{if } \kappa = s \\ \kappa & \text{otherwise} \end{cases}$$

If the coda and initial of the final bridge are both one manifested grapheme phrase long and equal to each other, then fusion is C-invariant and the repeated letter is removed. As a special case, ⟦¬rr→⟧ becomes ⟦¬l←⟧ and ⟦¬ss→⟧ becomes ⟦¬þ→⟧.

6.3.5   Vowel epenthesis

$$(\Sigma_{sn}\kappa c)^{\varepsilon} = \Sigma_{sn}\varepsilon_K\kappa_\iota \,:\, \text{ecþ} \qquad\qquad \text{if } \kappa \in \{r, l, ł\}$$
$$\Sigma_{sn}\kappa\iota \rightsquigarrow \Sigma_{sn}\varepsilon_K\kappa_\iota \,:\, e_N \,:\, \iota_K \qquad \text{if } \iota \in I \cap K,\, \kappa \in \{r, l, ł\} \qquad \text{(Epenthesis-LC)}$$

If the coda of the final bridge is $[\![r]\!]$, $[\![l]\!]$, or $[\![ł]\!]$ and its initial can be interpreted as a valid coda, then fusion is C-invariant with a $[\![\lnot{:}e\div]\!]$ inserted between the coda and the initial. As an exception, when fusing with a null consonant with the final initial being $[\![c\leftarrow]\!]$, the final coda of the result is $[\![\lnot c\text{þ}]\!]$ rather than $[\![\lnot c]\!]$.

6.3.6   Nasal merging

$$\Sigma_{sn}n_K d_I \rightsquigarrow \Sigma_{sn}n_I$$
$$\Sigma_{sn}n_K(\iota^1\iota^2)_I \rightsquigarrow \Sigma_{sn}n(\iota^2)_I \qquad\qquad \text{if } \iota^1 = d$$
$$\Sigma_{sn}n_K\iota \rightsquigarrow \Sigma_{sn}\eta_I \qquad\qquad \text{if } \iota \in \{c, g\}$$
$$\Sigma_{sg}\mu\nu n_K(\iota^1\iota^2)_I \rightsquigarrow \Sigma_{sg}\xi(\mu\nu)r(\iota^2)_I \qquad \text{if } \iota^1 \in \{c, g\} \qquad \text{(NasalMerge1)}$$

$\xi \,:\, \mathcal{S}_{gn}^0 \to \mathcal{S}_{gn}^0$ is the ξ-transformation; i.e.

$$\xi(\mu\nu) = \begin{cases} \mu o & \text{if } \nu \in \{a, o, u\} \\ \mu\hat{o} & \text{if } \nu \in \{\hat{a}, \hat{o}\} \\ jo & \text{if } \nu \in \{e, i\} \\ j\hat{o} & \text{if } \nu \in \{\hat{e}, \hat{\imath}\} \end{cases}$$

1. If the final bridge has a coda of $[\![\lnot n]\!]$ and an onset that starts with $[\![d]\!]$, perform fusion with the first consonant of the onset removed.

2. If the final bridge is $[\![\lnot nc\rightarrow]\!]$ or $[\![\lnot ng\rightarrow]\!]$, then perform fusion with $[\![\lnot\eta\rightarrow]\!]$ in its place.

3. If the final bridge has a coda of $[\![\lnot n]\!]$ and an onset that starts with $[\![c]\!]$ or $[\![g]\!]$, perform fusion as if the bridge consisted of $[\![r]\!]$ followed by the second consonant of the onset, with the previous medial and nucleus affected by the ξ-transformation.

$$(\Sigma_{sn}\varepsilon_K m)^n = \Sigma_{sn}nm$$
$$(\Sigma_{ss}m)^n = \Sigma_{ss} \,:\, \hat{o}m$$
$$(\Sigma_{ss}n)^n = \Sigma_{ss} \,:\, enn$$
$$(\Sigma_{so}\nu\kappa\iota)^n = \Sigma_{so}\chi(\nu)\kappa \,:\, \iota^{d\eth\nu/nnm} \qquad \text{if } \iota \in \{d, \eth, \nu\} \qquad \text{(NasalMerge2)}$$

$\chi \,:\, N \to N$ inverts the tone of a vowel; i.e.

$$\chi(v) = v^{\text{aeioâêîô}/\text{âêîôaeio}}$$

If the fusion consonant is $[\![n]\!]$, then:

1. If the final bridge has an empty coda and an onset of $[\![m{\rightarrow}]\!]$, then it metathesizes with the fusion consonant.

2. If the final bridge has an onset of $[\![m{\rightarrow}]\!]$ but a nonempty coda, then the result has the final initial replaced with $[\![\div\hat{\text{o}}{:}m{\rightarrow}]\!]$.

3. If the final bridge has an onset of $[\![n{\rightarrow}]\!]$, then the result has the final initial replaced with $[\![\div\text{en}{:}n{\rightarrow}]\!]$.

4. If the final bridge has an onset of $[\![d{\rightarrow}]\!]$, $[\![ð{\rightarrow}]\!]$, or $[\![v{\rightarrow}]\!]$, then the result is the stem, but with the final vowel inverted in tone. The final initial is also replaced with $[\![m{\rightarrow}]\!]$ if it was $[\![v{\rightarrow}]\!]$, or $[\![n{\rightarrow}]\!]$ otherwise.

6.3.7   Obstruent merging

$$
\begin{array}{lll}
\Sigma_{sn}\text{rþ}\iota \rightsquigarrow \Sigma_{sn}\text{r} : \iota & \text{if } \varphi(\text{þ}, \iota) & \\
\Sigma_{sn}\text{cþ}\iota \rightsquigarrow \Sigma_{sn}\text{c} : \iota & \text{if } \varphi(\text{þ}, \iota) & \\
\Sigma_{sn}\kappa\iota \rightsquigarrow \Sigma_{sn}\varepsilon : \iota & \text{if } \varphi(\kappa, \iota) & \text{(FricMerge1)} \\
(\Sigma_{ss}(\iota^1\iota^2)_{\text{I}})^{\theta} = (\Sigma_{ss} : \iota^1)^{\theta} & \text{if } \varphi(\iota^2, \theta) & \\
(\Sigma_{ss}\iota)^{\theta} = \Sigma_{ss} : \theta & \text{if } \varphi(\iota, \theta) & \text{(FricMerge2)}
\end{array}
$$

where

$$
\begin{aligned}
\varphi(\kappa, \iota) &\iff (\kappa, \iota) \in F \vee [\exists \pi \in \Pi, \rho \in \{\text{r}, \text{l}\} : \iota = \pi\rho \wedge (\kappa, \pi) \in F] \\
F &= \{(\text{f}, \text{þ}), (\text{þ}, \text{þ}), (\text{t}, \text{þ}), (\text{d}, \text{þ}) \\
&\quad (\text{f}, \text{f}), (\text{v}, \text{f}), (\text{þ}, \text{f}), \\
&\quad (\text{t}, \text{t}), (\text{t}, \text{n})\}
\end{aligned}
$$

These rules concern environments in which the first consonant of the consonant pairs $[\![\text{fþ}]\!]$, $[\![\text{þþ}]\!]$, $[\![\text{tþ}]\!]$, $[\![\text{dþ}]\!]$, $[\![\text{ff}]\!]$, $[\![\text{vf}]\!]$, $[\![\text{þf}]\!]$, $[\![\text{tt}]\!]$, and $[\![\text{tn}]\!]$ is removed.

1. If in the final bridge of the stem, the onset is either a single consonant or a consonant–liquid onset, and the last consonant of the coda and the first consonant of the onset make up one of the pairs above, fusion occurs as if the last consonant of the coda were absent.

2. If the fusion consonant is not null and the last consonant of the onset and the fusion consonant make up one of the pairs above, then fusion occurs as if the last consonant of the onset were absent.

6.3.8 Final devoicing

$$(\Sigma_{ss}\iota)^\varepsilon = [\Sigma_{ss}h(\iota)]^\varepsilon \qquad \text{if } \iota \in \{v, m, d, ð\}$$
$$(\Sigma_{ss}\iota)^\theta = [\Sigma_{ss}h(\iota)]^\theta \qquad \text{if } \iota \in \{v, m, d, ð\} \text{ if } \theta \in \{t, þ\} \qquad \text{(FinalDevoice)}$$

where

$$h(\iota) = \iota^{vmdð/fflþ}$$

If the fusion consonant is not $[\![n]\!]$ and the stem ends with an onset of $[\![v{\leftarrow}]\!]$, $[\![m{\leftarrow}]\!]$, $[\![d{\leftarrow}]\!]$, or $[\![ð{\leftarrow}]\!]$, then fusion occurs as if the final onset were $[\![f{\leftarrow}]\!]$, $[\![f{\leftarrow}]\!]$, $[\![l{\leftarrow}]\!]$, or $[\![þ{\leftarrow}]\!]$ instead.

6.3.9 Stems ending in consonant–liquid onsets

For any consonant c and coda $\omega \in \Omega$, define $\lhd$ as

$$(\Sigma_{xn}\omega) \lhd c = (\Sigma_{xn}\lfloor\omega\rfloor) : c_\mathrm{I}$$

where $\lfloor \cdot \rfloor : \Omega \to K$ denotes the operation of taking the maximal prefix of a coda that is a simple coda.

To INJECT a consonant into a sequence of syllables, the last of which might contain a complex coda, remove consonants from the end of the word until it ends with a simple coda, then append the consonant.

These rules concern stems ending in an onset consisting of a consonant π followed by $[\![r]\!]$ or $[\![l]\!]$.

Let $\rho \in \{r, l\}$ and $\pi \in \Pi$. Then $\pi\rho \in I$.

$$\Sigma_{sn}\varepsilon_\mathrm{K}\iota v\varepsilon_\mathrm{K}(\pi\rho) \rightsquigarrow \Sigma_{sn}\iota_\mathrm{K} : \pi_\mathrm{I} : v : \rho_\mathrm{K} \qquad \text{if } \iota \in \{\varepsilon, s, n, l\} \qquad \text{(Cl-Meta)}$$

If the stem has at least two full syllables, the last two full syllables both have empty codas, and the last full syllable has an onset that is empty, $[\![s]\!]$, $[\![n]\!]$, or $[\![l]\!]$, then fusion is C-invariant, with π moved right after the onset of the last full syllable, which becomes the coda of the preceding syllable.

$$(\Sigma_{sn}\varepsilon_K(t_\Pi\rho))^t = \Sigma_{sn} : r_K : t$$
$$(\Sigma_{sn}\varepsilon_K(\pi\rho))^t = (\Sigma_{sn}\varepsilon_K\pi_I)^\varepsilon \triangleleft d \qquad\qquad\text{(Cl-NoCoda-T)}$$
$$(\Sigma_{sn}\varepsilon_K(\pi\rho))^n = \Sigma_{sn}(\iota^{dc/rs})_K : \eta \qquad\qquad \text{if } \pi \in \{d, c\}$$
$$(\Sigma_{sn}\varepsilon_K(\pi\rho))^n = (\Sigma_{sn}\varepsilon_K\pi_I)^n \qquad\qquad\text{(Cl-NoCoda-N)}$$
$$(\Sigma_{sn}\varepsilon_K(\pi\rho))^\flat = \Sigma_{sn} : r_K : \pi \qquad\qquad \text{if } \pi \in \{\flat, \eth\}$$
$$(\Sigma_{sn}\varepsilon_K(\pi\rho))^\flat = (\Sigma_{sn}\varepsilon_K\pi_I)^\varepsilon \triangleleft \eth \qquad\qquad\text{(Cl-NoCoda-Þ)}$$

Otherwise, if the coda of the last full syllable is empty, then:

- If the fusion consonant is ⟦t⟧ and the final onset starts with ⟦t⟧, then the result is the stem but with ⟦¬rt←⟧ as the final bridge.

- If the fusion consonant is ⟦t⟧ and the final onset starts with any other consonant, then remove the final liquid from the stem and perform fusion on it with the null consonant. Then inject ⟦d⟧ into the result.

- If the fusion consonant is ⟦n⟧ and the final onset starts with ⟦d⟧ or ⟦c⟧, then the result is the stem with the final coda being ⟦¬r⟧ or ⟦¬s⟧, respectively, and the final onset being ⟦ŋ→⟧.

- If the fusion consonant is ⟦n⟧ and the final onset starts with any other consonant, then fusion occurs as if the liquid were absent.

- If the fusion consonant is ⟦þ⟧ and the final onset starts with ⟦þ⟧ or ⟦ð⟧, then the result is the stem but with ⟦r⟧ as the final coda and the liquid in the final onset removed.

- If the fusion consonant is ⟦þ⟧ and the final onset starts with any other consonant, then remove the final liquid from the stem and perform fusion on it with the null consonant. Then inject ⟦ð⟧ into the result of doing so.

$$(\Sigma_{ss}(\pi r))^\varepsilon = (\Sigma_{ss}\pi_I) : \hat{o}r$$
$$(\Sigma_{ss}(\pi l))^\varepsilon = (\Sigma_{ss}\pi_I) : \hat{e}l \qquad\qquad\text{(Cl-Nil)}$$
$$(\Sigma_{ss}(\pi\rho))^\theta = (\Sigma_{ss}\pi_I) : \hat{e}_{gs} : \theta \qquad\quad \text{if } \theta \in \{t, \flat\} \quad\text{(Cl-TÞ)}$$
$$(\Sigma_{ss}(\pi\rho))^n = (\Sigma_{ss}\pi_I) : \hat{o}_{gs} : n \qquad\qquad\text{(Cl-N)}$$

If the coda of the last syllable is *not* empty:

- If the fusion consonant is null, then the result replaces the final ⟦r⟧ or ⟦l⟧ with ⟦←ôr→⟧ or ⟦←êl→⟧, respectively.

- If the fusion consonant is ⟦t⟧ or ⟦þ⟧, then the result is the stem without the final liquid, followed by ⟦←ê÷⟧ then the fusion consonant.

- If the fusion consonant is ⟦n⟧, then the result is the stem without the final liquid, followed by ⟦←ôn→⟧.

Stems ending in ⟦÷r→⟧ or ⟦÷l→⟧

$$(\Sigma_{ss}\mathsf{r})^{\varepsilon} = (\Sigma_{ss}\varepsilon_{\mathrm{I}}) : \hat{\mathsf{o}}\mathsf{r}$$
$$(\Sigma_{ss}\mathsf{l})^{\varepsilon} = (\Sigma_{ss}\varepsilon_{\mathrm{I}}) : \hat{\mathsf{e}}\mathsf{l} \qquad\qquad \text{(L-Nil)}$$
$$(\Sigma_{ss}\rho_{\mathrm{I}})^{\theta} = (\Sigma_{ss}\rho_{\mathrm{I}}) : \hat{\mathsf{e}}_{gs} : \theta \qquad \text{if } \theta \in \{\mathsf{t}, \mathsf{þ}\} \qquad \text{(L-TÞ)}$$
$$(\Sigma_{sn}\mathsf{n}_{\mathrm{K}}\rho_{\mathrm{I}})^{\mathsf{n}} = (\Sigma_{sn}\mathsf{n}_{\mathrm{K}}) : \mathsf{n}$$
$$(\Sigma_{ss}\rho_{\mathrm{I}})^{\mathsf{n}} = (\Sigma_{ss}\rho_{\mathrm{I}}) : \hat{\mathsf{o}}_{gs} : \mathsf{n} \qquad\qquad \text{(L-N)}$$

Likewise, there are similar rules when the final onset is ⟦÷r→⟧ or ⟦÷l→⟧ alone:

- If the fusion consonant is null, then the result replaces the final ⟦r⟧ or ⟦l⟧ with ⟦←ôr→⟧ or ⟦←êl→⟧, respectively.

- If the fusion consonant is ⟦t⟧ or ⟦þ⟧, then the result is the stem without the final liquid, followed by ⟦←ê÷⟧ then the fusion consonant.

- If the fusion consonant is ⟦n⟧, then the result is the stem without the final liquid, followed by ⟦←ôn→⟧.

  – However, if the preceding coda is ⟦¬n⟧, then the result lacks the ⟦ô⟧.

6.3.10 Stems ending in ⟦š⟧, ⟦ł⟧, or ⟦č⟧

$$\Sigma_{sn}\kappa\iota \rightsquigarrow \Sigma_{sn}I(\kappa\iota)\mathsf{i}_{gs} \qquad \text{if } \iota \in \{\check{\mathsf{s}}, \mathsf{ł}, \check{\mathsf{c}}, \mathsf{c\check{s}}\} \qquad \text{(Šłč)}$$

where $I : \Gamma \to \Gamma$ is defined as

$$I(\gamma) = \begin{cases} \mathsf{rþ} & \text{if } \gamma = \mathsf{rþ\check{s}} \\ \mathsf{rt} & \text{if } \gamma = \mathsf{rþ\check{c}} \\ \mathsf{þ\check{c}} & \text{if } \gamma = \mathsf{cþ\check{s}} \\ \mathsf{ł} & \text{if } \gamma = \mathsf{lł} \\ \check{\mathsf{c}} & \text{if } \gamma = \mathsf{t\check{c}} \\ \gamma & \text{otherwise} \end{cases}$$

If the stem ends in ⟦š⟧, ⟦ł⟧, or ⟦č⟧, then fusion is C-invariant with ⟦i⟧ inserted after the stem. However, some bridges are transformed when this occurs: ⟦¬rþš→⟧ to ⟦¬rþ→⟧, ⟦¬rþč→⟧ to ⟦¬rt→⟧, ⟦¬cþš→⟧ to ⟦¬þč→⟧, ⟦¬lł→⟧ to ⟦¬ł→⟧, and ⟦¬tč→⟧ to ⟦¬č→⟧.

6.3.11   Stems ending in $[\![c]\!]$ or $[\![g]\!]$

$$(\Sigma_{sn}\kappa c)^{\varepsilon} = \Sigma_{sn} : \kappa^{s\flat/[c\flat][c\flat]}$$
$$(\Sigma_{ss}c)^{\theta} = \Sigma_{ss} : \theta^{tn\flat/t\eta[c\flat]} \tag{C\flat}$$

- -

If the final onset is $[\![\div c \rightarrow]\!]$ and the fusion consonant is null, then the result is the stem without the final onset and with the final coda replaced with $[\![\neg c\flat]\!]$ if it was either $[\![s]\!]$ or $[\![\flat]\!]$ (otherwise, the final coda is not changed).
If the final onset is $[\![\div c \rightarrow]\!]$ and the fusion consonant is not null, then the result is the stem without the final onset, followed by $[\![\div t \rightarrow]\!]$, $[\![\div \eta \rightarrow]\!]$, or $[\![\div c\flat \rightarrow]\!]$ for the fusion consonants $[\![t]\!]$, $[\![n]\!]$, and $[\![\flat]\!]$, respectively.

$$(\Sigma_{so}v\varepsilon_K g)^{\varepsilon} = \Sigma_{so}v\varepsilon_{\Gamma}i\varepsilon_{\Omega} \qquad\qquad \text{if } v \in \{a, e, \hat{a}, \hat{e}\}$$
$$(\Sigma_{so}v\varepsilon_K g)^{\varepsilon} = \Sigma_{so}vs \tag{G-Nil}$$
$$(\Sigma_{ss}g)^{\varepsilon} = \Sigma_{ss} : i_{s\omega} \tag{G}$$

- -

If the final onset is $[\![\div g \neg]\!]$, the fusion consonant is null, then:

- If the preceding coda is empty and the preceding vowel is $[\![a]\!]$, $[\![e]\!]$, $[\![\hat{a}]\!]$, or $[\![e]\!]$, then the result is the stem but with the final onset replaced by $[\![i]\!]$.

- If the preceding coda is empty and the preceding vowel has any other value, the result is the stem but with the final onset replaced by $[\![s]\!]$.

- If the preceding coda is not empty, then the result is the stem but with $[\![i]\!]$ added at the end.

$$(\Sigma_{sn}\kappa g)^{\theta} = \Sigma_{sn}\kappa : i_{ss} : \theta \qquad\qquad \text{if } \kappa \in W$$
$$(\Sigma_{ss}g)^{\theta} = \Sigma_{ss} : \theta^{tn\flat/d\eta[g\eth]} \tag{G\eth}$$

where W is the set of codas that end in a voiceless consonant.

- -

If the final onset is $[\![\div g \rightarrow]\!]$ but the fusion consonant is not null, then:

- If the preceding coda ends with a voiceless consonant, then the result is the stem plus $[\![i]\!]$ and the fusion consonant.

- Otherwise, the result is the stem with the onset replaced with $[\![\div d \rightarrow]\!]$, $[\![\div \eta \rightarrow]\!]$, or $[\![\div g\eth \rightarrow]\!]$ for a fusion consonant of $[\![t]\!]$, $[\![n]\!]$, or $[\![\flat]\!]$, respectively.

6.3.12 Stems ending in $[\![p]\!]$

$$\Sigma_{so}\nu\varepsilon_{K}p \rightsquigarrow \Sigma_{so}\nu f \qquad\qquad\qquad \text{if } \nu \in \{e, \hat{e}\}$$
$$\Sigma_{so}\nu\varepsilon_{K}p \rightsquigarrow \Sigma_{so}\nu\varepsilon_{\Gamma}e\varepsilon_{K} \qquad\qquad\qquad\qquad\text{(P-Nil)}$$
$$\Sigma_{sn}n_{K}p \rightsquigarrow \Sigma_{sn}\varepsilon_{K} : me_{ss}$$
$$\Sigma_{ss}p \rightsquigarrow \Sigma_{ss} : e_{ss} \qquad\qquad\qquad\qquad\qquad\text{(P)}$$

If the final onset is $[\![\div p{\rightarrow}]\!]$, then fusion is C-invariant.

- If the preceding coda is empty, then the final onset is replaced with $[\![f]\!]$ if the preceding vowel is $[\![e]\!]$ or $[\![\hat{e}]\!]$ and with $[\![e]\!]$ otherwise.

- If the preceding coda is $[\![\neg n]\!]$, then the final bridge is replaced by $[\![\neg{:}me]\!]$.

- If the preceding coda is anything else, then the final onset is replaced with $[\![\div e]\!]$.

6.3.13 Stems ending in $[\![h]\!]$

$$(\Sigma_{sn}n_{K}h_{I})^{\varepsilon} = \Sigma_{sn}ns$$
$$(\Sigma_{sn}r_{K}h_{I})^{\varepsilon} = \Sigma_{sn}ls$$
$$(\Sigma_{sg}\mu\nu\kappa h_{I})^{\varepsilon} = \Sigma_{so}\xi(\mu\nu)(\kappa^{\varepsilon/s})_{\Omega}$$
$$(\Sigma_{ss}h)^{\theta} = \Sigma_{ss} : t \qquad\qquad\qquad\qquad\text{(H)}$$

If the final onset is $[\![\div h{\rightarrow}]\!]$, then:

- If the fusion consonant is null, then the result is:

  - the stem with the final bridge replaced with $[\![\neg ns]\!]$, if the preceding coda is $[\![\neg n]\!]$

  - the stem with the final bridge replaced with $[\![\neg ls]\!]$, if the preceding coda is $[\![\neg r]\!]$

  - the stem with the preceding glide and vowel ξ-transformed, if the preceding coda is anything else. In this case, a final coda of $[\![\neg s]\!]$ is added if it is empty.

- If the fusion consonant is not null, then the result replaces the final onset with $[\![t]\!]$.

6.3.14   Stems ending in $[\![\hbar]\!]$

$$\Sigma_{sn}c_K\hbar_I \rightsquigarrow \Sigma_{sn}\varepsilon_K g_I$$
$$(\Sigma_{sn}\varepsilon_K\hbar_I)^\varepsilon = \Sigma_{sn}s$$
$$\Sigma_{ss}\hbar_I \rightsquigarrow \Sigma_{ss} \tag{Ħ}$$

If the final onset is $[\![\div\hbar\rightarrow]\!]$, then:

1. If the bridge is $[\![\neg c\hbar\rightarrow]\!]$, then fusion occurs as if it were $[\![\neg g\rightarrow]\!]$ instead.

2. If the fusion consonant is null and the preceding coda is empty, then the result is the stem, but with the final onset replaced with $[\![\neg s]\!]$.

3. Otherwise, fusion is C-invariant, with the final $[\![\hbar\rightarrow]\!]$ being lost.

6.3.15   Stems ending in $[\![\eta]\!]$

$$\Sigma_{sg}\mu\nu\kappa\eta \rightsquigarrow \Sigma_{sg}\xi(\mu\nu)r \qquad\qquad \text{if } \kappa \in \{\varepsilon, n\} \tag{Ŋ-N}$$
$$(\Sigma_{sn}\kappa\eta)^\varepsilon = \Sigma_{sn}\text{lôr}_{n\omega} \qquad\qquad \text{if } \kappa \in \{r, l\}$$
$$(\Sigma_{sn}\kappa\eta)^\theta = \Sigma_{sn}l_K : \theta \qquad\qquad \text{if } \kappa \in \{r, l\} \tag{Ŋ-Rl}$$

If the final onset is $[\![\div\eta\rightarrow]\!]$, then:

1. If the preceding coda is empty or $[\![\neg n]\!]$, then fusion is C-invariant, with the final bridge replaced with $[\![\neg r]\!]$ and the preceding glide and vowel ξ-transformed.

2. If the fusion consonant is null and the preceding coda is $[\![\neg r]\!]$ or $[\![\neg l]\!]$, then the result has the final bridge replaced with $[\![\neg\text{lôr}]\!]$.

3. If the fusion consonant is not null and the preceding coda is $[\![\neg r]\!]$ or $[\![\neg l]\!]$, then the result has the final bridge replaced with $[\![\neg l\div]\!]$ plus the fusion consonant.

4. No other coda preceding the final onset is possible at this point.

6.3.16   Stems ending in any other onset with two consonants

$$[\Sigma_{sn}\varepsilon_K(\iota^1\iota^2)_I]^\theta = \Sigma_{sn}\varepsilon_K(\iota^1\iota^2)_I\hat{\imath} : \theta$$
$$\Sigma_{ss}(\iota^1\iota^2)_I \rightsquigarrow \Sigma_{ss}(\iota^1)_I i\varepsilon_K\iota^2 \tag{Ccc}$$

If the final onset has two consonants:

1. If the fusion consonant is not null and the preceding coda is empty, then the result

is the stem, followed by ⟦î⟧ then the fusion consonant.

2. Otherwise, fusion occurs as if ⟦i⟧ were inserted between the consonants of the final onset.

6.3.17   Coda-based rules

By this point, the only possible onsets at the end of the stem are ⟦n s þ f⟧.

- All two-consonant onsets have already been handled.

- ⟦c ŋ š r l ł g p č h ħ⟧ handled by their respective rules.

- ⟦v m d ð⟧ handled by final devoicing.

- ⟦t⟧ handled by onset aliasing for fusion with ε and by obstruent merging for fusion with θ.

By observation, the only possible codas in the final bridge at this point are ⟦s n þ rþ t f⟧.

- The empty coda is obviously eliminated, as all of ⟦n s þ f⟧ are valid simple codas.

- ⟦r⟧: ⟦rþ⟧ is a valid coda; other cases handled by (Epenthesis-LC)

- ⟦l⟧ handled by (Epenthesis-LC); in case of fusion with ε, ⟦lþ⟧ and ⟦lt⟧ are valid complex codas

- ⟦c⟧: ⟦¬c:n→⟧ is an invalid bridge in the first place; ⟦¬c:s→⟧, ⟦¬c:þ→⟧, and ⟦¬c:f→⟧ are interpreted as having an empty coda and a complex onset.

- ⟦cþ⟧: ⟦¬cþn→⟧, ⟦¬cþs→⟧, and ⟦¬cþf→⟧ not valid. ⟦¬cþþ→⟧ handled by obstruent merging.

Some codas are limited to certain onsets at this point:

- ⟦t⟧ can be followed only by ⟦s⟧: ⟦¬tn→⟧ not valid, ⟦¬tf→⟧ canonicalizes to a null coda, and ⟦¬tþ→⟧ handled by obstruent merging.

- ⟦þ rþ⟧ followed only by ⟦n⟧: neither can precede ⟦s⟧. ⟦þþ rþþ⟧ handled by degemination or obstruent merging. ⟦þf rþf⟧ handled by obstruent merging.

- If fusing with a null consonant, ⟦n⟧ is followed only by ⟦f⟧: ⟦¬ns⟧ and ⟦¬nþ⟧ are already valid complex codas, ⟦¬nn→⟧ handled by degemination.

The bridge $\llbracket\neg\text{ts}\rightarrow\rrbracket$

$$\Sigma_{sn}\text{ts}_\Gamma \rightsquigarrow \Sigma_{sn}\text{s} \tag{Ts}$$

If the final bridge is $\llbracket\neg\text{ts}\rightarrow\rrbracket$, then fusion is C-invariant, with the final bridge replaced by $\llbracket\text{s}\rrbracket$.

The codas $\llbracket\neg\text{s}\rrbracket$, $\llbracket\neg\text{þ}\rrbracket$, $\llbracket\neg\text{rþ}\rrbracket$, and $\llbracket\neg\text{f}\rrbracket$

$$\Sigma_{so}\nu\text{rþ}\iota \curvearrowright \Sigma_{so}\eta(\nu)\text{r} : \iota \tag{Coda-Rþ}$$
$$\Sigma_{so}\nu\kappa\iota \curvearrowright \Sigma_{so}\eta(\nu)\varepsilon : \iota \qquad \text{if } \kappa \in \{\text{s}, \text{þ}, \text{f}\} \tag{Coda-Sþf}$$

where $\eta(\nu) = \nu^{\text{aeio}/\hat{a}\hat{e}\hat{\imath}\hat{o}}$.

If the final coda is $\llbracket\neg\text{s}\rrbracket$, $\llbracket\neg\text{þ}\rrbracket$, $\llbracket\neg\text{rþ}\rrbracket$, or $\llbracket\neg\text{f}\rrbracket$, then fusion occurs as if the preceding vowel is hatted and the final coda loses its last consonant. The following onset is unchanged.

The coda $\llbracket\neg\text{n}\rrbracket$

$$\Sigma_{sn}\text{nf}_\Gamma \rightsquigarrow \Sigma_{sn}\text{f}$$
$$\Sigma_{sn}\text{n}_K\iota \rightsquigarrow \Sigma_{sn}\text{n} \tag{Coda-N}$$

If the final coda is $\llbracket\neg\text{n}\rrbracket$, then fusion is C-invariant, with the bridge replaced with $\llbracket\neg\text{f}\rrbracket$ if the following onset is $\llbracket\text{f}\leftarrow\rrbracket$ and with $\llbracket\neg\text{n}\rrbracket$ otherwise.

6.3.18   Properties of stem fusion

Fusion with $\llbracket\text{t}\rrbracket$ is invariant (i.e. yields the same stem as the original) only when the final onset of the stem is $\llbracket\text{t}\rightarrow\rrbracket$.

Fusion with $\llbracket\text{n}\rrbracket$ is invariant only when the final bridge of the stem is $\llbracket\neg\text{nn}\rightarrow\rrbracket$.

Fusion with $\llbracket\text{þ}\rrbracket$ is invariant only when the final onset of the stem is $\llbracket\text{þ}\rightarrow\rrbracket$ or $\llbracket\text{cþ}\rightarrow\rrbracket$.

Chapter 7

Layer 2s and 3s: the spoken layers

7.1 Layer 2s

TODO: deal with complex codas before a clitic boundary

Traditionally, only manifested grapheme phrases are considered to be significant in the conversion from layer 1 to layer 2s. However, other graphemes such as punctuation can affect prosody.

In some more conservative dialects, ⟨f·⟩ is pronounced as /ʍ/ and ⟨v·⟩ is pronounced as /w/.

Layer 2 has a two-way tone contrast between vowels: the high tone (H) is the default, being contrasted with the low tone (L). For historical reasons, the presence or absence of a low tone on a vowel is called [±creaky].

7.2 Layer 3s

The conversion from layer 2s to layer 3s is comparatively more complex.

7.2.1 Segmental changes

First, the following changes are made:

- kθ → $\widehat{xθ}$

- ʕ → ħ / V[+creaky] _

- n → m / _ C[+labial]

- n → ɱ / _ C[+labiodental]

- n → n̪ / _ C[+dental]

- n → ɳ / _ C[+retroflex]

- n C_1[+velar] → ɲ C_1[+palatal]

- n → ŋ / _ C[+lateral] V[+front]

- sʂ → ʂː

- C_1={ɹ, ɭ} → w / C_1V _

MGPs	IPA	MGPs	IPA
c	k	p	p
e	e	t	t
n nd	n	č	$\widehat{tʂ}$
ŋ ŋg	ŋ	î	ì
v m· vp	v	j	j
o	o	i	i
s	s	d dt	d
þ t·	θ	ð d· ðþ	ð
š č·	ʂ	h c·	x
r	ɹ	ħ g·	ʕ
l lł	l	ê	è
ł	ɬ	ô	ò
m mp	m	â	à
a	a	u	ṳ
f p·	f	f· v· ð·	∅
g gc	g		

Table 7.1: Layer 1 to layer 2s conversions.

- l → ɾ / V[+back] _ V

- θ → θ̠ / s_, _s, _ʂ

- ʂj → ʃ

- ʂ → ʃ / _ i

- $\widehat{tʂ}$j → $\widehat{tʃ}$

- $\widehat{tʂ}$ → $\widehat{tʃ}$ / _ i

- sj → ɕ

- s → ɕ / _ i

- lj → ɬ / C[+plosive, −voiced] _ (often)

- lj → ɮ̊ / C[+plosive, +voiced] _ (sometimes)

- lj → ɮ̊ (rarely)

- C_1[+voiced, +plosive] → C_1[−voiced, +ejective] / ɬ

- C_1[+voiced, +plosive] → C_1[−voiced, −aspirated] / C_2[−voiced]

Plosives in a coda are unreleased. All unvoiced plosives and affricates outside of a coda are aspirated. Voiced plosives are sometimes partially devoiced or breathy-voiced after a vowel of the same word.

The words ⟨cenþ'pe⟩ and ⟨cenþ've⟩ are pronounced as [kenθe] and as [kenðe].

7.2.2 Stress

In order to describe tone, we must introduce the concept of "STRESS", which is placed according to the following rules:

- Syllables with a high tone have a priority over syllables with a low tone – that is, a syllable with a low tone will be selected only if the word in question has only low-tone syllables.

- If the 2nd-to-last syllable has a vowel of [i] or [ì] and an empty coda, then the syllables are chosen in the order **3rd-to-last → 2nd-to-last → last → 4th-to-last → ... → first**.

- If the coda of the final syllable is either empty or is [s] or [n], then:

  - If the 3rd-to-last syllable has a nonempty coda but the 2nd-to-last syllable does not, then the syllables are chosen in the order **3rd-to-last → 2nd-to-last → last → 4th-to-last → ... → first**.

  - Otherwise, the syllables are chosen in the order **2nd-to-last → 3rd-to-last → last → 4th-to-last → ... → first**.

- If the coda of the final syllable is a complex coda, then the syllables are chosen in the order **last → 3rd-to-last → 2nd-to-last → 4th-to-last → ... → first**.

- If the coda is anything else, then the syllables are chosen from end to start: **last → 2nd-to-last → 3rd-to-last → ... → first**.

- Monosyllabic function words generally lack any stressed syllable.

7.2.3   Tone

While Ŋarâþ Crîþ has two tone levels phonemically, their realizations in the phonetic level is more complex. It is common to describe phonetic tone using seven levels, from 0 (the lowest) to 6 (the highest). Each syllable has one or more tones.

We introduce the concept of a TONE ACCOUNTING UNIT (TAU), which is the level at which tones are realized. That is, the tone of a syllable depends only on the contents of the TAU in which it lies. Instances of content words occupy different TAUs from each other, but some function words occupy the same TAU as the preceding or following word (in particular, such words have no stressed syllable and are confined to a relatively fixed position):

- Head particles, nominalized verb particles, and monosyllabic determiners occupy the same TAU as the following word.

- ⟨so⟩, monosyllabic relationals ... occupy the same TAU as the preceding word.

(Stress is accounted by orthographic word, not by TAU.)

First, two adjacent vowels are fused into a diphthong if the vowels are not identical, the first vowel is stressed, the second vowel is [i] or [ɥ], and the syllable to which the second vowel belongs can be interpreted as having an empty coda. For purposes of tonekeeping, a diphthong is considered to be composed of two different syllables.

In general, unstressed H and L syllables have tone levels 4 and 2, respectively; stressed H and L syllables have tone levels 5 and 1. However, an open H or L syllable before a stressed syllable gets level 3 or 1, respectively, instead. Diphthongs get different values: 65 for HH, 53 for HL, 13 for LH, and 21 for LL.

If two adjacent copies of an identical vowel have the same tone level at this stage, then the one closer to the stressed syllable rises by one tone level and the one farther from it falls by one level.

A tone level of n is then changed into a tone contour in the following situations, unless doing so would result in an out-of-bounds tone level:

- n to ($n : n + 1$): when the coda is [s͡t] or [x͡θ]

- n to ($n : n − 1$): when the coda is [rθ] or [ns]

- n to ($n + 1 : n$): when the nucleus is preceded by two or more voiceless consonants

In addition, other syllables change their tone levels:

- Raise the tone level by 1 (if it is not already 6) if the coda is a voiceless fricative, or if the coda is [x͡θ].

- Lower the tone level by 1 if the coda is [ɹ].

- Lower the tone level by 1 if the coda is a nasal followed by a voiced obstruent or nasal.

Finally, if all tones have a level of 4 or higher, then the lowest tone (breaking ties by preferring later tones) is lowered to 3, and all other tones in the same syllable are lowered by the same amount. All level-3 tones are then lowered to level 2.

7.2.4   Isochrony

The isochrony of Ŋarâþ Crîþ falls somewhere between syllable and mora timing, where:

- The body of a syllable is always 1 unit long.

- The coda of a syllable is between 0 and 1 unit long, with the hierarchy /t, k < n < l, ɹ < f, s, θ, ɹθ, kθ < s͡t, lt, ns, ls, nθ/.

- Codas are shortened after two consecutive vowels: for instance, the ⟨l⟩ in ⟨moriel⟩ is pronounced for less time than that in ⟨mjarel⟩.

Chapter 8

Layers 2w – 4w: The typography of Ŋarâþ Crîþ

In principle, layer 2w is the highest written layer needed to write in Ŋarâþ Crîþ. (Note that there is only one valid layer-2w representation for each layer-1 string; in other words, changing a valid layer-2w string in a way that preserves the layer-1 representation always results in an invalid layer-2w string.) However, speakers of Ŋarâþ Crîþ tend to value aesthetics, even in writing. Thus, a mastery of handwriting beyond layer 2w is considered crucial.

Even though movable type has been available for a long time, prominent parts of printed materials (such as titles) often continued to use plates engraved from handwriting. Eventually, typography and calligraphy were considered parts of the same discipline, leading to typefaces supporting more features from the latter. Even today, logos often opt for lettering over typefaces. Because of this unification, we use the term TYPOGRAPHY to refer to the discipline of laying out writing in general.

Although a full treatment of Ŋarâþ Crîþ typography is out of scope for this grammar, this section gives an overview of the concerns at hand.

8.1   Kerning

Cenvos is a script that absolutely requires kerning. To start, some glyphs such as ²⟨e⟩ and ²⟨m⟩ have long leftward tails that necessitate kerning with glyphs such as ²⟨s⟩ or ²⟨o⟩, which lack descenders, or even some glyphs with descenders such as ²⟨j⟩.

Other glyphs such as ²⟨j⟩ and ²⟨ê⟩ have shorter leftward descenders that also require kerning with following glyphs.

²⟨â⟩ has a descender in the opposite direction; thus, it must kern with certain *preceding* glyphs.

Diagonal strokes with matching slopes (such as in ²⟨âv⟩ or ²⟨rj⟩) should be kerned to bring them closer.

Moreover, even pairs are sometimes insufficient. Since ²⟨e⟩ and ²⟨i⟩ are kerned so closely, ²⟨ei⟩ must itself kern with glyphs such as ²⟨s⟩.

8.2   Ligation and shaping

Another important aspect of typography is the use of ligatures (beyond the required ones). The concepts of higher written layers and the hierarchy of graphic variations have been developed

âv   câ   ên   jo   mj   es
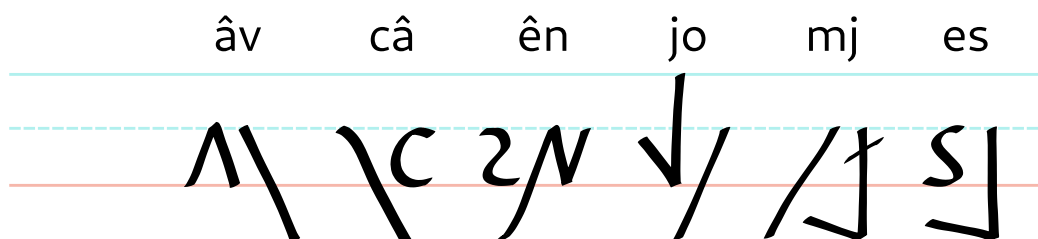
Figure 8.1: Examples of glyph pairs that require kerning: ²⟨es⟩, ²⟨mj⟩, ²⟨jo⟩, ²⟨ên⟩, ²⟨câ⟩, and ²⟨âv⟩.

eig   eis

Figure 8.2: Kerning of ²⟨eis⟩ and ²⟨eig⟩. In ²⟨eis⟩, ²⟨ei⟩ has room to kern with ²⟨s⟩. ²⟨ei⟩ obviously cannot kern with ²⟨g⟩; that is, in ²⟨eig⟩, ²⟨i⟩ and ²⟨g⟩ are spaced *farther apart* than usual.
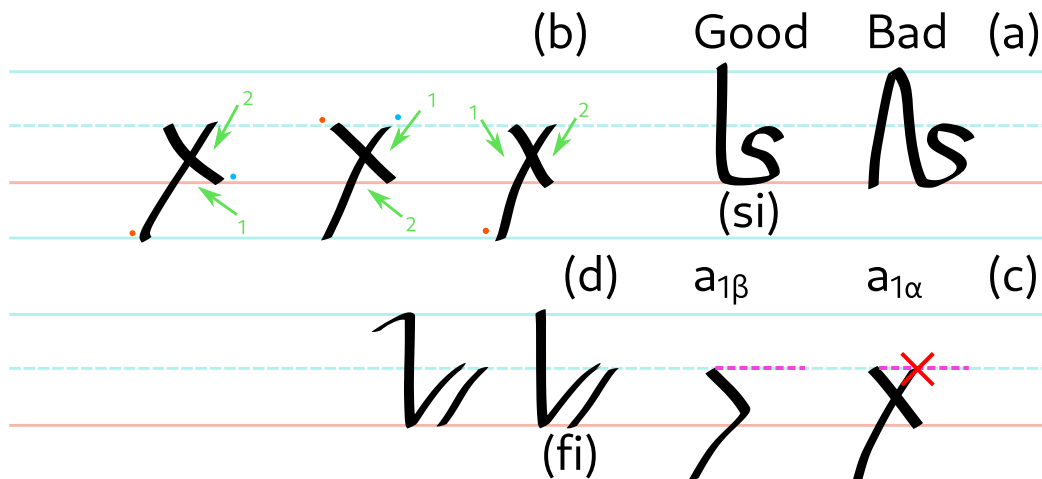
Figure 8.3: (a) An example of a bad ligature, in which the first glyph ends at the baseline and the second glyph starts at the top line. In the next example, the second glyph starts at the baseline as well, avoiding an awkward joining point. (b) A difference in stroke order (shown with the glyph $^2\langle a\rangle$) can change the starting points (shown as blue dots) and the ending points (shown as red dots) of a glyph. ($^3\langle a_{1\alpha}\rangle$ does not have a starting point suitable for ligation.) (c) The first stroke of $^3\langle a_{1\alpha}\rangle$ blocks ligation from a previous glyph, but such a stroke is absent in $^3\langle a_{1\beta}\rangle$. (d) The default variant $^4\langle i_{2\alpha}\rangle$ in comparison to $^4\langle i_{2\alpha}{}^S\rangle$ (both ligated after $^4\langle f_{1\alpha}\rangle$).

to try to formalize this problem.

To explain the idea behind this model, we note that a good ligature will have the end of one glyph near the start of the next. The starting and ending points of a glyph, in turn, depend on the order in which the strokes are written.

Furthermore, natural handwriting tends to join certain strokes together. In some cases, this joining can affect how a glyph ligates; for instance, $^3\langle a_{1\alpha}\rangle$ cannot ligate with the previous character (ligating through the middle would cause a stroke collision with stroke 2 of $^3\langle a_{1\alpha}\rangle$), but $^3\langle a_{1\beta}\rangle$, in which the two strokes are joined without a loop, can do so.

In addition, rapid handwriting often produces stylistic variations of glyphs. For example, $^3\langle i_{2\alpha}\rangle$ ("$^2\langle i\rangle$ with the stroke going upward") can often end in a leftward swash at the end of the stroke. Since this deviation does not create any ambiguity, it has been accepted, yielding the stylistic variant $^4\langle i_{2\alpha}{}^S\rangle$.

We now cover the formalism itself. Layers 2w*, 3w, and 4w are aesthetic layers; the writer decides the precise sequence of glyphs to realize a layer-2w string in higher layers. Nonetheless, not all layer-3w or -4w strings are valid, even those that correspond to valid layer-2w strings; for instance, $^3\langle \overline{s_1 i_1}\rangle$ is not a valid realization of $^2\langle si\rangle$ because it requires a base-to-top ligation.

Only some glyphs PARTICIPATE in typesetting. Notably, all letters participate, but no numerals do so, nor does the space.

Each participating layer-2w* glyph has a hierarchy of variations as follows:

- At the top level is the layer-2w* glyph itself.

- These are divided into STROKE-ORDER VARIANTS, which differ only in stroke order. All strokes must be preserved, and no loops may be introduced or removed, but the rel-
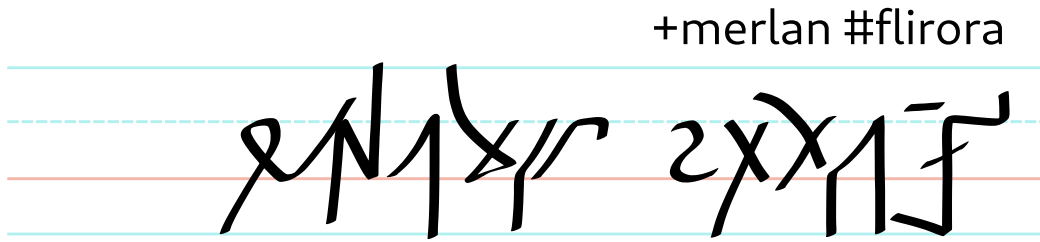
Figure 8.4: What $^3\langle\overline{+_{1\alpha}\mathrm{me}_{1\alpha}}\,\overline{\mathrm{r}_{1\alpha}\mathrm{l}_{2\beta}}\mathrm{a}_{1\alpha}\mathrm{n}_{1\alpha}\;\overline{\#_{1\alpha}\mathrm{f}_{1\alpha}\mathrm{l}_{2\delta}\mathrm{i}_{1\beta}}\mathrm{r}_{1\alpha}\overline{\mathrm{o}_{1\alpha}\mathrm{r}_{2\alpha}\mathrm{a}_{3\beta}}\rangle$ would look like.

ative stroke order might be different, and some strokes may be written in the reverse direction; furthermore, a stroke may be split at a turn, and two strokes may be joined where one ends and another begins. These are denoted with subscript numerals: $^2\langle\mathrm{a}\rangle$ has variants $^3\langle\mathrm{a}_1\rangle$, $^3\langle\mathrm{a}_2\rangle$, and $^3\langle\mathrm{a}_3\rangle$. Variant 1 is considered the 'canonical' variant.

- Each stroke-order variant has one or more TOPOLOGICAL VARIANTS, which may join strokes together, cause two different strokes to touch each other when they did not (or vice versa), or introduce or remove loops. Lengthening or shortening strokes to alter ligation properties also falls under this level. Topological variants are distinguished using lowercase Greek letters. For instance, $^3\langle\mathrm{a}_1\rangle$ has three topological variants: $^3\langle\mathrm{a}_{1\alpha}\rangle$, $^3\langle\mathrm{a}_{1\beta}\rangle$, $^3\langle\mathrm{a}_{1\gamma}\rangle$. α is reserved for the canonical variant, which preserves all strokes, although it is not always the most common variant.

- Each topological variant has one or more STYLISTIC VARIANTS, which can modify the strokes of the glyph themselves. For instance, $^4\langle\mathrm{i}_{2\alpha}\rangle$ is the topological variant of $^2\langle\mathrm{i}\rangle$ in which the stroke goes from the base to the top. It has two stylistic variants: $^4\langle\mathrm{i}_{2\alpha}\rangle$ is the default one, and $^4\langle\mathrm{i}_{2\alpha}{}^S\rangle$ has a swash to the left at the top of the stroke. Note that the 'canonical' stylistic variant has no superscript letter, while the other variants do.

Layer 2w is transliterated using mostly the same symbols as the layer-1 romanization, but required ligatures are notated with an overline (such as in $^2\langle\overline{\mathrm{me}}\rangle$ for 킈), and final forms are written as if they were ligatures with a special \$ symbol: $^2\langle\mathrm{c}\$\rangle$ for ᒋ. Layer 2w* introduces DISCRETIONARY LIGATURES, which are similarly marked in our notation. By DISCRETIONARY LIGATURE, we mean a ligature that the writer may choose to use but is not obligated to do so, and that cannot be derived by simply connecting the ending stroke of one glyph to the starting stroke of another.

Layer 3w works on topological variants. The overline denotes optional ligatures between topological variants; it is now omitted for required and discretionary ligatures, which are their own layer-2w* glyphs in their own right: $^3\langle\overline{+_{1\alpha}\mathrm{me}_{1\alpha}}\,\overline{\mathrm{r}_{1\alpha}\mathrm{l}_{2\beta}}\mathrm{a}_{1\alpha}\mathrm{n}_{1\alpha}\;\overline{\#_{1\alpha}\mathrm{f}_{1\alpha}\mathrm{l}_{2\delta}\mathrm{i}_{1\beta}}\mathrm{r}_{1\alpha}\overline{\mathrm{o}_{1\alpha}\mathrm{r}_{2\alpha}\mathrm{a}_{3\beta}}\rangle$ transliterates a particularly fancy realization of $\langle$+merlan #flirora$\rangle$.

Layer 4w works on stylistic variants. In the transliteration, the overline is used as in 3w.

Layer 3w can be thought of as the 'ligation layer'; similarly, layer 4w can be thought of as the 'shaping layer'.

Table 8.1 describes the canonical stroke order of each glyph, and Table 8.2 lists the stroke-order variants.

Table 8.1: Canonical stroke orders for layer-2w* glyphs. (Glyphs in parentheses are discretionary ligatures.)

Glyph	Stroke order
c	(1) Counterclockwise
e	(1) From top right to bottom left
n	(1) From top left to bottom right
ŋ	(1) From top right to bottom
v	(1) From right to left
o	(1) From top to bottom left
s	(1) From top right to bottom left
þ	(1) Rightmost stroke from right to left (2) Leftmost stroke from right to left
š	(1) From top right to bottom left
r	(1a) From bottom to top (1b) to left
l	(1a) r-stroke from bottom to top (1b) to left (2) Intersecting stroke from right to left
ł	(1a) o-stroke from top to bottom (1b) to left (2) Intersecting stroke from right to left
m	(1) e-stroke from top right to bottom left (2) Intersecting stroke from right to left
a	(1) þ-sloping stroke from left to right (2) f-sloping stroke from right to left
f	(1) Rightmost stroke from right to left (2) Leftmost stroke from right to left
g	(1) From top right to bottom
p	(1) From right to bottom
t	(1a) v-stroke from right to top (1b) to left (2) Vertical stroke from top to bottom
č	(1) Ascending stroke from top to bottom (2) f-sloping stroke from right to left
î	(1) From bottom right to top left
j	(1) From top right to bottom left
i	(1) From top to bottom
d	(1) þ-sloping stroke from left to right (2) f-sloping stroke from right to left
ð	(1) Leftmost þ-sloping stroke from left to right (2) Rightmost þ-sloping stroke from left to right (3) f-sloping stroke from right to left
h	(1) From right to left

Table 8.1: Canonical stroke orders for layer-2w* glyphs. (Glyphs in parentheses are discretionary ligatures.) (Continued)

Glyph	Stroke order
ħ	(1) Clockwise, starting and ending at the top
ê	(1) From top right to bottom left
ô	(1) From top to bottom
â	(1) From bottom right to top left
u	(1) o-stroke from top to bottom left (2) Rightmost dot (3) Leftmost dot
w	(1) From top to bottom
x	(1) Stroke with descender, starting from the top-right corner and ending on the descender (2) Wave stroke, from right to left
y	(1) From right to left
z	(1) From right to left
c̄$	(1) From right to bottom left
ŋ̄$	(1) ŋ-stroke from top right to bottom (2) Intersecting stroke from right to left
ēē	(1) e-stroke from top right to bottom left (2) Overbar from right to left
ēm	(1) e-stroke from top right to bottom left (2) Roof from right to lef
m̄e	(1) e-stroke from top right to bottom left (2) Intersecting stroke from right to left (3) Overbar from right to left
m̄m̄	(1) e-stroke from top right to bottom left (2) Intersecting stroke from right to left (3) Roof from right to left
j̄â	(1) j-stroke from top right to bottom left (2) Ring clockwise (starting and ending point unspecified)
âj̄	(1) â-stroke from bottom right to top left (2) Ring clockwise (starting and ending point unspecified)
w̄w̄	(1) w-stroke, from top to bottom (2) Ring clockwise (starting and ending point unspecified)
x̄x̄	(1) Stroke with descender, starting from the top-right corner and ending on the descender (2) Wave stroke, from right to left (3) Bottom-right tick (4) Top-left tick

Table 8.1: Canonical stroke orders for layer-2w* glyphs. (Glyphs in parentheses are discretionary ligatures.) (Continued)

Glyph	Stroke order
ȳȳ	(1) y-stroke, from right to left (2) Tick, from top to bottom
z̄z̄	(1) z-stroke, from right to left (2) Ring clockwise (starting and ending point unspecified)
#	(1) From bottom right to top left
+	(1) From top right to bottom left
+*	(1) From top right to bottom left (2) Vertical stroke from top to bottom (3) f-sloping stroke from top right to bottom left (4) þ-sloping stroke from bottom right to top left
@	(1) Vertical stroke from top to bottom (2) v-stroke from right to left
*	(1) Vertical stroke from top to bottom (2) Horizontal stroke from right to left (3) f-sloping stroke from top right to bottom left (4) þ-sloping stroke from bottom right to top left
&	(1) Sinusoid from right to left (2) Arrowhead
.	(1) Main stroke from right to left (2) Arrowhead
;	(1) Main stroke from right to left (2) Arrowhead
?	(1) Main stroke from right to left (2) Arrowhead
!	(1) Main stroke from right to left (2) Arrowhead
{	(1) From right to left
}	(1) From right to left
«	(1) From top to bottom
»	(1) Vertical stroke from top to bottom (2) Left cornered edge from top to bottom
/	(1) From bottom, curving at the top toward the left, then descending while crossing to the right half and possibly to the left again
(r̄a)	(1) Stroke as in ²⟨r⟩, but with the end extending to the descender line (2) Stroke intersecting the second part of stroke 1
(r̄o)	(1a) The stem of the ²⟨r⟩-stroke, from bottom to top (1b) A ²⟨v⟩-stroke from right to left
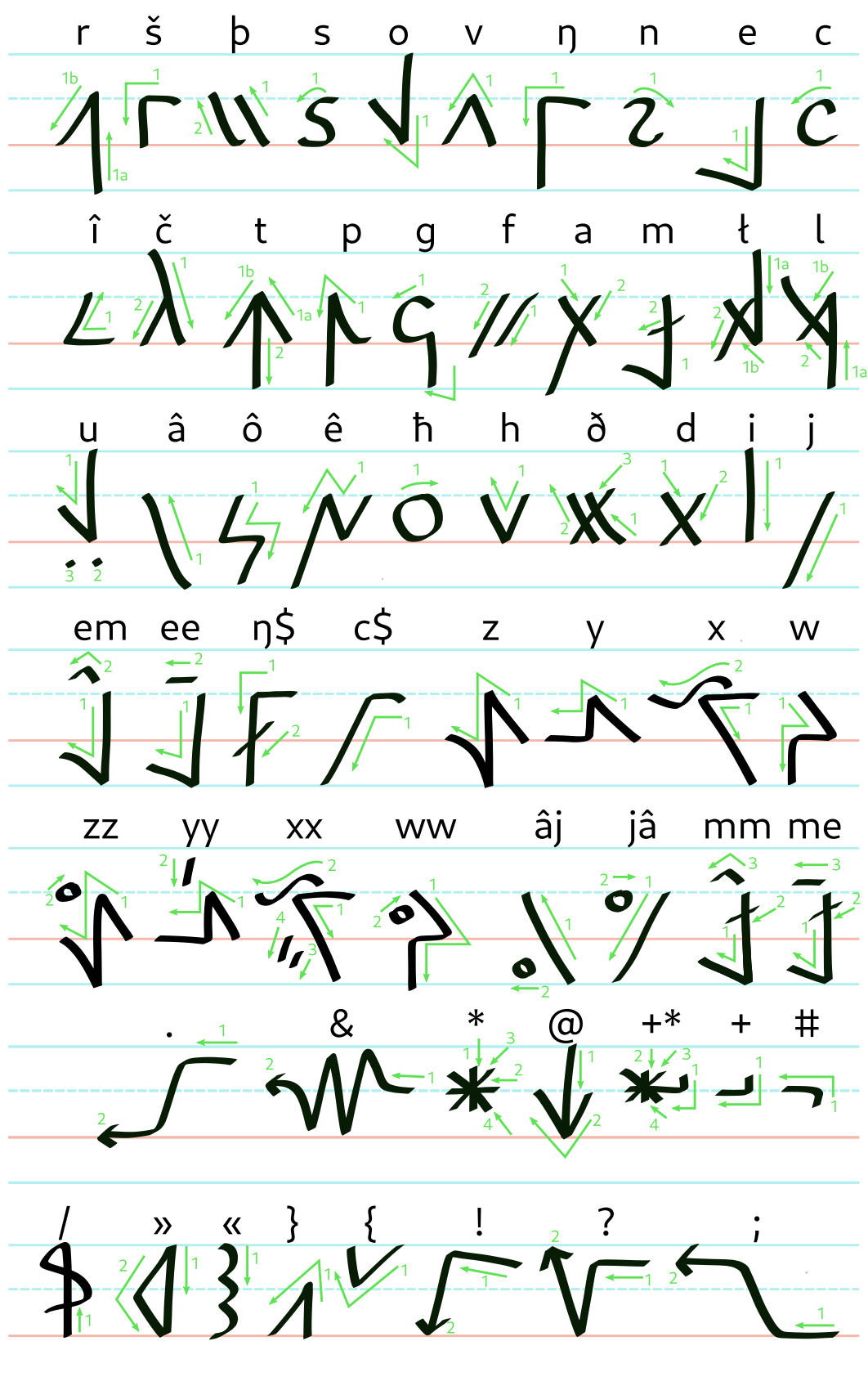
Figure 8.5: Canonical stroke orders of layer-2w glyphs.
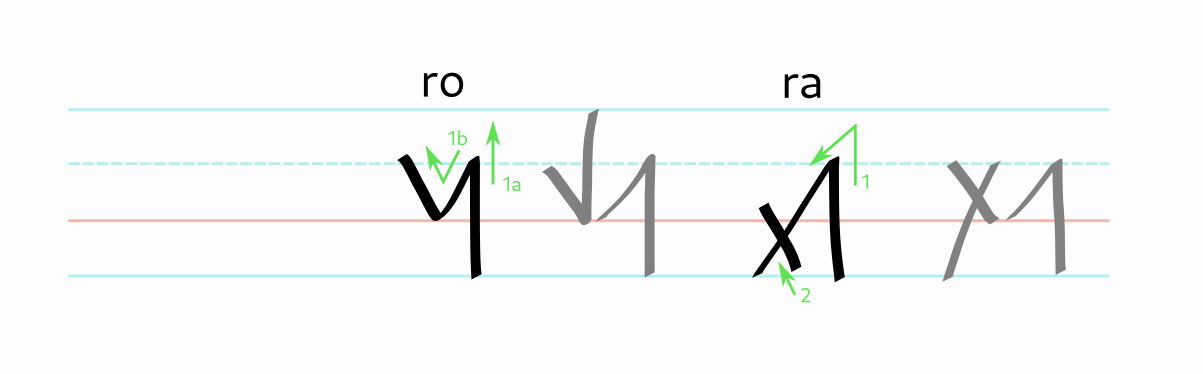
Figure 8.6: Stroke orders of discretionary ligatures.

Table 8.2: Stroke order variants of glyphs, in reference to the canonical stroke order (Table 8.1). The prime symbol denotes the reverse direction; the plus denotes a fused stroke.

Glyph	1	2	3	4	5	6
c	1					
e	1					
n	1	1′				
ŋ	1					
v	1					
o	1					
s	1					
þ	1 2					
š	1					
r	1	1a′ 1b				
l	1 2	1a′ 1b 2				
ł	1 2					
m	1 2	2′ 1	1 2′			
a	1 2	2 1′	1′ 2			
f	1 2					
g	1					
p	1					
t	1 2	1a+2 1b				
č	1 2					
î	1					
j	1					
i	1	1′				
d	1 2	2 1′	1′ 2			
ð	1 2 3	3 1 2				
h	1					
ħ	1					
ê	1					
ô	1					
â	1					
u	1 2 3					
w	1					

Table 8.2: Stroke order variants of glyphs, in reference to the canonical stroke order (Table 8.1). The prime symbol denotes the reverse direction; the plus denotes a fused stroke.

Glyph	1	2	3	4	5	6
x	1 2					
y	1					
z	1					
c$	1					
ŋ$	1 2	1 2′				
ee	1 2	2 1				
em	1 2	2 1				
me	1 2 3	2′ 1 3	1 2′ 3	3 1 2	3 2′ 1	3 1 2′
mm	1 2 3	2′ 1 3	1 2′ 3	3 1 2	3 2′ 1	3 1 2′
jâ	1 2					
âj	1 2					
ww	1 2					
xx	1 2 3 4					
yy	1 2					
zz	1 2					
#	1					
+	1					
+*	1 2 3 4					
@	1 2					
*****	1 2 3 4					
&	1 2					
.	1 2					
;	1 2					
?	1 2					
!	1 2					
{	1					
}	1					
«	1					
»	1 2	1+2′				
/	1					
(ra)	1 2					
(ro)	1	1a′ 1b				

Table 8.3: Topological variants of glyphs: ligation properties and descriptions. (Stroke numbers are in reference to the stroke-order variant, not the 2w glyph.)

Glyph	Start join	End join	Description	Use
$c_{1\alpha}$	M	—	Default	Default
$e_{1\alpha}$	Mv	D	Default	Default
$e_{1\beta}$	Bv	D	Stem shortened to start at base	After glyphs that end at the base
$n_{1\alpha}$	—	—	Default	Default

Table 8.3: Topological variants of glyphs: ligation properties and descriptions. (Stroke numbers are in reference to the stroke-order variant, not the 2w glyph.)

Glyph	Start join	End join	Description	Use
$\mathbf{n}_{2\alpha}$	B	M	Default	Before glyphs that start at the mid
$\mathbf{\eta}_{1\alpha}$	M	Dv	Default	Default
$\mathbf{v}_{1\alpha}$	B	B	Default	Default
$\mathbf{o}_{1\alpha}$	Tv	M	Default	Default
$\mathbf{o}_{1\beta}$	M	M	Loop on stroke to allow for mid ligation with previous glyph	After glyphs that end at the mid
$\mathbf{s}_{1\alpha}$	M	B	Default	Default
$\mathbf{þ}_{1\alpha}$	B	M	Default	Default
$\mathbf{þ}_{1\beta}$	B	M	Strokes 1 and 2 connected	Stylistic
$\mathbf{š}_{1\alpha}$	M	Bv	Default	Default
$\mathbf{r}_{1\alpha}$	Dv	B	Default	Default
$\mathbf{r}_{2\alpha}$	Mv	B	Default	Rare (β form is more common), but sometimes after glyphs that end at the mid
$\mathbf{r}_{2\beta}$	Bv	B	Stroke 1 disconnected from 2 (starts at base instead)	After glyphs that end at the base
$\mathbf{l}_{1\alpha}$	Dv	M	Default	Default
$\mathbf{l}_{1\beta}$	Dv	M	Strokes 1 and 2 connected	Stylistic
$\mathbf{l}_{2\alpha}$	Mv	M	Default	Rare (β form is more common), but sometimes after glyphs that end at the mid
$\mathbf{l}_{2\beta}$	Bv	M	Stroke 1 disconnected from 2 (starts at base instead)	After glyphs that end at the base
$\mathbf{l}_{2\gamma}$	Mv	M	Strokes 2 and 3 connected	Rare (δ form is more common), but stylization of α
$\mathbf{l}_{2\delta}$	Bv	M	Stroke 1 disconnected from 2 (starts at base instead), and strokes 2 and 3 connected	Stylization of β
$\mathbf{ł}_{1\alpha}$	Tv	BD	Default	Default
$\mathbf{ł}_{1\beta}$	Tv	BD	Strokes 1 and 2 connected	Stylistic
$\mathbf{m}_{1\alpha}$	Mv	—	Default	Default
$\mathbf{m}_{2\alpha}$	—	D	Default	Rare; β form is more common
$\mathbf{m}_{2\beta}$	—	D	Strokes 1 and 2 connected	Stylistic

Table 8.3: Topological variants of glyphs: ligation properties and descriptions. (Stroke numbers are in reference to the stroke-order variant, not the 2w glyph.)

Glyph	Start join	End join	Description	Use
$m_{3\alpha}$	Mv	—	Default	Rare; β form is more common
$m_{3\beta}$	Mv	—	Strokes 1 and 2 connected	Stylistic
$a_{1\alpha}$	—	D	Default	Default
$a_{1\beta}$	M	D	Strokes 1 and 2 fused, with 2 beginning where 1 ends (without a loop)	Stylistic ('italic' variant)
$a_{1\gamma}$	—	D	Strokes 1 and 2 connected (with a loop)	Stylistic
$a_{2\alpha}$	M	M	Default	After glyphs that end at the mid
$a_{2\beta}$	M	M	Strokes 1 and 2 connected (rare)	Stylistic
$a_{3\alpha}$	B	D	Default	After glyphs that end at the base
$a_{3\beta}$	B	D	Strokes 1 and 2 connected	Stylistic
$f_{1\alpha}$	M	B	Default	Default
$f_{1\beta}$	M	B	Strokes 1 and 2 connected	Stylistic
$g_{1\alpha}$	M	Dv	Default	Default
$p_{1\alpha}$	B	Dv	Default	Default
$t_{1\alpha}$	B	—	Default	Default
$t_{2\alpha}$	B	B	Default	Stylistic
$č_{1\alpha}$	T	B	Default	Default
$î_{1\alpha}$	B	M	Default	Default
$j_{1\alpha}$	M	D	Default	Default
$i_{1\alpha}$	Tv	Bv	Default	Default
$i_{1\beta}$	M	Bv	Loop on stroke to allow for mid ligation with previous glyph	After glyphs that end at the mid
$i_{2\alpha}$	B	T	Default	After glyphs that end at the base
$d_{1\alpha}$	—	B	Default	Default
$d_{2\alpha}$	M	M	Default	After glyphs that end at the mid
$d_{3\alpha}$	B	B	Default	After glyphs that end at the base
$ð_{1\alpha}$	B	—	Default	Default

Table 8.3: Topological variants of glyphs: ligation properties and descriptions. (Stroke numbers are in reference to the stroke-order variant, not the 2w glyph.)

Glyph	Start join	End join	Description	Use
$ð_{1\beta}$	B	—	Strokes 1 and 2 connected	Stylistic
$ð_{1\gamma}$	B	—	Strokes 2 and 3 connected	Stylistic
$ð_{1\delta}$	B	—	Strokes 1, 2, and 3 connected	Stylistic
$ð_{2\alpha}$	M	M	Default	After glyphs that end at the mid, or as a stylization
$ð_{2\beta}$	M	M	Strokes 2 and 3 connected	Stylistic
$h_{1\alpha}$	M	M	Default	Default
$ħ_{1\alpha}$	—	—	Default	Default
$ê_{1\alpha}$	M	D	Default	Default
$ê_{1\beta}$	M	—	Stroke bends to the right at the end, preventing linkage with the next glyph	Stylistic
$ô_{1\alpha}$	M	D	Default	Default
$â_{1\alpha}$	D	M	Default	Default
$u_{1\alpha}$	Tv	DB	Default	Default
$u_{1\beta}$	M	DB	Loop on stroke 1 to allow for mid ligation with previous glyph	After glyphs that end at the mid
$w_{1\alpha}$	M	Dv	Default	Default
$x_{1\alpha}$	M	M	Default	Default
$y_{1\alpha}$	B	B	Default	Default
$z_{1\alpha}$	B	B	Default	Default
$c\$_{1\alpha}$	M	D	Default (in practice, final forms have no successor to ligate to)	Default
$ŋ\$_{1\alpha}$	M	DB	Default	Default
$ŋ\$_{2\alpha}$	M	—	Default	Rare; β form is more common
$ŋ\$_{2\beta}$	M	—	Strokes 1 and 2 connected	Stylistic
$ee_{1\alpha}$	Mv	M	Default	Default
$ee_{2\alpha}$	M	D	Default	Sometimes after a glyph that ends at the mid
$ee_{2\beta}$	M	D	Strokes 1 and 2 connected (uncommon)	Stylistic
$em_{1\alpha}$	Mv	M	Default	Default
$em_{2\alpha}$	M	D	Default	Stylistic

Table 8.3: Topological variants of glyphs: ligation properties and descriptions. (Stroke numbers are in reference to the stroke-order variant, not the 2w glyph.)

Glyph	Start join	End join	Description	Use
em$_{2\beta}$	M	D	Strokes 1 and 2 connected (uncommon)	Stylistic
me$_{1\alpha}$	Mv	M	Default	Default
me$_{2\alpha}$	—	M	Default	Stylistic
me$_{2\beta}$	—	M	Strokes 1 and 2 connected	Stylistic
me$_{3\alpha}$	Mv	M	Default	Stylistic
me$_{3\beta}$	Mv	M	Strokes 1 and 2 connected	Stylistic
me$_{3\gamma}$	—	M	Strokes 2 and 3 connected	Stylistic
me$_{3\delta}$	—	M	Strokes 1, 2, and 3 connected	Stylistic
me$_{4\alpha}$	M	D	Default	Sometimes after a glyph that ends at the mid
me$_{4\beta}$	M	D	Strokes 1 and 2 connected	Stylistic
me$_{5\alpha}$	M	D	Default	Sometimes after a glyph that ends at the mid
me$_{5\beta}$	M	D	Strokes 1 and 2 connected	Stylistic
me$_{5\gamma}$	M	D	Strokes 2 and 3 connected	Stylistic
me$_{5\delta}$	M	D	Strokes 1, 2, and 3 connected	Stylistic
me$_{6\alpha}$	M	—	Default	Sometimes after a glyph that ends at the mid
me$_{6\beta}$	M	—	Strokes 1 and 2 connected	Stylistic
me$_{6\gamma}$	M	—	Strokes 2 and 3 connected	Stylistic
me$_{6\delta}$	M	—	Strokes 1, 2, and 3 connected	Stylistic
mm$_{1\alpha}$	Mv	M	Default	Default
mm$_{2\alpha}$	—	M	Default	Stylistic
mm$_{2\beta}$	—	M	Strokes 1 and 2 connected	Stylistic
mm$_{3\alpha}$	Mv	M	Default	Stylistic
mm$_{3\beta}$	Mv	M	Strokes 1 and 2 connected	Stylistic
mm$_{3\gamma}$	—	M	Strokes 2 and 3 connected	Stylistic
mm$_{3\delta}$	—	M	Strokes 1, 2, and 3 connected	Stylistic
mm$_{4\alpha}$	M	D	Default	Sometimes after a glyph that ends at the mid
mm$_{4\beta}$	M	D	Strokes 1 and 2 connected	Stylistic

Table 8.3: Topological variants of glyphs: ligation properties and descriptions. (Stroke numbers are in reference to the stroke-order variant, not the 2w glyph.)

Glyph	Start join	End join	Description	Use
$\mathbf{mm}_{5\alpha}$	M	D	Default	Sometimes after a glyph that ends at the mid
$\mathbf{mm}_{5\beta}$	M	D	Strokes 1 and 2 connected	Stylistic
$\mathbf{mm}_{5\gamma}$	M	D	Strokes 2 and 3 connected	Stylistic
$\mathbf{mm}_{5\delta}$	M	D	Strokes 1, 2, and 3 connected	Stylistic
$\mathbf{mm}_{6\alpha}$	M	—	Default	Sometimes after a glyph that ends at the mid
$\mathbf{mm}_{6\beta}$	M	—	Strokes 1 and 2 connected	Stylistic
$\mathbf{mm}_{6\gamma}$	M	—	Strokes 2 and 3 connected	Stylistic
$\mathbf{mm}_{6\delta}$	M	—	Strokes 1, 2, and 3 connected	Stylistic
$\mathbf{j\hat{a}}_{1\alpha}$	M	M	Default	Default
$\mathbf{\hat{a}j}_{1\alpha}$	D	D	Default	Default
$\mathbf{ww}_{1\alpha}$	M	—	Default	Default
$\mathbf{xx}_{1\alpha}$	M	D	Default	Default
$\mathbf{yy}_{1\alpha}$	B	M	Default	Default
$\mathbf{zz}_{1\alpha}$	B	—	Default	Default
$\#_{1\alpha}$	—	M	Default	Default
$+_{1\alpha}$	—	M	Default	Default
$+^{*}_{1\alpha}$	—	—	Default	Default
$@_{1\alpha}$	Tv	M	Default	Default
$@_{1\beta}$	M	M	Loop on stroke 1 to allow for mid ligation with previous glyph	After a glyph that ends at the mid
$^{*}_{1\alpha}$	—	M	Default	Default
$\&_{1\alpha}$	—	—	Default	Default
$\cdot_{1\alpha}$	MT	—	Default	Default
$;_{1\alpha}$	B	—	Default	Default
$?_{1\alpha}$	MT	—	Default	Default
$!_{1\alpha}$	M	—	Default	Default
$\{_{1\alpha}$	T	Tv	Default	Default
$\}_{1\alpha}$	Bv	B	Default	Default
$\ll_{1\alpha}$	—	—	Default	Default
$\gg_{1\alpha}$	—	—	Default	Default

Table 8.3: Topological variants of glyphs: ligation properties and descriptions. (Stroke numbers are in reference to the stroke-order variant, not the 2w glyph.)

Glyph	Start join	End join	Description	Use
$»_{2\alpha}$	—	—	Default	Stylistic (handwriting variant)
$/_{1\alpha}$	—	—	Default	Default
$\mathbf{ra}_{1\alpha}$	Dv	—	Default	Default
$\mathbf{ro}_{1\alpha}$	Dv	M	Default	Default
$\mathbf{ro}_{2\alpha}$	Mv	M	Default	Rare (β form is more common), but sometimes after glyphs that end at the mid
$\mathbf{ro}_{2\beta}$	Bv	M	Stroke 1 disconnected from 2 (starts at base instead)	After glyphs that end at the base

Table 8.3 lists all topological variants with their possible join positions on each side, with *B* for *base*, *M* for *mid* (or *mean*), *T* for *top* (ascender line), and *D* for *descender*. If more than one position is listed, then any one of them can be used. A *v* suffix on a position indicates that the stroke end at the appropriate side is vertical.

In general, for two topological variants *a* and *b* to ligate to each other (in that order), there must exist a position *C* such that *a* can join at *C* endward and *b* can join at *C* startward, with at least one end not being vertical.

There are a few exceptions to this rule: any topological variant of ²⟨l⟩ can be ligated before ³⟨$i_{2\alpha}$⟩ (see Figure 8.4 for an example).

Stylistic variants are much less standardized in comparison, but there are some widely recognized variants:

- Some topological variants (³⟨$þ_{1\beta}$⟩, ³⟨$j_{1\alpha}$⟩, ³⟨$i_{2\alpha}$⟩, ³⟨$c\$_{1\alpha}$⟩, ³⟨$«_{1\alpha}$⟩) have an S variant that introduces a swash at the end of the last stroke.

- In the standard forms, ²⟨e⟩ and ²⟨m⟩ (as well as the required ligatures involving these) have the tail sloping slightly upwards (as it goes to the left). This tail might sometimes bend downwards (the C variant) or even start with a downward slope (the D variant).

- The rightward descending stem of a glyph such as ³⟨$r_{1\alpha}$⟩ can be shortened (in the H variant) after an ²⟨e⟩ or ²⟨m⟩ to allow kerning.

²⟨'⟩ and ²⟨·⟩ are special: they can ligate with *any* participating glyph on either end, appearing as an extension of the stroke near the ²⟨'⟩ or ²⟨·⟩. Nonetheless, such ligation is not particularly common.

The rules over layers 3w and 4w dictate only what is legal, not what is considered beautiful. (Indeed, it is perfectly legal to use the 1α form of every glyph and abstain from all non-required ligatures.) Nor do they dictate *how* an eligible pair of glyphs should be ligated. There are some guidelines, however, on what is desirable:

- Avoid stroke collisions

- Minimize horizontal space

Connotation	Properties of realization
Elegant, refined	Increased use of ligation in general; use of 'broken ²⟨r⟩-stroke forms' such as ³⟨$r_{2\beta}$⟩ and ³⟨$l_{2\beta}$⟩
Rational	Use of the non-H stylistic variants of glyphs such as ³⟨$r_{1\alpha}$⟩ after ²⟨e⟩ or ²⟨m⟩ rather than the H variants
Casual, informal	Use of ³⟨$a_{1\beta}$⟩

Table 8.4: Expresive connotations associated with choices in layer-4w realization.

- Minimize effort to write

- Prefer to ligate when possible, but avoid doing so excessively

- Prefer to use the canonical stroke-order

- Prefer to use the most common topological forms

- Vary the particular forms of each letter

8.2.1 Connotations associated with choices in layer-4w realization

Of course, context also plays a role in deciding how to realize text into layer 4w. First, the purpose of the writing has an influence (text meant for children or language learners will be less embellished, and header text tends to be more embellished than body text).

Another part of context is the expressive connotation that the writer wishes to communicate.

8.3 Vertical ligation

Another desirable practice is VERTICAL LIGATION, in which the strokes of two glyphs in different lines are connected. This is naturally difficult even in handwriting, let alone in type!

Part III

Syntax

Chapter 9

Overview

For most of this text, we will be working with units that are the SENTENCE or lower. A sentence consists of one or more INDEPENDENT CLAUSE PHRASES (ICPs), separated by ⟨;⟩, with a ⟨.⟩, ⟨?⟩, or ⟨!⟩ at the end. An independent clause phrase can be a GENERAL INDEPENDENT CLAUSE PHRASE (gICP) or a SPECIAL INDEPENDENT CLAUSE PHRASE (sICP).

A special independent clause phrase is one of an INTERJECTION, a VOCATIVE, a PROBISM, an ATTRIBUTED QUOTATION, or a DATUM (Section 9.6).

An INTERJECTION is a word in the "interjection" part of speech and is not inflected. There are a few interjections, such as ⟨cirtel⟩ *by the way, incidentally* and ⟨olasta⟩ *in addition, furthermore, moreover* that can never appear on their own; they must be followed by another ICP in the same sentence. Others, such as ⟨cleli⟩ *of course, obviously*, can stand on their own, but when they occur before another ICP, they can naturally be interpreted as modifying it. To put it another way, such interjections on their own imply an ellipsed statement: "of course, *that is the case*". Such interjections constitute DEPENDENT SPECIAL INDEPENDENT CLAUSE PHRASES (dsICPs) and AMBIDEPENDENT SPECIAL INDEPENDENT CLAUSE PHRASES (asICPs). Of course, it can be argued that all sICPs are dsICPs or asICPs, as interjections such as ⟨menco⟩ *oh!, I see!, look!, indeed!* are related to what follows them. In any case, the presence of dsICPs and asICPs imply a structural level between the ICP and the sentence.

A VOCATIVE consists of a noun phrase in the dative case and is used to address the referent.

A PROBISM (named after the *Appendix Probi*[1]) consists of one or both of a direct quotative (Section 13.11) noun phrase in the ablative case and another in the accusative case, such that ⟨«Y» noþa «X» ne⟩ is an instruction to use the construction X rather than Y. If both of the quotatives are present, then the ablative one comes first.

An ATTRIBUTIVE QUOTATION indicates words said by a certain person, as in a piece of dialogue. It consists of a noun phrase in the nominative case followed by a quotation in quotation marks. While it can technically be used in a larger sentence, it usually stands on its own.

General independent clause phrases, on the other hand, are structurally more complex. We first look at the case of a single independent clause with no dependent clauses.

9.1 Independent clauses

An independent clause might or might not have a verb. We first look at the case where a verb is present.

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[1] https://en.wikipedia.org/wiki/Appendix_Probi

If there is a verb, then it comes at the end of the clause (except before any tail particles). That is, arguments and adjuncts to the verb occur before it. Because Ŋarâþ Crîþ has cases, the relative order of noun phrases in a clause is usually insignificant, but the topic usually precedes the focus, and contrastive foci are often moved immediately after the topic (if any) or immediately before the verb.

Likewise, most modifiers precede their heads. The following do not, however:

- cardinal (as opposed to an ordinal) numerals

- the second part of most compound nouns

Some types of modifiers agree with their heads and therefore can be moved away from them, as long as their relative order is preserved.

[TODO: order of modifiers]

9.1.1   Verbless clauses

Some independent clauses do not have a finite verb at the end. Nonetheless, they are treated as the head of a gICP and therefore can be a part of a *so*-clause.

- A clause with a nominative NP *x* alone implies the existence of whatever *x* refers to. In this case, *x* is usually understood to be new information.

- A clause with two nominative NPs *x* and *y* equates the referents of *x* with the referents of *y*.

- A clause with a nominative NP *x* and an accusative NP *y* implies that the referents of *x* are a subset of the referents of *y*.

- A clause with a nominative NP *x* and an a semblative NP *y* implies that the referents of *x* are like the referents of *y* (as described by the semblative case).

Nominative–nominative and nominative–accusative verbless clauses are often used as a pseudo-clefting construction to place a noun phrase as the focus (see Chapter 10):

(1)   nemirin #saþo mênčeþ.

nem-irin   #saþ-o   mênč-eþ.
apple-ACC.SG   NAME-NOM.SG   eat-3SG.PAST.PFV

#saþo ate the apple.

(2)   nemirin mînčac nava #saþo.

nem-irin   mînč-ac   nav-a   #saþ-o.
apple-ACC.SG   eat-REL.NOM,NOM.HUM   person-NOM.SG   NAME-NOM.SG

It was #saþo who ate the apple.

Verbless independent clauses can also occur when the primary verb of a clause modified by a converbal clause or a *so*-clause is the same as that of the subordinate clause and is ellipsed.

9.2 Dependent clauses

These clauses are introduced in Chapter 13 and Chapter 14:

- Quotatives (Section 13.11), which use a sentence wrapped inside quotation marks, followed by a particle

- Relative clauses (Section 14.6), which use a participle form of a verb

- Converbal clauses (Section 14.7), which use a converb

- *So*-clauses (Subsection 14.7.3), which use a gICP (i.e. finite form of a verb) plus a *so*-particle

- Nominalized clauses (Section 14.8), which use a nominalized verb

In all such clauses, the verb comes at the end of the clause (followed by a *so*-particle for *so*-clauses).

9.3 Head and tail particles

Ŋarâþ Crîþ has both head and tail particles, which occur at the extremes of an ICP. Absolute head particles (aheadps) appear at the beginning of an ICP:

- ⟨ai⟩ *but, however* is used to contrast the idea of the clause in question with that of an earlier one.

- ⟨ea⟩ *thus, therefore, in addition* is used to imply that the clause in question is the result of an earlier one, or that the clause in question adds information to an earlier one.

- ⟨vjor⟩ *alternatively* is used to contrast a clause with an earlier alternative.

Conjunct head particles (cheadps) appear at the beginning of an ICP, but if a so-clause is present, then it may occur at the start of the independent clause proper, immediately after the *so*-particle:

- ⟨ša⟩, inside an ICP, indicates an interrogative sentence. This particle can also be used at the beginning of a *so*-clause, in which case it indicates an irrealis modality.

- ⟨le⟩ indicates an imperative (Subsection 14.11.1) or hortative modality.

In informal speech, the placement of cheadps is more relaxed: they might, for instance, occur after a nominalized verb phrase or after an oblique noun phrase.

Tail particles (tailps) are used less often than head particles and often serve a pragmatic role. Omitting them can be seen as stoic. Prosodically, the final phoneme of a tail particle is often lengthened.

- ⟨šan⟩ indicates a tag question. If this particle is used, then ⟨ša⟩ is omitted, but the *šac* is not.

- ⟨þal⟩ is used to make assertions. When used with the imperative, it marks a stronger imperative. When this particle appears after a word ending in ⟨-þ⟩ but not in ⟨-cþ⟩, then the ending and the particle dissimilate into ⟨-s tal⟩.

- ⟨se⟩ indicates a rhetorical question or occasionally a mirative mood. Regardless of its use, it is not used with a *šac*.

- ⟨ado⟩ shows that the speaker laments the preceding statement.

- ⟨viþca⟩ marks the conditional (Subsection 14.11.2) mood.

9.4   Scope ordering

Several constructs in Ŋarâþ Crîþ can produce a new scope. These include the universal and existential quantifiers ⟨šino⟩ and ⟨nema⟩, numerals, coordinate phrases, and certain auxiliary verbs.

Scopes created by noun phrases follow linear order. In other words, the outermost quantifier corresponds to the outermost level of quantification:

(3)   šine nemar racro.

šin-e   nem-ar   racr-o.
all-NOM.PL   any-ACC.PL   know-3PL

All of them know someone out of them. = For all x, there exists y such that x knows y.

(4)   nemar šine racro.

nem-ar   šin-e   racr-o.
any-ACC.PL   all-NOM.PL   know-3PL

There is someone out of them whom all of them know. = There exists y such that for all x, x knows y.

(5)   šine #saþon #môran'te racro.

šin-e   #saþ-on   #môr-an='te   racr-o.
all-NOM.PL   NAME-ACC.SG   NAME-ACC.SG=or   know-3PL

All of them know either #saþo or #môra. = For all x, x knows #saþo or #môra.

(6)   #saþon #môran'te šine racro.

#saþ-on   #môr-an='te   šin-e   racr-o.
NAME-ACC.SG   NAME-ACC.SG=or   all-NOM.PL   know-3PL

Either all of them know #saþo, or all of them know #môra. = There exists y in {#saþo, #môra} such that for all x, x knows y.

TODO: figure out scope ordering involving auxiliary verbs or subordinate clauses

(7)   šinai lensat rjota.

    šin-ai   *lens-at*   *rjot-a.*
    all-DAT.PL help-INF cannot-1SG

    There is no one I can help. = For all *x*, I can't help *x*.

(8)   #saþo šinai lensat rjote.

    #saþ-o   *šin-ai*   *lens-at*   *rjot-e.*
    NAME-NOM.SG all-DAT.PL help-INF cannot-3SG

    (a) There are some people #saþo can't help.
    (b) There is no one #saþo can help.

9.5   Questions

All questions contain either the cheadp ⟨ša⟩ or, in the case of a tag question, the tailp ⟨šan⟩. If the last clause of a sentence is interrogative, then it is terminated by a ⟨?⟩. In colloquial speech, ⟨ša⟩ may be omitted, but this is never done in song lyrics.

POLAR QUESTIONS ask whether a statement is true and are created using the cheadp ⟨ša⟩ on the statement that is questioned. They can be answered using ⟨vil⟩ (the statement is true) or ⟨ces⟩ (the statement is false).

(9)   ša lê tfoþos gðenuveþ?

    ša   *lê*   *tfoþ-os*   *gðen-u-ve-þ?*
    INT THIS.CEL village-LOC.SG give_birth-3GC-2SG-PAST

    Were you born in this village?

TAG QUESTIONS, which are created using the tailp ⟨šan⟩ instead of ⟨ša⟩, are leading toward an affirmative answer. There is no separate way to create a leading question toward a negative answer.

WH-QUESTIONS, in addition to ⟨ša⟩, contain one or interrogative pro-forms, each of which can be an INTERROGATIVE PRONOUN (Subsection 13.9.2), a noun phrase modified by the interrogative determiner ⟨mê⟩ *which*, or the pro-verb ⟨nepit⟩. The questioned element stays in its original position.

The following elements can be questioned:

- all noun phrases that are arguments or adjuncts the main clause

- all objects of relational phrases that are adjuncts to the main clause

- all complements of postpositional phrases that are adjuncts to the main clause

- the second element of commutative nominal coordinate structures and either element of noncommutative nominal coordinate structures, if the entire coordinate phrase could be replaced with an interrogative pronoun

- any verb in the main clause

If an interrogative pronoun is modified, then the domain of answers is similarly restricted.

Answers to *wh*-questions are given in the same order as the interrogative pro-forms appear, with the same morphological forms.

Choice questions list the options that the answer is expected to be selected from. In Ŋarâþ Crîþ, they are a special case of *wh*-question, in which the interrogative pronoun ⟨meel⟩ *which one?*, with the choices, joined by the coordinator ⟨='ce⟩, being a genitive adjunct to that pronoun, is the element being questioned. In this case, ⟨meel⟩ can appear wherever an interrogative pronoun could, and the answers take the same form as ⟨meel⟩. ⟨meel⟩ is singular if exactly one answer is expected, but plural if there is no such expectation.

9.6   Data

A datum is one of the following:

- A short numeral (alone)

- A noun phrase in the nominative case

- An amount of currency (Subsection 16.10.3), denoted using the ⟨9{}⟩ or the ⟨*9{}⟩ numquote

- A list whose elements are data, denoted using the ⟨3{}⟩ numquote (Section 5.3) with elements separated by spaces. Elements with spaces on the outer level are grouped with ⟨{}⟩.

- A key-value list whose keys are arbitrary strings (but usually nominative-case noun phrases) and whose values are data. Each key is wrapped inside the ⟨3{}⟩ numquote, followed by the corresponding value inside the ⟨4{}⟩ numquote. The elements are collectively wrapped inside the ⟨2{}⟩ numquote.

A datum that is a list or a key-value list is called a compound datum.

Arbitrary strings can be contained inside a datum by casting them into nouns using a direct quotative (section 13.11) particle. Alternatively, the particle ⟨neþþo⟩ before a list or key-value list applies the quotative to each element of a list or to each value of a key–value list. In this case, the outer quotation marks may be omitted (with multi-word phrases being encompassed by grouping brackets).

A datum by itself can be used as a sICP to convey the information contained therein. It can also be cast into a noun using a zero genitive construct, involving the noun ⟨manveo⟩ *datum* immediately followed by the datum. This noun can be replaced with a more specific term that describes the referent of the datum. If a verbless independent clause ends with a datum under ⟨manveo⟩ in the nominative case, then this occurrence of ⟨manveo⟩ can be omitted.

(10)   ociro 2{3{ineþav·rêma} 4{9{B/'}} 3{*srela} 4{9{rł1 mA}} 2{fîðiłir} 3{9{10/2}}}.

ocir-o	*2{3{ineþav·rêm-a}*	*4{9{B/'}}*	*3{*srel-a}*
price-NOM.PL	MAP:KEY:notebook-NOM.SG	VALUE:CUR:11/-	KEY:backpack-NOM.SG

4{9{rł1	*mA}}*	*2{fîðił-ir}*	*3{9{10/2}}}.*
VALUE:CUR:£1	10s	KEY:broom-NOM.SG	VALUE:CUR:16/2

The prices are: notebook: 11/-, backpack: £1 10s, broom: 16/2.

Chapter 10

Information Structure

Ŋarâþ Crîþ marks the topic and the focus using prosody and word order. In particular, the topic comes at the beginning of an independent clause phrase (after any headps). In contrast, the focus usually occurs near its end, immediately before the possibly implicit verb. However, an interrogative NP as a focus may be fronted instead of backed, as may an NP that acts as an answer to a question.

Prosodically, the topic is marked with a lower and less varied pitch range, while the focus is marked with sentence-level stress on its last stressed syllable.

10.1   The additive clitic ⟨='moc⟩

The clitic ⟨='moc⟩ can be translated to the Japanese particle 〜も or to the English words *also* or *even*. It can be applied to many different constituents:

- noun phrases

- attributive predicate phrases (verb participles, adverbial or adnominal relationals)

- the *so*-particle ⟨so⟩, changing the meaning to *even if*

(11)   ondelt'moc cerit'pe corðen teha.

ond-elt='moc   cer-it='pe   corð-en   teha.
now-LOC.DI=also live-INF=POSS.1 certainty-ACC.DI one_of.3SG.PRES.IPFV

Even now, I'm sure that I'm alive.

(12)   celmas vrele so'moc le nemirin cengrit garasle.

celm-as   vrel-e   so='moc le nem-irin   cengr-it   gar-as-le.
window-NOM.SG thick-3SG if=also IMP apple-ACC.PL throw-INF refrain-2SG-PAST

Even if the window is thick, don't throw apples at it.

⟨='moc⟩ is also used to attach significance to its antecedent:

(13)   sâna gjorłeve varoþ'moc rille merte.

      sân-a   *g\jorł-eve*   *var-oþ='moc*   *rille*   *metr-te.*
      bear-NOM.SG shout-INF.LOC life-DAT.DI=also on_behalf_of run-1SG.PAST.PFV

      When the bear roared, I ran for as much as my life.

    When ⟨='moc⟩ is used on the subject of ⟨telit⟩ *not exist*, then the existence of the subject is not presupposed. [TODO: more]

(14)   nemir mina'moc ceła.

      nem-ir   *mina='moc*   *ceła.*
      apple-NOM.SG one.NOM.CEL=also not_exist.3SG

      There are no apples.

    When the ⟨='moc⟩ is attached to a noun or pronoun in the generic number other than a third- or sixth-declension noun in the nominative, accusative, dative, or genitive case, that noun takes the direct number instead, and all modifiers to that noun change in number to reflect this. This change, however, does not apply to verbal affixes that agree in number with the noun in question.

(15)   eši nôro tano'moc mervu.

      eši   *nôr-o*   *tan-o='moc*   *merv-u.*
      here.LOC.DI small-REL.NOM,NOM.PL bird-NOM.DI=also large-3GC

      Here, even the small birds are large.

10.2   Marking exhaustivity

There is no clitic akin to ⟨='moc⟩ for exhaustive constituents. Instead, the sentence is restructured to equate the exhaustant with a noun phrase involving ⟨šino⟩:

(16)   ceriþo arantil circþîve mîr anljar noršidir šinos cenþal.

      cer-iþo   *arant-il*   *circþîv-e*   *mîr* *anlj-ar*
      remain-REL.NOM,DAT.CEL long_time-GEN.DI battle-DAT.SG after injure-REL.ACC,NOM.HUM

        noršid-ir   *šin-os*   *cens-þal.*
        warrior-NOM.SG all-DAT.SG equal-3SG.PAST.IPFV

      After the long battle, all who survived was the injured warrior.
      Or: After the long battle, only the injured warrior survived.

(17)   ŋaras crîþe monrit vasrit pentos šinen tfełu vrêmas monru.

ŋar-as	*crîþ-e*	*monr-it*	*vasr-it*	*pent-os*
language-DAT.SG	forest-DAT.SG	teach-INF	effective-INF	can-REL.NOM,NOM.CEL

šin-en	*tfeł-u*	*vrêm-as*	*monr-u.*
all-GEN.SG	method-NOM.GC	grammar-DAT.SG	teach-3GC

All methods that can effectively teach Ŋarâþ Crîþ teach its grammar.
Or: Only methods that teach the grammar of Ŋarâþ Crîþ can effectively teach it.

Other uses of *only* can be translated into Ŋarâþ Crîþ using other constructions:

(18)   lê nemirin m·ênčilt'pe tecto entan ħelilt've mârit folca.

lê	*nem-irin*	*m·ênč-ilt='pe*	*tecto*	*ent-an*
this.CEL	apple-ACC	eat-INF.DAT.IND=POSS.1	before	that_thing.CEL-ACC.SG

ħel-ilt='ve	*mâr-it*	*folc-a.*
do_this-INF.DAT.IND=POSS.2	wait-INF	intend_to-1SG

I will wait until you eat that apple before I eat this one.
Or: Only when you eat that apple will I eat this one.

For the use of *only* to mean *sole* or *unique*, the numeral ⟨mina⟩ *one* is used with the distinctness clitic ⟨='ot⟩. For the use of *only* to mean *no more than*, the bounding clitic ⟨='ocþaf⟩ is used.

Part IV

Morphology

This part firſt describes the morphological framework and notation for describing Ŋarâþ Crîþ. It then describes each part of speech.

Chapter 11

Morphological paradigms

Each LEXICAL ENTRY belongs to a LEXICAL CATEGORY (nouns, verbs, &c.). Each lexical category is associated with one or more PARADIGMS, each of which has

- a name,

- a SCHEMA, which is a named tuple of GRAMMATICAL CATEGORIES,

- and a MAPPING that computes a set of strings (usually one) from an instance of the schema and the lexical entry.

For instance, the lexical category of nouns contains one paradigm named *default* with a schema of $(\text{case} : \text{Case}, \text{number} : \text{Nnumber})$.

An INSTANCE of a schema is a named tuple, each of whose elements has a name identical to that of the corresponding element in the schema and a value in the set of values of the respective grammatical category. For example, $(\text{case} : \text{nominative}, \text{number} : \text{dual})$ is an instance of the schema $(\text{case} : \text{Case}, \text{number} : \text{Nnumber})$.

Given a lexical category C consisting of k paradigms $P_0 = (n_0, \sigma_0, f_0), \ldots, P_{k-1}$, a lexical entry L with a lexical category of C consists of k PARADIGM APPLICATIONS $A_0 = (n_0, s_0), \ldots, A_{k-1}$, where $s_i = f_i(\cdot, L)$ is a function mapping instances of σ_i to a set of strings. For the noun ⟨ŋarâþ⟩, the *default* paradigm application maps $(\text{case} : \text{nominative}, \text{number} : \text{dual})$ to {ŋarac}.

How exactly the mappings of paradigms are defined in Ŋarâþ Crîþ is described in Chapter 12.

11.1   Grammatical categories

A GRAMMATICAL CATEGORY consists of a set of two or more values. Grammatical categories are usually used as inputs to paradigm mappings but occasionally also appear as intrinsic properties of lexical entries.

11.1.1   Number

Ŋarâþ Crîþ has separate ideas of NOMINAL and VERBAL NUMBERS, which are often abbreviated as NNUMBERS and as VNUMBERS. Nominal numbers are used in the declension of nouns, while verbal numbers are used for agreement affixes in verbs and relationals. There are four verbal numbers: SINGULAR, DUAL, PLURAL, and GENERIC.

There are five nominal numbers: DIRECT, DUAL, PLURAL, SINGULATIVE, and GENERIC. No noun can decline for all five nnumbers; instead, each noun is limited to a subset of these according to its CLAREÞ, which governs how nominal numbers map to verbal numbers:

- SINGULAR nouns allow the direct (as a singular), the dual, the plural, and the generic.

- COLLECTIVE nouns allow the direct (as a collective, usually corresponding to the plural vnumber, but sometimes to the singular vnumber when treated as a singular mass instead of a collection of individuals), the singulative (corresponding to singular vnumber), and the generic. The following nouns tend to be collective:

    - Objects that tend to be found in groups

    - Some plants, including all trees and flowers

    - Small animals

    - Diminuitive nouns

- MASS nouns allow only the direct (corresponding to singular vnumber) and the generic.

Generic number is used to mean "X in general" or "X as a concept". It is used on noun phrases that do not refer to a specific referent or referents:

(19)   mjoþelca glefteþ @asares tferamotras menu.

 mjoþ-elca   *glev-þeþ*   *@asar-es*   *tfera-motr-as*   *men-u.*
 gender-INST.SG discrimination-DAT.GC Asoren-LOC.SG often-DDT-LOC.SG see-3SG

 Discrimination based on gender is being seen increasingly often in Asoren.
 (metions discrimination in general)

(20)   «ranaren gleverþ plence» reþ teno gcarþeþ.

 «ran-ar-en   *glev-erþ*   *plenc-e»*   *reþ*
 3PL.HUM-TOWARD-ADN discrimination-NOM.DI illegal-SG QUOT.ACC.IND

  ten-o   *g\carþ-e-þ.*
  court-NOM.SG PFV\declare-3SG-PST

 The court ruled that the discimination against them violated the law.
 (metions a specific case of discrimination)

(21)   telu tovrełen mênču.

 tel-u   *tovr-ełen*   *mênč-u.*
 fish-NOM.GC flower-ACC.GC eat-3GC

 Fish eat flowers.
 (general truth, so "fish" would be in the generic and "flowers" would be in the generic)

(22) telos tovrełen mênči.

tel-os   *tovr-ełen*   *mênč-i.*
fish-NOM.CO flower-ACC.GC eat-3PL

The fish eat flowers.
(referring to a particular group of fish, but no particular group of flowers, perhaps indicating a habitual action)

(23) telos tovran mênči.

tel-os   *tovr-an*   *mênč-i.*
fish-NOM.CO flower-ACC.CO eat-3PL

The fish eat (some/the) flowers.
(referring to particular groups of fish and of flowers)

(24) telu vônos respos tovran vilhenrotomin mênču.

tel-u   *vôn-os*   *resp-os*   *tovr-an*   *vil-henroto-min*
fish-NOM.GC norm-LOC.DI lifetime-LOC.SG flower-ACC.SG one-16^2.APPROX-CTR.small_plant

     mênč-u.
     eat-3GC

A fish will usually eat about 256 flowers during its lifespan.
("Fish" is generic, as this sentence is not referring to a particular fish but rather an idealized individual reflecting the average. "Flowers" is plural and "lifespan" is singular because they are definite relative to the subject, even though the subject is generic.)

(25) elêþ šileħe.

el-êþ   *šile-ħe.*
sun-NOM.SG shine-3SG

The sun shines.
Or: The sun is shining.
(The former interpretation states a general fact, but there is only one sun, so ⟨elêþ⟩ still takes the singular number.)

The generic number is also used for noun phrases that do not necessarily have a referent:

(26) nemir nirþeftês es veła.

nem-ir   *nirþev-tês*   *es*   *veła.*
apple-NOM.SG basket-DAT.SG inside exist-3SG

(A/The) apple is in the basket.

(27)   nemir nirþeftês es ceła.

nem-ir   nirþev-tês   es   ceła.
apple-NOM.SG basket-DAT.SG inside not_exist-3SG

The apple is not in the basket.

(28)   nefþes nirþeftês es cir.

nem-þes   nirþev-tês   es   cir.
apple-NOM.GC basket-DAT.SG inside not_exist-3GC

There is no apple in the basket.

(29)   ša nefþes nirþeftês es ver?

ša   nem-þes   nirþev-tês   es   ver?
INT apple-NOM.GC basket-DAT.SG inside exist-3GC

Is there an apple in the basket?

   When a noun in the genitive case is used for description, it usually takes the direct number, not the generic.

   A third-person pronoun in the generic number refers to a class of objects or people in general and can be translated as the English impersonal pronoun *one*. First-person and second-person generic pronouns act similarly, except that they include first-person or second-person referents. The use of generic-number pronouns is most notable in imperatives:

(30)   le celcols es coclat garu.

le   celc-ols   es   cocl-at   gar-u.
IMP building-DAT.SG inside run-INF refrain_from-3GC

No running in the building. (least direct)

(31)   le celcols es coclat garaf.

le   celc-ols   es   cocl-at   gar-af.
IMP building-DAT.SG inside run-INF refrain_from-2GC

Don't run in the building.

(32)   le celcols es coclat garas.

le   celc-ols   es   cocl-at   gar-as.
IMP building-DAT.SG inside run-INF refrain_from-2SG

Don't run in the building. (aimed specifically at one person; most direct)

Name	Use
Nominative	The subject of the clause. The citation form of a noun is the nominative singular.
Accusative	The "direct object" of the clause.
Dative	The "indirect object" of the clause. Also used as a vocative.
Genitive	Shows such things as possession, composition, description, or apposition.
Locative	Indicates the location or time of an object or an action: *at X*, *on X*, *in X*. On a nominalized verb, this case can be translated as *when*, *where*, or *as long as*.
Instrumental	Indicates the comitative or the instrumental: *with X*.
Abessive	The negation of the instrumental: *without X*. In the dual number, *with only one X*.
Semblative	*like X in behavior*. On a nominalized verb, *such that*, *as though*, or *to the point that* (although ⟨dôm⟩ is used more often for the last sense). Not used for semblance in appearance.

Table 11.1: The cases of Ŋarâþ Crîþ.

11.1.2 Case

Ŋarâþ Crîþ has eight cases (Table 11.1). The nominative, accusative, dative, and genitive cases are considered CORE CASES. In general, the first three of these are used for arguments to verbs, the genitive case for adnominal adjuncts, and the other four cases for adnominal or adverbial adjuncts.

11.1.3 Gender

Ŋarâþ Crîþ has three genders or noun classes: CELESTIAL, TERRESTRIAL, and HUMAN. Gender is an intrinsic part of each noun; that is, the gender of each noun is fixed. The unmarked gender is celestial, in that noun phrases are assumed to be celestial unless otherwise specified, and the celestial gender is used for an object whose gender is otherwise unknown (such as in participles of headless relative clauses).

Many words agree with noun phrases in gender when they are inflected, including:

- third-person possessive clitics

- demonstrative determiners and pronouns

- finite verb forms in the gender of a third-person accusative or dative argument

- verb participles in genera I and III

- relationals in the gender of a third-person object

- long numerals from 1 to 6

11.1.4   Tense and aspect

Ŋarâþ Crîþ has two tenses: PRESENT (more precisely, NONPAST) and PAST. In addition to the present, the present tense covers the future as well as the immediate past.

The present tense is also used as a narrative present: in stories, the past tense is used only for events that had happened before the current point.

Ŋarâþ Crîþ has two aspects: IMPERFECTIVE and PERFECTIVE. The imperfective aspect is used for ongoing (such as progressive or habitual) actions.

11.1.5   Mood

Ŋarâþ Crîþ inflects for mood only on nominalized forms of a verb (Section 14.8) in certain cases. The mood distinction encodes a difference in modality in the dative and semblative cases only. In the locative, instrumental, and abessive, it encodes a distinction between adverbial and adnominal forms.

11.1.6   Attachment

ATTACHMENT refers to whether an adjunct is attached to a noun phrase or to a verb phrase. This is marked only on relationals (Section 15.2), as well as nominalized forms of a verb in cases that use mood distinctions to signal attachment.

11.2   Conjunct forms

Each lexical element that can appear as the first element of a compound word (Section 17.1) has two CONJUNCT FORMS. The CONSONANTAL CONJUNCT FORM is a sequence of nonterminal syllables and is used before a non-vowel-initial word; the VOCALIC CONJUNCT FORM is a stem that is used before a vowel-initial word.

Chapter 12

Morphophonology

Inflected forms of a word are built from two or more COMPONENTS, which include CONSTANTS and VARIABLES. Constants stay the same within a given form of a given paradigm, regardless of the noun within that paradigm to be declined, and are notated using usual Ŋarâþ Crîþ orthography. Variables depend on the noun being declined and can be divided into STEMS, THEMES, and ROLLS (Section 12.1).

A STEM, in a way, is one of the essences of a word. Each inflected form of a word contains exactly one instance of a stem. In most cases, a stem consists of one or more syllables followed by an onset that does not contain a lenited consonant, but it can otherwise be arbitrary. In our notation, stems are denoted using capital Latin letters.

A THEME is a variable that is short (almost always one letter long). Unlike stems, themes are limited to a predefined number of options. Themes in noun paradigms can be classified into THEMATIC CONSONANTS and THEMATIC VOWELS. In our notation, themes are denoted using capital Greek letters.

Each regular lexical entry has a set of PRINCIPAL COMPONENTS, which are the set of components needed to determine all of its inflected forms. The PRINCIPAL PARTS are a set of inflected forms of the entry that collectively give all of its principal components. The principal components of an entry include all of its stems and themes but no rolls, but in practice, some principal parts might be included solely for containing rolls that are otherwise inconvenient to derive.

A theme or a roll may receive a TRANSFORMATION, which is a function from themes to themes or from rolls to rolls. In our notation, transformations are shown in superscript to the right of the variable to be transformed. The result of a transformation is sometimes called a DERIVATIVE.

The following basic transformations are defined:

- $^{\lambda/\mu}$: Replace the vowels in λ with the corresponding ones in μ.

- $^{\lambda \times \mu}$: Apply an EXCHANGE TRANSFORMATION on a vowel: $\lambda \rightarrow \mu$; $\mu \rightarrow \lambda$.

- $^{\langle \lambda/\mu}$: Replace this vowel with μ when the previous vowel (if any) is λ.

- $^{\sim\sigma}$: Apply the transformation σ over both normal and hatted vowels.

- $^{\sigma \cdot \tau}$: Apply the transformations σ and τ, in that order.

Other transformations can be expressed in terms of these:

- $\pi = {}^{\sim\text{aoe/oei}}$

- $\gamma = {}^{\sim}\text{aoei/eeie}$

- $\lambda = {}^{\sim}\text{oi/ae}$

- $+ = {}^{\sim}\text{o/a}$

- $\kappa = {}^{\sim}\text{o/e}$

- $\tau = {}^{\sim}\text{oi/ee}$

- $\varphi = {}^{\sim}\text{ai/ea}$

- $\psi = {}^{\sim}\text{ai/io}$

- $\eta = \text{aeio/âêîô}$

Additionally, inflection often uses stem fusion (Section 6.3), which is notated by a superscript of either the fusion consonant or ε.

When the inflected form is given, the concatenation operator is understood to be inserted between each variable and its neighboring components. The type of each component will usually be clear from the context.

12.1   Rolls

Like themes, a ROLL is a short variable, but a roll is dependent on the letter sum of one of the word's inflected forms. In our notation, rolls are denoted using die faces: ⚀ ('ace'), ⚁ ('deuce'), ⚂ ('trey'), ⚃ ('cater'), and ⚄ ('cinque'). (Fortunately, we've yet to find a need for a *sice*.)

A shorthand is used to specify the value of a roll. The notation $[\![x_0\ x_1\ ...\ x_{n-1}]\!] \ll y$ is used to mean that the letter sum of y should be taken modulo n and used as an index into the list. Sometimes, this will be followed by 'increment until' or 'decrement until' followed by a condition; in this case, the index should be incremented or decremented (wrapping around if necessary) until the condition holds.

For instance, ⚀ $= [\![e\ a\ i\ a\ i\ e]\!] \ll$ *NOM.DI* means that the letter sum of the nominative direct form of a noun should be calculated. If this is 0, 6, 12, 18, or so on, then ⚀ is $[\![e]\!]$; if it is 1, 7, 13, 19, or so on, then ⚀ is $[\![a]\!]$; and so forth.

12.2   Phi consonants

The PHI CONSONANT of a stem X, denoted by Φ_X, is a consonant used in some generic forms. It can be either $[\![f]\!]$ and $[\![ł]\!]$ according to the following rules:

1. If the final onset of X is not preceded by $[\![-l]\!]$ or $[\![ł]\!]$, and that onset contains any consonants whose base letter is any of $[\![p\ f\ v\ m\ g\ d\ ð\ ħ]\!]$, then Φ_X is $[\![ł]\!]$.

2. If any onset or coda in Φ_X other than the final onset contains any consonants whose base letter is any of $[\![p\ f\ v\ m]\!]$, then Φ_X is $[\![ł]\!]$.

3. Otherwise, Φ_X is $[\![f]\!]$.

12.3 Mutations

Ŋarâþ Crîþ has two kinds of initial mutations: LENITION and ECLIPSIS. Neither kind of mutation has any effect on plosive–fricative onsets or any of ⟦r l n ŋ ħ⟧.

   Lenition tends to turn plosives into fricatives and is indicated with a middle dot ⟦·⟧ after the consonant affected. In particular, it affects ⟦p t d č c g m f v ð⟧. (See Section 7.1 for pronunciation details.) Partial lenition does not affect any of ⟦f v ð⟧; that is, it does not lenite consonants that would become silent. Unless otherwise qualified, lenition refers to total lenition, which affects ⟦f v ð⟧.

   In a word containing ⟦&⟧, both instances of the reduplicated prefix are lenited. For example, ⟨&d·enfo⟩ can be pronounced as [ðeðenfo] but not as *[ðedenfo].

   Lenition occurs in the following environments:

- On the stem in abessive forms of third- or sixth-declension nouns

- On a noun modified by ⟨šinen⟩ or ⟨nemen⟩ when used as determiners, if that noun is not a form of ⟨ðên⟩

- Partially, on a noun modified by ⟨ruf⟩ not immediately following it

- Partially, on a noun modified by ⟨mê⟩ immediately preceding it

- On the first-person dual or plural present perfective forms of a resinous verb

- Partially, on the first- and second-person generic past imperfective forms of a resinous verb

- On a terrestrial noun modified by a participle-form verb belonging to a Type I genus

- To a dative-case nominalized verb phrase as explained in Section 14.8

- Partially, on a verb when receiving the comparative prefixes ⟦mir-⟧ or ⟦ła-⟧

- On a classifier attached to the numeral ⟨ces⟩ or any numeral ending in ⟨ħas⟩ or ⟨sreþas⟩

- On the second item of a compound noun, if it is neither terrestrial nor a form of ⟨vês⟩

- On a verb with the cessative prefix ⟦car-⟧ or the terminative prefix ⟦er-⟧

   Eclipsis tends to add voice to voiceless consonants and change voiced stops into nasals. It is indicated by prefixing a consonant: ⟦t d c g f þ ł⟧ become ⟦dt nd gc ŋg vf ðþ lł⟧, respectively. ⟦p⟧ becomes ⟦vp⟧ before any of ⟦i e u î ê⟧ and ⟦mp⟧ elsewhere. If a word starts with a vowel, then it is eclipsed by prefixing ⟦g⟧.

   In a word containing ⟦&⟧, only the first instance of the reduplicated prefix is eclipsed. For example, ⟨n&denfin⟩ can be pronounced as [nedenfin] but not as *[nenenfin].

   Eclipsis occurs in the following environments:

- On the genitive dual, plural, and singulative forms of nouns

- On a noun modified by ⟨lê⟩ or ⟨tê⟩ immediately preceding it

- On a noun modified by ⟨dân⟩

- On a finite form of a vitreous verb or relational with perfective aspect

- On a finite form of a resinous verb with perfective aspect, unless it is a present-tense form and either a first-person dual or plural form or a first- or second-person generic form

- To a locative, instrumental, or abessive-case nominalized verb phrase that is not an object of a modifying relational, as explained in Section 14.8

- On a short numeral modified by ⟨ceþe⟩

Lenition can happen on any syllabic onset of a word, but eclipsis is limited to word-initial positions.

In this documentation, lenition is sometimes marked with an empty circle ○, and eclipsis with an filled circle ●. Partial lenition is marked with an empty triangle △.

Chapter 13

Nouns

Nouns are also declined for nominal number and case. These declensions are divided into six DECLENSION CLASSES, with a few irregular nouns failing to fall into any class. There are three broad categories of declension classes:

- Celestial (I and II): contain mainly celestial nouns and have suffixed instrumental and abessive forms

- Terrestrial (III): contain mainly terrestrial nouns and have circumfixed instrumental and abessive forms. Lack any thematic vowel.

- Stochastic (IV and V): the lemma has no suffix in the sense that I – III do; these classes employ rolls for some of the forms.

The sixth declension is considered a hybrid between the celestial and terrestrial categories. Additionally, the second declension has penultimate and ultimate variants.

Any declension class can contain words of the human class, since names can in theory be derived from any content noun.

In all regular declension classes, genitive dual, plural, and singulative forms are eclipsed. Indeclinable parts of compound nouns do not have this behavior. Most irregular nouns do, although there are exceptions.

Most nouns have at least N, L, and S stems. The N stem is used for the nominative, accusative, genitive, and dative cases; the L stem is used for the locative, instrumental, and abessive; and the S stem is used for the semblative. The second penultimate declension additionally has a G stem, while third-declension ⟦-el⟧ nouns have an A stem on top. The sixth declension adds I and I′ stems. In contrast, the fifth declension lacks an L stem. In declension classes that have one, the L stem is almost always distinct from the N stem because some forms differ only in the use of an N or an L stem.

Themes in declension classes can be classified into THEMATIC VOWELS and THEMATIC CONSONANTS. The PRIMARY THEMATIC VOWEL (where it exists) is denoted by ⟦Θ⟧, and the LOCATIVE THEMATIC VOWEL is denoted by ⟦Λ⟧. In declension classes that have one, the thematic consonant is denoted by ⟦Σ⟧.

In addition, all declension classes use one or two phi consonants: Φ_L and, for some classes, Φ_N.

The first, second, and third declensions admit words of different ending types, which have different rules for certain forms. Each declension class is first given for the most representative ending type, followed by deviations for other endings.

13.1 The first declension

Guidelines:

- Θ can be ⟦a⟧, ⟦e⟧, or ⟦o⟧.

- Λ can be ⟦a⟧, ⟦e⟧, or ⟦i⟧.

- L must be different from N, unless Θ is ⟦o⟧ and Λ is ⟦e⟧. The most common difference is to change the final vowel of N.

- S may be the same as N, but the most common difference is to change the final consonants of N (especially changing voiceless coronals to voiced coronals and ⟦r⟧ to ⟦l⟧).

- N cannot end in ⟦-nn⟧ if Θ is ⟦e⟧; otherwise, N^n is the same as N.

- □ = ⟦Θ Θ e Θ e e⟧ « N

Case \ Number	Direct	Dual	Plural	Singulative	Generic
Nominative	$N\Theta^{\Delta}$	$N\Theta c$	$N\Theta^{\pi\Delta}$	$N\Theta^{\gamma}l^{\Delta}$	$N\Theta^{+}\Phi_N$
Accusative	$N\Theta n^{\Delta}$	$N\hat{o}r$	$N\Theta r$	$N^n\Theta^{\gamma}s^{\Delta}$	$Ne\Phi_N en$
Dative	$N\Theta s^{\Delta}$	$N^t\Theta s$	$N\Theta^{+}i^{\Delta}$	$N^n\Theta^{\gamma}þ$	$N\Theta^{+}\Phi_N es$
Genitive	$N\Theta^{\gamma}n$	$N^t\Theta^{\gamma}n$	Nin	$N^n\Theta^{\gamma}n$	$N^n e\Phi_N$
Locative	$L\Lambda s$	$L\Lambda c$	$L\Lambda^{\pi}s$	$L\Lambda^{\gamma}ns$	$Le\Phi_L$
Instrumental	Leca	Lecca	$Lica^1$	$Linca^1$	$Le\Phi_L ca$
Abessive	Leþa	Lecþa	$Liþa^1$	$Linþa^1$	$Le\Phi_L þa$
Semblative	Sit	Set		$Siĉ\Theta$	Sicþ

Table 13.1: Declensions for first-declension -V nouns.

^{1} ⟦i⟧ in the suffix becomes ⟦e⟧ after the onsets ⟦t-⟧, ⟦d-⟧, ⟦s-⟧, ⟦þ-⟧, ⟦ð-⟧, ⟦tf-⟧, or ⟦dv-⟧, as well as any onsets that end with ⟦l⟧.

Form	⟦-Θ⟧	⟦-Θs⟧	⟦-Θ^nþ⟧	⟦-Θn⟧
Allowed Θ	a, e, o	a, e	a, e	a, e
Nominative direct	$N\Theta$	$N\Theta s$	$N\Theta^n þ$	$N\Theta n$
Nominative plural	$N\Theta^{\pi}$	$N\Theta^{\gamma}s$	$N\Theta^{\pi\cdot n}þ$	$N\Theta^{\pi}$
Nominative singulative	$N\Theta^{\gamma}l$	$N^n\Theta^{\gamma}s$	$N^n\Theta^{\gamma\cdot n}þ$	$N^n\Theta^{\gamma}l$
Accusative direct	$N\Theta n$	$N\Theta^n ns$	$N\Theta^n ns$	$N\Theta nen$
Accusative singulative	$N^n\Theta^{\gamma}s$	$N^n je$	$N^n je$	$N^n\Theta^{\gamma}s$
Dative direct	$N\Theta s$	No	$N\Theta s$	$N\Theta s$
Dative plural	$N\Theta^{+}i$	$N\Theta^{+}ri$	$N\Theta^{+}si$	$N\Theta^{+}ri$
Consonantal conjunct (if N is not vowel-final)	N□-	N□-	N□^{n}-	N□n-
Consonantal conjunct (if N is vowel-final)	N□-	N□s-	N□^{n}þ-	N□n-
Vocalic conjunct	N-	$N\Theta s$-	$N\Theta^n þ$-	N^n-

Table 13.2: Variable declensions for first-declension nouns.

Only a handful of ⟦-Θn⟧ nouns exist, and most such nouns are functional.

13.2 The second declension (penultimate)

Guidelines:

- Λ can be either ⟦e⟧ or ⟦i⟧.

- Has a separate G stem, which can be same as or different from N.

- L can potentially be the same as N but is usually different from it. The difference is usually more substantial than a change in the final vowel of the stem.

- S may be the same as N, but the most common difference is to change the final consonants of N (especially changing voiceless coronals to voiced coronals and ⟦r⟧ to ⟦l⟧).

- ▢ = ⟦e i e⟧ « N

Case \ Number	Direct	Dual	Plural	Singulative	Generic
Nominative	$N\Theta\Sigma^{\Delta}$	Njor	$Na\Sigma^{\Delta}$	$N^{m}\Theta^{\lambda}n$	$N^{\text{þ}}\Theta^{\tau}s$
Accusative	$N^{m}e^{\Delta}$	$N^{m}ec$	Neri	Nehin	$N^{\text{þ}}\Theta^{\tau}ns$
Dative	$N^{t}\hat{e}s$	Necþ	Nerþ	Nerin	$N^{\text{þ}}\Theta^{\tau}$þ
Genitive	Gen^{Δ}	$Gj\hat{o}r^{\Delta}$	$Ge\text{þ}^{\Delta}$	$G^{n}es^{\Delta}$	$N^{\text{þ}}\Theta^{\tau}st$
Locative	$L\Lambda lt$	$L\Lambda lt\Theta c$	$G\Lambda^{e\times i}lt$	$G\Lambda lten$	$L\Lambda\Phi_{L}$
Instrumental	$L\Lambda lca$	$L\Lambda lhac$	$L\Lambda lco$	$L\Lambda lcen$	$L\Lambda lca\Phi_{L}$
Abessive	$L\Lambda l\text{þ}a$	$L\Lambda l\text{þ}ac$	$L\Lambda l\text{þ}o$	$L\Lambda l\text{þ}en$	$L\Lambda l\text{þ}a\Phi_{L}$
Semblative	Sit	Set		$Sict\Theta$	Sicþ

Table 13.3: Declensions for ⟦-in⟧ and ⟦-is⟧ nouns.

Form	⟦-in⟧, ⟦-is⟧	⟦-Θ^{n}r⟧
Allowed Θ	i	e, i
Nominative direct	$N\Theta\Sigma$	$N\Theta^{n}\Sigma$
Nominative plural	$Na\Sigma$	$N\hat{i}\Sigma$
Accusative direct	$N^{m}e$	$N^{m}el$
Genitive direct	Gen	Gil
Genitive dual	Gjôr	$G^{t}il$
Genitive plural	Geþ	Gevi
Genitive singulative	$G^{n}es$	$G^{n}il$
Consonantal conjunct	$N▢\Sigma$-	$N\Theta^{n}\Sigma$-
Vocalic conjunct	$N▢\Sigma$-	$N\Theta^{n}\Sigma$-

Table 13.4: Variable declensions for second-declension penultimate nouns.

13.3 The second declension (ultimate)

Guidelines:

- As in IIp, Λ can be either ⟦e⟧ or ⟦i⟧.

- Does not have a separate G stem.

- L can potentially be the same as N but is usually different from it. The difference is usually more substantial than a change in the final vowel of the stem.

- S may be the same as N, but the most common difference is to change the final consonants of N (especially changing voiceless coronals to voiced coronals and ⟦r⟧ to ⟦l⟧).

Case \ Number	Direct	Dual	Plural	Singulative	Generic
Nominative	NΘΣ	NΘc	NΘ$^{\gamma}$r$^{\Delta}$	N^{n}Θ$^{\lambda}$n	N^{þ}Θ$^{\tau}$s
Accusative	NΘrin	NjΘ$^{\kappa\cdot\eta}$r	Neri	N^{n}Θrþ	N^{þ}Θ$^{\tau}$ns
Dative	NΘls	N^{t}el	Nari	N^{n}Θls	N^{þ}Θ$^{\tau}$þ
Genitive	NΘ$^{\tau}$i	NΘ$^{\tau}$ci	NΘ$^{\tau}$vi	NΘ$^{\tau}$ħin	N^{þ}Θ$^{\tau}$st
Locative	LΛlt	LΛltΘc	NΛ$^{e\times i}$lt	NΛlten	LΛΦ$_{L}$
Instrumental	LΛlca	LΛlhac	LΛlco	LΛlcen	LΛlcaΦ$_{L}$
Abessive	LΛlþa	LΛlþac	LΛlþo	LΛlþen	LΛlþaΦ$_{L}$
Semblative	Sit	Set		SictΘ	Sicþ
Consonantal conjunct	NΘΣ-				

Table 13.5: Declensions for vowel + ⟦r⟧ nouns.

Form	⟦-Θr⟧	⟦-Θl⟧	⟦-Θþ⟧	⟦-Θrþ⟧
Allowed Θ	a, e, i	a, i, o	a, e	a, e
Nominative plural	NΘ$^{\gamma}$r	NΘ$^{\gamma}$r	NoΣ	NoΣ
Vocalic conjunct	NΘ$^{i/e}$rl-	NΘł-	NΘþ-	NΘrþ-

Table 13.6: Variable declensions for second-declension ultimate nouns.

13.4   The third declension

Guidelines:

- There is no thematic vowel.

- L must be different from N. The most common difference is to change the final vowel of N.

- S may be the same as N, but the most common difference is to change the final consonants of N (especially changing voiceless coronals to voiced coronals and ⟦r⟧ to ⟦l⟧). In any case, it must be distinct from L.

Case \ Number	Direct	Dual	Plural	Singulative	Generic
Nominative	Nos$^\Delta$	Noc	Nor$^\Delta$	Noren$^\Delta$	Nu
Accusative	Non$^\Delta$	N^{t}on$^\Delta$	N$^\text{þ}$on$^\Delta$	Nelt	Nan
Dative	Noþ	N^{t}oþ	Nasor	N^{m}es	Nas
Genitive	Nel^1	N^{t}el	Njel	N^{m}el	N^{m}e
Locative	Los	Locþ	Lor	Loren	LeΦ$_L$
Instrumental	cjaLos$^\Delta$	cjaLocþ$^\Delta$	cjaLor	cjaLolt	cjaLeΦ$_L$
Abessive	þja○Los$^\Delta$	þja○Locþ$^\Delta$	þja○Lor	þja○Lolt	þja○LeΦ$_L$
Semblative	Sot	Soctos	Set	Sełi	Socþ

Table 13.7: Declensions for third-declension -os nouns.
^{1} See below.

Form	⟦-os⟧	⟦-on⟧	⟦-or⟧
Nominative default	Nos	Non	Nor
Nominative plural	Nor	Nor	Nosôr
Nominative singulative	Noren	Noren	Nons
Accusative default	Non	Nanon	Non
Accusative dual	N^{t}on	Nanor	N^{t}on
Accusative plural	N$^\text{þ}$on	Nanor	N$^\text{þ}$on
Instrumental default	cjaLos	cjaLon	cjaLor
Instrumental dual	cjaLocþ	cjaLoc	cjaLoc
Abessive default	þja○Los	þja○Lon	þja○Lor
Abessive dual	þja○Locþ	þja○Loc	þja○Loc
Consonantal conjunct	Nos-	Non-	Nor-
Vocalic conjunct	Nor-	Non-	Nor-

Table 13.8: Variable declensions for third-declension nouns.

⟦-el⟧ nouns have additional A and G stems and thus have their own declension:

Case \ Number	Direct	Dual	Plural	Singulative	Generic
Nominative	Nel	Noc	Nor	Nons	Aul
Accusative	Aen	A^{t}en	Aon	Nelt	Aan
Dative	Aoþ	N^{t}oþ	Aasor	N^{m}es	Aas
Genitive	Gel^1	G^{t}el	Gol	G^{n}el	A^{n}e
Locative	Los	Locþ	Lor	Loren	LeΦ$_L$
Instrumental	cjaLel	cjaLels	cjaLor	cjaLolt	cjaLeΦ$_L$
Abessive	þja○Lel	þja○Lels	þja○Lor	þja○Lolt	þja○LeΦ$_L$
Semblative	Sot	Soctos	Set	Sełi	Socþ
Consonantal conjunct	Nel-				
Vocalic conjunct	Nel-				

Table 13.9: Declensions for third-declension -el nouns.
^{1} See below.

In this case, the N and G stems must be distinct.

In the genitive singular, if the last bridge of N or G is ⟦l⟧, then the inflected form is Nlu or Glu, where the ⟦l-⟧ onset becomes the preceding coda. If the stem otherwise ends with ⟦l⟧, then the inflected form is Nô or Gô.

If the N stem ends in ⟦i⟧, then some forms are declined differently. Let N′ be the start-to-onset assemblage resulting from removing the final ⟦i⟧ from N. Then the declensions are as follows:

Case \ Number	Direct	Dual	Plural	Singulative	Generic
Nominative	N′ios$^{\Delta}$	N′ice	N′ia$^{\Delta}$	N′ien$^{\Delta}$	N′iva
Accusative	N′ion$^{\Delta}$	N′eton$^{\Delta}$	N′eþon$^{\Delta}$	N′ila	(N′ian)
Dative	N′isa	N′ista	N′esor	N′ines$^{\Delta}$	(N′ias)
Genitive	N′ina	N′inta	N′ide	(N′inel)	(N′ine)

Table 13.10: Declensions for third-declension -ios nouns. The other cases are inflected as usual.

Form	⟦-ios⟧	⟦-ion⟧	⟦-ior⟧
Nominative default	(N′ios)	(N′ion)	(N′ior)
Nominative plural	N′ia	N′ia	N′esôr
Nominative singulative	N′ien	N′ien	N′ines
Accusative default	N′ion	N′enon	N′ion
Accusative dual	N′eton	N′iaþ	N′eton
Accusative plural	N′eþon	N′iaþ	N′eþon
Dative singulative	N′ines	N′ines	N′ineþ
Consonantal conjunct	N′es-	N′en-	N′ur-
Vocalic conjunct	N′er-	N′en-	N′ur-

Table 13.11: Variable declensions for third-declension nouns with N stems ending in ⟦i⟧.

In ⟦-iel⟧ nouns, only the nominative and dative forms are affected:

Case \ Number	Direct	Dual	Plural	Singulative	Generic
Nominative	N′iel	N′ice	N′ia	N′ines	Aul
Dative	Aoþ	N′^{t}eþ	Aasor	N′ineþ	Aas
Consonantal conjunct	N′il-				
Vocalic conjunct	N′il-				

Table 13.12: Declensions for third-declension -iel nouns.

13.5   The fourth declension

Guidelines:

- Θ is ⟦o⟧ for terrestrial nouns and ⟦a⟧ for celestial nouns. Naturally, it can be either for human nouns.

- Λ can be either ⟦a⟧ or ⟦e⟧.

- Some vowels used by this declension class depend on the letter sum of a certain form modulo some integer:

  - $\boxdot$ = ⟦e a i a i e⟧ « NOM.DI if Θ = ⟦a⟧; otherwise ⟦o⟧
  - $\boxdot$ = ⟦i i a i e i⟧ « NOM.DI if Θ = ⟦a⟧; otherwise ⟦e⟧

- L **must be different** from N. This is a departure from declension classes 5 and 11 on the old system, as the final coda of the nominative direct is no longer mutated in certain forms. The easiest way to fix these two stems being the same is to change the final bridge of N.

- S may be the same as N, but the most common difference is to change the final consonants of N (especially changing voiceless coronals to voiced coronals and ⟦r⟧ to ⟦l⟧).

Case \ Number	Direct	Dual	Plural	Singulative	Generic
Nominative	N^{ε}	Nec	NΘr	N$\boxdot$n	$Na\Phi_N$
Accusative	N$\boxdot$n	$N^t\boxdot$n	Nas	N$\boxdot$nþ	$Na\Phi_N$en
Dative	Ni[1]	Nic	Nir	Nên	$Na\Phi_N$es
Genitive	Na	Nac	No	Nân	$N^n e\Phi_N$
Locative	LΛs	LΛc	LΛ$^{\pi}$s	LΛ$^{\gamma}$ns	$Le\Phi_L$
Instrumental	Leca	Lecca	Lica[2]	Linca[2]	$Le\Phi_L$ca
Abessive	Leþa	Lecþa	Liþa[2]	Linþa[2]	$Le\Phi_L$þa
Semblative	Same as I (III) for Θ = a (o)				
Consonantal conjucnt	?				
Vocalic conjunct	N-				

Table 13.13: Declensions for fourth-declension nouns.
[1] Nes if N ends in ⟦j⟧; otherwise Ne if the last vowel of N is ⟦i⟧ or ⟦î⟧.
[2] ⟦i⟧ in the suffix becomes ⟦e⟧ after the onsets ⟦t-⟧, ⟦d-⟧, ⟦s-⟧, ⟦þ-⟧, ⟦ð-⟧, ⟦tf-⟧, or ⟦dv-⟧, as well as any onsets that end with ⟦l⟧.

13.6   The fifth declension

Guidelines:

- This declension class has only N and S stems, with no L stem.

- Θ is any *nucleus*.

- Σ is a (possibly empty) simple coda other than ⟦-c⟧ or ⟦-t⟧, with a transformation ⅏ ('zhe').

- Some variables in this declension class depend on the letter sum of a certain form modulo some integer:

  - $\boxdot$ = ⟦e a i ô u o î ê â⟧ « NOM.DI
  - $\boxdot$ = ⟦o ô ô o⟧ « NOM.GC
  - $\boxdot$ = ⟦i i e e⟧ « NOM.DU

- ⊡ = ⟦g d v⟧ « ACC.DI, increment until ⊡ ≠ the last onset of N

- ⊡ = ⟦e a i u a e o i jâ jê jô jê jâ o⟧ « ACC.PL, increment until ⊡ ≠ Θ

• N is not necessraily a stem, as it is not required to have at least one full syllable.

• S may be the same as N, but the most common difference is to change the final consonants of N (especially changing voiceless coronals to voiced coronals and ⟦r⟧ to ⟦l⟧).

• In this case, Φ_L is based on ⟦N⊡Σ⚹⟧.

Case \ Number	Direct	Dual	Plural	Singulative	Generic
Nominative	NΘΣ	N^t⊡c^1	N⊡Σ	(NΘΣ⚹)^{t}e	NΘΣ⚹u
Accusative	NΘΣ⚹⊡n	NΘΣ⚹jor	N⊡Σ⚹⊡$^{e×i}$n	(NΘΣ⚹)^{t}en	NΘΣ⚹an
Dative	NΘΣ⚹er	NΘ⊡aΣ	NΘΣ⚹ir	(NΘΣ⚹)^{t}es	NΘΣ⚹as
Genitive	NΘΣ⚹es	NΘΣ⚹ec	NΘΣ⚹eris	(NΘΣ⚹)^{t}el	NΘΣ⚹e
Locative	N⊡Σ⚹a	N⊡Σ⚹ac	N⊡Σ⚹o	N⊡Σ⚹en	N⊡Σ⚹aΦ_L
Instrumental	N⊡Σ⚹eca	N⊡Σ⚹ehac	N⊡Σ⚹ego	N⊡Σ⚹egen	N⊡Σ⚹ecaΦ_L
Abessive	N⊡Σ⚹eþa	N⊡Σ⚹eþac	N⊡Σ⚹eðo	N⊡Σ⚹eðen	N⊡Σ⚹eþaΦ_L
Semblative	Sot	Soctos	Set	Sełi	Socþ
Consonantal conjucnt	NΘΣ-				
Vocalic conjunct	NΘΣ⚹-				

Table 13.14: Declensions for fifth-declension nouns.
[1] N⊡t if N does not contain at least one full syllable

Σ	Σ⚹
∅	ħ
s	r
r	r
n	nþ
þ	s
rþ	rs
cþ	cs
l	ł
f	m

Table 13.15: The ⚹ transformation for the fifth declension.

13.7 The sixth declension

Guidelines:

• Θ can be ⟦a⟧, ⟦e⟧, or ⟦i⟧.

• Λ can be ⟦a⟧ or ⟦e⟧.

• N cannot end with ⟦-nn-⟧.

- L is usually different from N, but it does not need to be.

- This declension class additionally has I and I′ stems, which are usually similar to the L stem.

- S may be the same as N, but the most common difference is to change the final consonants of N (especially changing voiceless coronals to voiced coronals and ⟦r⟧ to ⟦l⟧).

Case \ Number	Direct	Dual	Plural	Singulative	Generic
Nominative	NΘn	Njor	Nin[1]	NΘ$^\gamma$l	Nu
Accusative	NΘnΘ$^{ei/ae}$	N^{n}Θr	NΘr	NΘnΘ$^{ei/ae}$n	Nan
Dative	NΘns	NΘŋa	Neri	N^{n}Θs	Nas
Genitive	Nil	N^{t}il	Nevi	N^{n}in[1]	N^{n}e
Locative	LΛs	LΛc	LΛ$^\pi$s	LΛ$^\gamma$ns	LeΦ$_L$
Instrumental	cjaIes	cjaIecþ	cjaI′o	cjaI′ans	cjaIeΦ$_L$
Abessive	þja○Ies	þja○Iecþ	þja○I′o	þja○I′ans	þja○IeΦ$_L$
Semblative	Sit	Set		SictΘ	Sicþ
Consonantal conjunct	NΘn-				
Vocalic conjunct	NΘ$^{ei/ae}$n-				

Table 13.16: Declensions for sixth-declension nouns.
[1] Nien, N^{n}ien for ⟦-in⟧ nouns

13.8 L-avoidance

All declensions except for the fifth require an L stem that is frequently or even obligatorily distinct from the N stem. In addition, the L stem of a noun is fairly unpredictable from the corresponding N stem. The use of L stems thus adds a significant burden in acquiring and using the language. As a result, several periphrastic constructions to replace the use of the locative, instrumental, and abessive cases have come into use.

Case	Replacement	Signal	Comment
Locative	Genitive	fjones *location-LOC.DI*	
	Dative	es *inside*	Especially used for nouns describing areas
Instrumental			
Abessive	Genitive	intaras *absence-LOC.DI*	
	Genitive	linselþa *help-ABESS.DI*	

Table 13.17: L-avoidance strategies in Ŋarâþ Crîþ.

L-avoidance is more common with rarer nouns, as well as with names. However, using the cases that it replaces is considered more elegant and preferred in formal language.

Case \ Number	Singular	Dual	Plural	Generic
Locative	pelas	pelsac	pelir	peris
Instrumental	pelca	pelcac	pelcar	pelcef
Abessive	pilþa	pilþac	pilþar	pilþef
Semblative	pjot	pjočte	pjet	perþ

Table 13.18: Declensions for first-person pronouns.

Case \ Number	Singular	Dual	Plural	Generic
Locative	olas	olsac	oler	ores
Instrumental	olca	olcac	olcar	olcef
Abessive	eþa	eþac	eþar	aþef
Semblative	cet	cete	cet	cefte

Table 13.19: Declensions for second-person pronouns.

13.9   Pronouns and determiners

13.9.1   Personal pronouns

Basic personal pronouns

The BASIC PERSONAL PRONOUNS (Tables 13.18 – 13.22) are defective: they lack any forms for the core cases.

The first- and second-person pronouns are treated as if they were in the celestial gender, even though they will often refer to humans.

Basic personal pronouns are in the category *p* and avoid manifesting as free morphemes. They manifest in the following ways, ordered from most to least preferred:

- Fused with a coordinating conjunction if found as the left element

- In a relational with an object prefix

- As an object affix on the verb if in the accusative or dative case

- As a possessive postclitic (Sub-subsection 13.9.1) if in the genitive case, or in the nominative case of a nominalized verb phrase

- Omitted if inferable from the subject affix on a finite verb form

- As an independent form when in a non-core case

- Homophonic with the emphatic pronouns (Sub-subsection 13.9.1)

Case \ Number	Singular	Dual	Plural	Generic
Locative	eri	erjor	eren	eref
Instrumental	cjas	cjac	cjar	cjaf
Abessive	irþa	irþac	irþar	irþef
Semblative	atir	irce	adit	aden

Table 13.20: Declensions for third-person celestial pronouns.

Case \ Number	Singular	Dual	Plural	Generic
Locative	ose	osec	oros	oref
Instrumental	cjos	cjoc	cjor	cjof
Abessive	irþos	irþoc	irþor	irþof
Semblative	ator	ircon	adit	aden

Table 13.21: Declensions for third-person terrestrial pronouns.

Case \ Number	Singular	Dual	Plural	Generic
Locative	lase	lasec	laser	lasef
Instrumental	lasce	lascel	lasci	lascef
Abessive	laþes	laþecþ	laþer	laþef
Semblative	lefen	lefedi	adit	aden

Table 13.22: Declensions for third-person human pronouns.

Possessive clitics

Ŋarâþ Crîþ uses clitics to mark a pronominal possessor, listed in Table 13.23.

The vowels of the third-person celestial and human possessive clitics are omitted after an open syllable.

If the reflexive clitic immediately follows a vowel other than ⟦u⟧, then it changes that vowel to its hatted counterpart. If the vowel in question was not already hatted, then the ŋos is moved immmediately before it.

The clitic ⟨=ʼħe⟩ is used to indicate that the possessor is the referent of a prior ⟨šino⟩ or ⟨nema⟩ (Subsection 13.9.4).

The third-person possessive suffixes are also used in the double-marked POSSESSIVE CONSTRUCTION. In such a construction, the possessor takes the same case as the possessee and the clitic ⟨=ʼþ⟩ after a vowel or ⟨=ʼeþ⟩ after a consonant. The possessee takes the appropriate possessive clitic depending on the gender of the possessor. The possessor and possessee are not required to be adjacent to each other or even in a particular order.

In the general case, the possessive construction is used strictly for possession. That is, it does not have other functions of the genitive case such as apposition or composition.

The possessive construction is also used with the noun ⟨aliþ⟩ *something other than* as the possessee to 'negate' the possessor. This usage cannot be substituted with the genitive (although using non-third-person pronominal clitics on ⟨aliþ⟩ is permitted).

This construction is used with the pronouns ⟨šino⟩ and ⟨nema⟩ as the possessor in order to avoid ambiguity with the determiners, which are the genitive singular forms of these

Person & gender	Form
1st	=ʼpe
2nd	=ʼve
3rd celestial	=ʼ(a)c
3rd terrestrial	=ʼoc
3rd human	=ʼ(o)r
Reflexive	=ʼ(ê)cþ

Table 13.23: Pronominal clitics in Ŋarâþ Crîþ.

Type	Interrogative
Determiner	mê△
Pronoun	pen, ...
Pronoun (human)	penna, peþas, mpadit (Ih)
Pronoun (elective)	meel, maen, mełel, mirłos, meħot (IIIt)
Pronoun (place)	parja, perþas, pjalit (Ic)
Pronoun (time)	penelva, pełevas, pełevit (Ic.m)
Pronoun (event)	?
Pronoun (idea or speech)	peler, ...
Pronoun (kind)	pełoþ, pełoðen, pełaðes, pełiðit (IVc)
Pro-verb	nepit, nea, nepelta, nelpa, nelpeta, nolpaþos, nolpeve, ...

Table 13.25: Interrogative determiners and pronouns in Ŋarâþ Crîþ.

pronouns.

The use of the possessive construction is otherwise quite rare.

Reflexive and reciprocal pronouns

There is only one reflexive pronoun, ⟨cenþ⟩, whose declensions are shown in Table 13.24.

Case \ Number	Singular	Dual	Plural	Generic
Nominative	cenþ	cenþ	cemar	cemu
Accusative	cemen	cemas	cemas	ceman
Dative	cemi	cemic	cemir	cemase
Genitive	cema	cemac	cemo	ceme
Locative	ces	cesor	cis	cesef
Instrumental	ceŋa	ceŋac	ciŋa	ceŋaf
Abessive	cinþa	cinþac	cinþa	cinþaf
Semblative	cemit	cjorto	cit	cemicþ

Table 13.24: Declensions for the reflexive pronoun ⟨cenþ⟩.

Emphatic pronouns

Combining a reflexive pronoun with a possessive clitic creates an EMPHATIC PRONOUN, which acts roughly like a personal pronoun with an independent form but places focus on the referent.

Clusive pronouns

13.9.2   Interrogative pronouns and determiners

The interrogative determiners and pronouns in Ŋarâþ Crîþ are shown in Table 13.25.

Note that ⟨penna⟩ has an intrinsically mutated S stem.

The pronouns ⟨pen⟩ and ⟨peler⟩ are irregular.

Case \ Number	Singular	Dual	Plural	Generic
Nominative	pen	pen	penar	penaf
Accusative	penen	penas	penas	penas
Dative	peni	penic	penir	penef
Genitive	pena	vpenac	vpeno	penaf
Locative	pes	pesor	pis	pesac
Instrumental	peŋa	peŋac	piŋa	peŋaf
Abessive	pineþ	pinþac	pinþa	pinþaf
Semblative	pedit	pjorto	pit	pedecþ

Table 13.26: The declension of the irregular pronoun ⟨pen⟩ *what*.

Case \ Number	Singular	Dual	Plural	Generic
Nominative	peler	pelec	penare	penafel
Accusative	penreþ	penareþ	penareþ	penres
Dative	penres	penrecþ	penares	peneves
Genitive	penril	vpenric	vpenal	penavil
Locative	penraþ	penraþ	penarþ	penavaþ
Instrumental	penracþa	penracþa	penarcþa	penavacþ
Abessive	penraþa	penraþa	penarþa	penavaþa
Semblative	pelet	pelecþ	pelat	pelfet

Table 13.27: The declension of the irregular pronoun ⟨peler⟩ *what (idea, speech)*.

Informally, ⟨pen⟩ can be used instead of ⟨penna⟩ to refer to persons.

Note the difference between using an interrogative pronoun modified by a relative clause and using a similar noun in its place:

(33)   feljan moren navan ame.

felj-an　　　　　 *mor-en*　　　　　　 *nav-an*　　　　　 *am-e.*
this_speech-ACC.SG say-REL.NOM,ACC.CEL person-ACC.SG indifferent-1SG

The person who said this is not important (i.e. if *A* said this, then I don't care about *A*).

(34)   feljan moren pennan ame.

felj-an　　　　　 *mor-en*　　　　　　 *penn-an*　　　 *am-e.*
this_speech-ACC.SG say-REL.NOM,ACC.CEL who-ACC.SG indifferent-1SG

Who said this is not important (i.e. whether *A* said it or someone else did is not important).

13.9.3   Demonstrative pronouns and determiners

The demonstrative determiners and pronouns in Ŋarâþ Crîþ are shown in Table 13.28.

Type	Proximal	Distal
Determiner (celestial or human)	lê●	tê●
Determiner (terrestrial)	el	om
Pronoun (celestial)	ela, elras, elit (Ic)	enta, ontas, ensit (Ic)
Pronoun (terrestrial)	elos, elros, elot (IIIt)	entos, ontos, ensot (IIIt)
Pronoun (human)	eltan, elnas, enlit (Ih)	eften, iftes, cjariftes, cjarefto, evrit (VIh)
Pronoun (place)	elgren, …	engren, …
Pronoun (time)	endîr, endil, ondelt, endit (IIc.m), ina, jonas, insit (Ic.m)	
Pronoun (event)	?	?
Pronoun (idea or speech)	felja, foljas, felit (Ic)	fetja, fotas, fedit (Ic)
Pro-verb	ħelit	

Table 13.28: Demonstrative determiners and pronouns in Ņarâþ Crîþ.

The determiners ⟨lê⟩ and ⟨tê⟩ trigger eclipsis only if they lie directly before the head of what they modify.

The pronouns elgren and engren are irregular.

Case \ Number	Singular	Dual	Plural	Generic
Nominative	elgren	elgjor	elgrin	elgref
Accusative	elgranen	elgranor	elgrenin	elgrenef
Dative	elgres	elgrecþ	elgras	elgresef
Genitive	elgrer	elgreric	elgrir	elgrerif
Locative	eši	ešic	ešin	ešif
Instrumental	esar	esac	esor	esaf
Abessive	eþa	eþac	eþar	ecþaf
Semblative	elgrit	elgricte	elgret	elgricþ

Table 13.29: The declension of the irregular pronoun ⟨elgren⟩ *here.*

Case \ Number	Singular	Dual	Plural	Generic
Nominative	engren	engjor	engrin	engref
Accusative	engranen	engranor	engrenin	engrenef
Dative	engres	engrecþ	engras	engresef
Genitive	engrer	engreric	engrir	engrerif
Locative	eči	ečic	ečin	ečif
Instrumental	etar	etac	etor	etaf
Abessive	eða	eðac	eðar	egðaf
Semblative	engrit	engricte	engret	engricþ

Table 13.30: The declension of the irregular pronoun ⟨engren⟩ *there.*

13.9.4 Quantification

The pronouns ⟨šino, šjonas, šedit⟩ (Ic) means *all*, and ⟨nema, nomes, nemit⟩ (Ic) means *some* or *any*. When qualified with a modifying phrase, their scopes are restricted:

(35)   naven šinaf ndranlos.

nav-en   šin-af   n\dranl-os.
human-GEN.SG all-NOM.GC PFV\die-3GC.PAST.PFV

All humans [will] die.

However, both of these quantifiers can also be used in the genitive singular as determiners, provided that the head of the noun phrase being modified is partially lenited. Furthermore, forms of ⟨ðên⟩ are not mutated. That is, the above example may have used ⟨šinen navaf⟩ instead.

When a noun phrase containing ⟨šino⟩ or ⟨nema⟩ is in the generic number, it is considered to cover all or some of the relevant individuals in general. When such a noun phrase is in any other number, it is considered to have a partitive meaning, with the number reflecting the quantity of the whole:

(36)   naven šinor sâna mênčeþ.

nav-en   šin-or   sân-a   mênč-e-þ.
human-GEN.SG all-ACC.PL bear-NOM.SG eat-3SG.PFV-PAST

All of the humans were eaten by a bear.

Of course, this example could have used ⟨šinen navar⟩ instead.

Scope ordering is covered in Section 9.4.

The semantically related noun ⟨ruf⟩ *each* modifies a noun somewhere before it in the same clause with the same case. If ⟨ruf⟩ does not immediately follow the noun that it affects, that noun undergoes a partial lenition if it does not already have a mutation.

The determiner ⟨mel⟩ means *much* or *many*. It is not inflected, but the corresponding pronoun ⟨denfo, danfes, denfit⟩ (Ic) is. From the latter is derived ⟨&denfo, &danfes, &denfit⟩ (Ic) *majority*. Similarly, the determiner ⟨dân⟩ *few, little* corresponds to the pronoun ⟨dane, dones, denit⟩ (Ic), but the word for *minority* is ⟨resa, risas, redit⟩ (Ic). Additionally, ⟨dân⟩ triggers eclipsis in the head noun.

For numerals, see Chapter 16.

13.10   Coordination

Noun phrases are coordinated by attaching a clitic to all except the first coordinand. A noun phrase may be coordinated only with others of the same case.

When the first coordinand is pronominal, then it is fused into the coordinating clitic, leaving the other coordinands behind.

The gender of a coordinated noun phrase involving the *and* operation is the strongest of those of the coordinands. For this purpose, the human gender is stronger than the celestial, which is stronger than the terrestrial gender.

All coordinated noun phrases inherit the person in the same way: the first person takes precedence over the second, which takes precedence over the third.

Operation	X = NP	X = 1	X = 2	X = 3	Inherits number & gender from
X **and** Y	='ce	='cjo	='gjo	='cil	X plus Y
X **or** Y	='te	='čo	='djo	='čil	Y
X **xor** Y	='re	='pre	='vre	='ril	Y
X **but not** Y	='ne	='njo	='mjo	='nil	X

Table 13.31: Coordinating clitics in Ŋarâþ Crîþ.

Case	Direct	Indirect	Indirect-SR
Nominative	ner	ler	n/a
Accusative	ne	reþ	raſt
Dative	nes	res	rens
Genitive	nel	ril	rels
Locative	nos	raþ	reþþe
Instrumental	noca	racþa	racþaf
Abessive	noþa	raþa	raþas
Semblative	nit	ret	ret

Table 13.32: Quotative particles in Ŋarâþ Crîþ.

When there are more than two coordinands, then the respective clitics occur on each element after the first. X_1 *xor ... xor* X_n means *exactly one of* X_i; X_1 *but not ... but not* X_n means X_1 *but not any later* X_i. All pronominal clitics occur at the end of the coordinated noun phrase. In 'but not'-coordinated phrases, there can be only one pronominal clitic (namely, the one representing the first item).

If the coordinands are quotatives, then the clitics are placed after the quoted items themselves, immediately after the *þos*, and only one quotative particle is used.

13.11   Quotatives

Quotatives are formed by wrapping the quoted material in quotation marks, followed by a particle depending on case and directness, forming a noun phrase.

Direct quotatives are used for verbatim speech. Indirect quotatives indicate some kind of paraphrasing and do not necessarily represent what someone has said. There exists a separate set of switch-reference indirect quotatives, which are used when (1) both the outer and inner clauses have a third-person subject and (2) the subjects do not corefer.

Direct quotatives necessarily inherit the personal and temporal deixis of the one who said its contents. The personal deixis does not shift inside an indirect quotative, but the temporal deixis shifts to that of the outer event:

(37)   #flirora «eltan cþasce» reþ maraþ.

    #fliror-a   *«elt-an*   *cþasc-e»* *reþ*   *mar-a-þ.*
    (name)-NOM.SG salmon-ACC.CO cook-3SG QUOT.ACC.IND say-3SG-PAST

    #flirora₁ said that they₁ *(sg)* were cooking salmon.

(38)   #flirora «eltan cᶈasce» raŝt maraþ.

#fliror-a	*«elt-an*	*cᶈasc-e»*	*raŝt*	*mar-a-þ.*
(name)-NOM.SG	salmon-ACC.CO	cook-3SG	QUOT.ACC.IND.SR	say-3SG-PAST

#flirora₁ said that they₂ *(sg)* were cooking salmon.

13.12 Names

The most salient types of names – namely, personal and place names – have markers, although other types of names, such as titles of works, do not.

Names can manifest in two ways: as UNQUALIFIED NAMES or as QUALIFIED NAMES. Unqualified names refer to names that stand alone as full noun phrases.

A qualified name, on the other hand, is a name accompanied by the type of entity it refers to as done in Toki Pona. In such a name, the common noun comes first and is suffixed with a marker or punctuation correlated to the name:

- ⟨#⟩ for a given name

- ⟨+⟩ for a surname

- ⟨+#⟩ for a surname and a given name

- ⟨@⟩ for a place name

- ⟨«»⟩ for a work title

In particular, the common noun is never suffixed with a *nef*, and these postfixes do not affect the letter sum of the noun.

Qualified names are used in the following situations:

- As part of the conventional name for geographic features, such as ⟨vlêcadir@ @elþana⟩ *the Elþana archipelago.*

- To ascribe a title to a personal name (Subsection 13.12.1).

- To emphasize or disambiguate the type of entity that is being referred to.

- To refer to an entity by a name that is not phonotactically or morphologically adapted to Ŋarâþ Crîþ.

13.12.1 Personal names

Ŋarâþ Crîþ recognizes two parts of personal names: the surname and the given name, in that order. Surnames are marked with either a *tor*, ⟨+⟩ or a *njor*, ⟨+*⟩. The *tor* is used for surnames passed by native conventions (i.e. from parent to child within the same gender), while the *njor* marks a surname passed using non-native conventions. The presence of a *njor* is correlated but does not always coincide with that of a *nef* (⟨*⟩): 'foreign' surnames can be passed by 'native' conventions; in the opposite direction, a *njor* might be present without a *nef* in a calqued surname, as well as in a few native surnames that are traditionally passed by a non-native convention.

A given name is marked with a *carþ*, ⟨#⟩. If a person is known by a single name only, then the name is treated as a given name.

Both the surname and the given name are declined nouns.

A person is addressed or mentioned using the surname, given name, or both, with the surname being more formal than the given name. Nonetheless, the choice of whether to address someone by their surname or by their given name can also depend on other factors such as convenience of pronunciation or distinguishing between multiple people with the same given name or surname.

The use of titles is limited: there is no direct equivalent to *Mr.* or *Ms.*. Instead, titles are used merely to describe the role of the person. Notably, (1) they are always nouns, (2) they are never used in the vocative, (3) they are used with the person's name when the person in question is introduced, and (4) the use of the title alone in later mentions over the name carries no social connotation otherwise. The closest equivalent to *sir* or *madam* is ⟨cercerin⟩, meaning *stranger*, which is used to address someone whose name is not known.

A title can be used as a part of a qualified name:

(39)   dosareþ+# +astova #ageþne «tfaren inora sarałêns arnenden cenventês ndogenħal» reþ maraþ.

dosareð-∅+#	*+astov-a*	*#ageþn-e*	*«tfar-en*	*inor-a*
teacher-NOM.SG	(surname)-NOM.SG	(given)-NOM.SG	money-GEN.SG	void-NOM.SG

sarał-êns	*arnend-en*	*cenvent-ês*	*n\dogenħ-al»*
school-ACC.SG	music-GEN.CO	course-DAT.CO	PFV\CAUS-TWIST-3SG.INV

reþ	*mar-a-þ.*
QUOT.ACC.IND	say-3SG-PAST

+astova #ageþne, a teacher, stated that the lack of money has caused the school to reduce funding for music classes.

Because titles are used with names only to introduce a person, ⟨+#⟩ is the most common choice for the postmarker.

13.12.2   Place names

The name of any kind of place is marked with an *es*, ⟨@⟩.

13.12.3   Language names

Languaeg names are zero compounds in which the first word is ⟨ŋarâþ⟩ *language*. The second word is frequently the name of a place associated with the language, as in ⟨ŋarâþ @asoren⟩, or an uninflected word. The major exception is ⟨ŋarâþ crîþ⟩, which uses the common noun ⟨crîþ⟩ *forest*.

13.12.4   Titles of works

Chapter 14

Verbs

PREDICATES can be divided into INDEPENDENT VERBS (IVERBS) and RELATIONALS. In this chapter, we look at verbs; Chapter 15 covers relationals.

The adnominal and adverbial forms of a predicate are collectively called MODIFYING FORMS.

14.1   Valency and case frame

All predicates have at least a nominative-case argument (the SUBJECT). Verbs are classified into five valency classes:

- INTRANSITIVE VERBS take only a nominative argument, without an accusative or dative argument.

- SEMITRANSITIVE VERBS take a nominative and dative argument.

- TRANSITIVE VERBS take a nominative and accusative argument.

- DITRANSITIVE VERBS take a nominative, accusative, and dative argument.

- AUXILIARY VERBS (Subsection 14.10.3) are not iverbs and thus are not predicates. Instead, they are a class of PREDICATE MODIFIER.

Note that the labels of "nominative", "accusative", and "dative" arguments are somewhat arbitrary; the role of each case depends on the verb in question. However, there are some general tendencies:

- The agent, if present, is almost always the nominative argument.

- If the action described by a verb is perceived as having a direct effect on the patient, then the verb is more likely to be transitive than semitransitive.

- Conversely, if the action described by a verb is perceived as having an *indirect* effect on the patient, then the verb is more likely to be semitransitive than transitive.

- In a ditransitive verb with both a theme and a recipient, the theme is more likely to be accusative than dative.

- If there is an experiencer, then it is more likely than not to be in the nominative.

Feature	Independent verbs	Relationals
Semantics	Can indicate an action or state	Can indicate a state in relation to another entity
Valency	1 – 3 arguments	Usually 2 arguments, but occasionally 3
Case frame	Nominative, plus possibly accusative and dative arguments depending on the verb	Nominative plus dative by default; the second argument can be accusative to change the meaning to involve motion towards the object or abessive for motion away from it
Finite form	Finite conjugations	Attached to a scaffolding verb
Modifying nouns	Participle forms (marked for case of shared noun in both the embedded and the main clause, as well as the gender of the shared noun in the main clause)	Lemma form or modified, depending on bias
Modifying verbs	Converbal forms	Lemma form or modified, depending on bias
Nominalized form	Particle + infinitive	?

Table 14.1: Comparison between independent verbs and relationals.

14.2   Predicate modifiers

Predicate modifiers take as input one or more predicates and output another predicate as a result. They include:

- Auxiliary verbs: the resulting predicate has the same case frame as the input

- The causative voice affix ⟦do-⟧, which increases valency by one

- Adverbial phrases

14.3   Verb categories

Predicates can mark the person and number of various arguments. First-person dual or plural arguments marked this way are also distinguished by clusivity. Whenever this is allowed, it might be possible to instead specify a reflexive or reciprocal argument.

Ŋarâþ Crîþ has two tenses: present (more precisely, nonpast) and past. In addition to the present, the present tense covers the future as well as the immediate past.

The present tense is also used as a narrative present: in stories, the past tense is used only for events that had happened before the current point.

Ŋarâþ Crîþ has two aspects: imperfective and perfective. The imperfective aspect is used for ongoing (such as progressive or habitual) actions.

Person \ Number	Singular	Dual	Plural	Generic
1st excl.	-Θ^τ	-Θ^τn	-Θ^φcþ	-$\Theta^\tau\Phi$.
1st incl.		-$\Theta^{\tau\cdot\eta}$n	-$\Theta^{\varphi\cdot\eta}$cþ	
2nd	-Θ^φs	-Θ^φns*	-Θ^φr	-$\Theta^\varphi\Phi$.
3rd	-Θ^φ	-Θ^φn	-Θ^ψ	-u

Table 14.2: Conjugation of vitreous verbs according to the subject (direct aspect).

Person \ Number	Singular	Dual	Plural	Generic
1st excl.	-Θ^τl	-Θ^τnis	-Θ^φcþis	-$\Theta^\tau\Phi$.
1st incl.		-$\Theta^{\tau\cdot\eta}$nis	-$\Theta^{\varphi\cdot\eta}$cis	
2nd	-Θ^φres	-Θ^φnsis	-Θ^φris	-$\Theta^\varphi\Phi$.
3rd	-Θ^φl	-Θ^φnis	-Θ^ψris	-os

Table 14.3: Conjugation of vitreous verbs according to the subject (inverse aspect).

In conjugation, aspects can be labeled as DIRECT or INDIRECT. The perfective aspect is used for completed actions. The DIRECT ASPECT is imperfective for the present tense and perfective for the past tense; the INVERSE ASPECT is the other aspect.

14.4 Inflection of verbs

A verb has six stems: I (infinitive), N (nonpast), P (past), R (nominative-rcase relative), Q (other relative), and L (locative). In addition, it has one thematic vowel, Θ, which is either ⟦a⟧ or ⟦i⟧.

The primary lemma form of a verb is its INFINITIVE, which is always ⟦IΘt⟧.

If the stem of a verb ends with a vowel that is the same as the initial vowel of the following affix or differs only in tone, then ⟦ħ⟧ is inserted as a bridge between them. This epenthesis applies to all verb forms and is implied whenever an abstract form is given.

The consonantal conjunct form of a verb is ⟦Ii⟧, and the vocalic conjunct form is ⟦Ij⟧.

14.5 Finite forms

Verbs can be divided into VITREOUS and RESINOUS verbs based on the conjugation of their finite forms. Resinous verbs exhibit more fusion in the finite forms than vitreous verbs, and they have a few forms that are absent in vitreous verbs.

A third-person generic subject not specified elsewhere often corresponds to an impersonal subject.

14.5.1 Vitreous verbs

In vitreous verbs, there are two different affixes used depending on the aspect relative to the tense (Tables 14.2 & 14.3).

Present-tense forms use the N stem and past-tense forms use the P stem. For the past tense, there is an additional tense suffix if the person–number affix has only one vowel: ⟦-þ⟧ when the preceding affix ends with a vowel or ⟦-r⟧ and ⟦-ta⟧ otherwise. (To be precise, the empty coda is changed to ⟦-þ⟧, and ⟦-r⟧ is changed to ⟦-rþ⟧.) If the person–number affix contains two or more vowels, then there is no tense affix and P^t is used in place of P.

Person \ Number	Singular	Dual	Plural	Generic
1st excl.	pe	pjo	po	ten
1st incl.		pjô	pô	
2nd	ve	vi	vo	ves
3rd celestial	le			
3rd terrestrial	lu			
3rd human	les	lis	los	
3rd epicene		li	lo	las
Reflexive	cin			
Reciprocal	riþ			

Table 14.4: Object affixes for vitreous verbs.

Person \ Number	Singular	Dual	Plural	Generic
1st excl.	$N\Theta^{\tau}$	$N\Theta^{\tau\cdot\eta}$c	$N\Theta^{\varphi}$þ	$N\Theta^{\tau}\Phi_N$
1st incl.		$N\Theta^{\tau}$c	$N\Theta^{\varphi\cdot\eta}$þ	
2nd	$N\Theta^{\varphi}$s	$N\Theta^{\varphi}$vi	$N\Theta^{\varphi}$r	$N\Theta^{\varphi}\Phi_N$
3rd	N^{ε}[1]	N^{t}e	$N\Theta^{\psi}$	Nu

Table 14.5: Conjugation of resinous verbs according to the subject (present imperfective).
[1] $N\Theta^{\varphi}$ if followed by an object affix.

Additionally, in perfective forms, the verb is eclipsed.

The second-person dual direct suffix is ⟦-Θ^{φ}ns⟧ if there are no subsequent suffixes but ⟦-Θ^{φ}n⟧ if there are.

The first- and second-person generic forms use phi consonants according to the stem used, possibly with fusion, but before ⟦ħ⟧-epenthesis.

An object affix can be added immediately after the person–number affix (i.e. before the tense affix if it is present) and shows the person and number of an accusative or dative argument. It is never necessary, but it cannot appear redundantly to an explicitly stated argument that is not postposed.

14.5.2   Resinous verbs

The resinous finite forms are described in Tables 14.5 – 14.8.

Resinous verbs use object affixes at the end, but the forms used are different from those

Person \ Number	Singular	Dual	Plural	Generic
1st excl.	●$N\Theta$e[1]	○Naŋe	○$N\Theta^{\tau}$n	$P\Theta^{\tau}\Phi_P$
1st incl.		○Nâge	○$N\Theta^{\tau\cdot\eta}$r	
2nd	●Nea	●$N\Theta$ste	●$N\Theta^{\varphi}$ris	$P\Theta^{\varphi}\Phi_P$
3rd	●$N\Theta^{\varphi}$[2]	●$N\Theta^{\varphi}$n	●$N\Theta^{\psi}$	Nos

Table 14.6: Conjugation of resinous verbs according to the subject (present perfective).
[1] When the final bridge of N is empty, then this form is ●$Np\Theta^{\tau}$, with the final bridge being stripped from N.
[2] The object affix is prefixed instead, and lenition occurs on the object affix instead of eclipsis.

Person \ Number	Singular	Dual	Plural	Generic
1st excl.	PΘ^τlt[1]	P$^n\Theta^\tau$si	P$^n\Theta^\tau$vi	$\triangle$N$\Theta^\tau\Phi_N$ta
1st incl.		P^{n}eca	P$^n\Theta^\tau$i	
2nd	PΘ^φcþ	P$^\flat\Theta^\varphi$c	P$^\flat\Theta^\varphi$łΘ^τ	$\triangle$N$\Theta^\varphi\Phi_N$ta
3rd	P$^\flat\Theta^\varphi$l[2]	P$^t\Theta^\varphi$nþ[3]	P$^\flat\Theta^\psi$r	Poþ

Table 14.7: Conjugation of resinous verbs according to the subject (past imperfective).
[1] PΘ^τl when followed by an object affix.
[2] P$^\flat\Theta^\varphi$r when followed by an object affix.
[3] P$^t\Theta^\varphi$n when followed by an object affix.

Person \ Number	Singular	Dual	Plural	Generic
1st excl.	●P$^t\Theta^\tau$	●Q^{t}ôr	●QΘ^τŝt[1]	●P$\Theta^\tau\Phi_p$ta
1st incl.		●Q^{t}or	●Q^{t}ełt[2]	
2nd	●P$^t\Theta^\varphi$s	●P^{t}eši	●P$^t\Theta^{\varphi\cdot\gamma}$s	●P$\Theta^\varphi\Phi_p$ta
3rd	●P$^t\Theta^\varphi$	●P$^t\Theta^\varphi$ri	●P$^t\Theta^\varphi$lt[3]	●Poþ

Table 14.8: Conjugation of resinous verbs according to the subject (past perfective).
[1] ●Q$^t\Theta^{\tau\cdot n}$s when followed by an object affix.
[2] ●Q^{t}êłi when followed by an object affix.
[3] ●P$^t\Theta^\varphi$l when followed by an object affix.

for vitreous verbs, and there are alternate forms if the object suffix follows ⟦-l⟧.

If the object affix is prefixed as in the present perfective third-person singular forms, then the first-person plural exclusive and inclusive forms become ⟦gin-⟧ and ⟦gîn-⟧. Additionally, if an object affix would otherwise be eclipsed, it is instead lenited.

Transfinite forms

On top of the finite forms, resinous verbs have TRANSFINITE forms, which encode additional categories. They may be syntactically finite or otherwise and receive object affixes as usual:

- The second-person singular imperative: ⟦N$^\flat$au⟧. The headp ⟨le⟩ is used even when this form is used.

Person \ Number	Singular	Dual	Plural	Generic
1st excl.	pe	pal (pae)	gins	peł (peþ)
1st incl.		pâl (paê)	gîns	
2nd	ve	vel (ven)	tor	veł (veþ)
3rd celestial	li (gi)			
3rd terrestrial	rel			
3rd human	li (gi)	lec (geþ)	ljen (gjan)	
3rd epicene		lec (geþ)	lje (gja)	sâ
Reflexive	cin			
Reciprocal	riþ (giþ)			

Table 14.9: Object affixes for resinous verbs.

- The SUPINE form, which is an adverbial or adnominal form indicating the purpose of another action: ⟦N^{n}els⟧ (⟦N^{n}ase⟧ before an object affix). This is equivalent to using the relational ⟨roc⟩ with a dative nominalized form.

- The ACTIVE GERUNDIVE forms, which indicate the intended purpose or fate of the subject. The predicative form is ⟦N^{n}elvΘ$^\varphi$⟧, and the attributive form is ⟦N^{n}ełor⟧ when the head NP is terrestrial and ⟦N^{n}elvΘ$^{\varphi\cdot\gamma}$n⟧ when it is of any other gender. The attributive form has prefixed object affixes. The terrestrial attributive form can also be used adverbially.

- The PASSIVE GERUNDIVE forms, which indicate the intended purpose or fate of the direct or indirect object. The predicative form is ⟦N$^\flat$elvΘ$^\varphi$⟧, and the attributive form is ⟦N$^\flat$elvΘ$^{\varphi\cdot\gamma}$n⟧. The attributive form has prefixed object affixes. The attributive form can also be used adverbially.

The active and passive gerundive forms are often used for future actions.

14.6   Participles (adnominal forms)

Participle forms of verbs are used in RELATIVE CLAUSES. The COMMON ARGUMENT of a relative clause is the referent shared between the relative clause and the outer clause. Participles are then distinguished by:

- the RELATIVE CASE or RCASE – the case of the common argument in the relative clause (nominative, accusative, or dative; as well as the genitives of any of these separataely)

- the HEAD CASE or HCASE – the case of the common argument in the outer clause (any case)

and optionally, depending on the genus:

- the HEAD GENDER or HGENDER – the gender of the common argument in the outer clause

- the HEAD NUMBER or HNUMBER – the number of the common argument in the outer clause

In general, participles with nominative rcase use the R stem, while participles with other rcases use the Q stem.

In terms of participle forms, verbs are first divided into GENERA, which describe the broad pattern of inflection, and within each genus into SPECIES.

Participles of GENUS I verbs mark for hgender but not for hnumber. Participles of GENUS II verbs mark for hnumber but not for hgender. Participles of GENUS III verbs mark for whether or not the hnumber is singular and mark for hgender only when the hnumber is singular.

A participle of a genus I verb with terrestrial hgender triggers a lenition in the noun it modifies if the noun follows the participle immediately.

Because participles agree with the heads of relative clauses, relative clauses can be moved away from their heads.

Participle forms can also take object affixes, but the affixes occur before the root in this case, and the vitreous set is used regardless of the verb's material. If an object affix is present, then it describes a nominative, accusative, or dative argument in the embedded clause that is

not the common argument. Again, an object affix cannot appear redundantly to an explicitly stated argument, and if an object affix would otherwise be eclipsed, it is instead lenited.

Relative clauses can modify free noun phrases only; they cannot modify bound pronouns (such as subject or object inflections on verbs or possessive clitics). This restriction sometimes requires a personal pronoun to be expressed in a free form as an emphatic pronoun (Subsection 13.9.1).

A semantically vague noun such as ⟨sar⟩ or ⟨nava⟩ can be used as the head of a relative clause. Alternatively, in informal language, the participle may be modified by a demonstrative determiner for the same purpose.

14.6.1 Genus I

Genus I participles distinguish rcase, hcase, and hgender.

Species I$_1$

Species I$_1$ specifies only the forms in which the rcase is nominative. The rest are derived from these as such:

- infix ⟦-aþ-⟧ between the stem and the ending to get the respective forms with accusative rcase,

- infix ⟦-Λ^γþ-⟧ to get the respective forms with dative rcase,

- infix ⟦-Λ^γn-⟧ to get the respective forms with genitive-of-nominative rcase,

- infix ⟦-anþ-⟧ to get the respective forms with genitive-of-accusative rcase, and

- infix ⟦-Λ^γnþ-⟧ to get the respective forms with genitive-of-dative rcase.

If the stem ends with ⟦þ⟧ or ⟦ð⟧, then all ⟦þ⟧s in the above infixes are replaced with ⟦t⟧s.

Each species I$_1$ verb specifies a celestial ending and a terrestrial ending. The celestial ending is one of ⟦-a⟧, ⟦-e⟧, ⟦-o⟧, ⟦-an⟧, ⟦-en⟧, or ⟦-in⟧. The terrestrial ending can be ⟦-os⟧ or ⟦-or⟧ if the celestial ending ends in a vowel, and ⟦-on⟧ or ⟦-or⟧ if it ends in ⟦-n⟧.

For this species, let Λ be the vowel of the celestial ending, Σ its (possibly empty) coda, and Γ the coda of the terrestrial ending.

For nominative to locative hcases, the forms for terrestrial hgender (Table 14.10) are determined separately from the forms for other hgenders (Table 14.11).

Σ	$\varnothing$		**n**	
Γ	**s**	**r**	**n**	**r**
Nominative	-os	-or	-on	-or
Accusative	-on	-on	-anon	-on
Dative	-oþ	-oþ	-os	-os
Genitive	-el	-el	-el	-el
Locative	-orþ	-orþ	-ori	-ori

Table 14.10: Terrestrial-hcase forms by ending type.

Species I$_1$ contains three sets of suffixes for the instrumental- and abessive-hcase forms (Table 14.12). The set to be used must be memorized for each verb; however, verbs whose R

Σ	∅		n	
Hgender	**Cel**	**Hum**	**Cel**	**Hum**
Nominative	-Λ	-Λc	-Λn	-Λn
Accusative	-Λn	-ôr	-Λna	-Λ$^{a/e}$an
Dative	-Λs	-Λs	-Λns	-Λns
Genitive	-Λ$^{\gamma}$n	-jôr	-il	-il
Locative	-Λ$^{\gamma}$s	-Λ$^{\gamma}$s	-Λ$^{\gamma}$s	-Λ$^{\gamma}$s

Table 14.11: Celestial- and human-hcase forms by ending type.

or Q stems contain labial consonants will generally not take the α-class endings, and those whose stems end with ⟦þ⟧ or ⟦ð⟧ take the δ-class endings if they would not otherwise be in class α.

Case	Instrumental			Abessive		
Hgender	**Cel**	**Ter**	**Hum**	**Cel**	**Ter**	**Hum**
α	-epa	-epos	-epac	-eši	-eši	-ešic
β	-(e)la	-(e)lon	-(e)lac	-(e)na	-(e)nor	-(e)nac
γ	-(e)la	-(e)lon	-(e)lac	-(e)ta	-(e)tor	-(e)tac
δ	-êl	-êl	-êl	-eva	-evor	-evac

Table 14.12: Instrumental- and abessive-hcase endings.

In rcases other than nominative, the β- and γ-class instrumental suffixes lack the initial ⟦e⟧. That is, the infixes for these rcases become ⟦-aþl-⟧, ⟦-Λ$^{\gamma}$þl-⟧, ⟦-Λ$^{\gamma}$nl-⟧, ⟦-anþl-⟧, and ⟦-Λ$^{\gamma}$nþl-⟧.

The abessive suffixes work similarly, except that the genitive-of-nominative-rcase infix becomes ⟦-ann-⟧ or ⟦-ant-⟧ instead. (Equivalently, these suffixes work as if they cause the stem plus rcase infix to be fused with their first consonant.)

Finally, the semblative forms have the affixes ⟦-el⟧ for all three genders.

Species I$_3$

Species I$_3$ specifies the forms for the nominative, accusative, and genitive rcases (Table 14.13). The genitive-rcase forms are derived from their non-genitive-rcase counterparts by fusing the appropriate stem with ⟦n⟧. This species contains two subspecies: w and x.

Species I$_3$ uses the same instrumental and abessive affixes as I$_1$, except that the vowels in the β- and γ-class suffixes are never omitted.

14.6.2   Genus II

Genus II participles distinguish rcase, hcase, and hnumber.

Species II$_4$

Species II$_4$ specifies only the forms in which the rcase is nominative. The rest are derived from these as such:

- infix ⟦-el-⟧ between the stem and the ending to get the respective forms with accusative rcase,

Subspecies	w			x		
Hcase \ Hgender	Cel	Ter	Hum	Cel	Ter	Hum
Nominative rcase						
Nominative	-a	-os	-ac	-iþ	-os	-icþ
Accusative	-an	-on	-ôr	-inþ	-on	-orþ
Dative	-as	-oþ	-as	-iþo	-oþ	-icþo
Genitive	-er	-or	-er	-ir	-or	-ir
Locative	-ei	-ei	-ei	-ei	-ei	-ei
Instrumental	See below					
Abessive	See below					
Semblative	-et	-ot	-est	-it	-ot	-ist
Accusative rcase						
Nominative	-e	-ios	-ec	-aþ	-avas	-acþ
Accusative	-en	-osi	-en	-anþ	-avan	-arþ
Dative	-es	-ioþ	-es	-aþo	-avaþ	-acþo
Genitive	-eri	-ori	-eri	-ar	-avar	-ar
Locative	-ami	-ami	-ami	-ami	-ami	-ami
Instrumental	⟦Qᵗ⟧ + nominative-rcase endings					
Abessive	⟦Qᵗ⟧ + nominative-rcase endings					
Semblative	-aþet	-aþot	-aþest	-aþit	-aþot	-aþist
Dative rcase						
Nominative	-ae	-ajos	-ace	-eþ	-evas	-ecþ
Accusative	-aen	-ajon	-acen	-enþ	-evan	-erþ
Dative	-aes	-ajoþ	-aces	-eþo	-evaþ	-ecþo
Genitive	-ari	-aôr	-ari	-er	-evar	-er
Locative	-emi	-emi	-emi	-emi	-emi	-emi
Instrumental	⟦Qᵇ⟧ + nominative-rcase endings					
Abessive	⟦Qᵇ⟧ + nominative-rcase endings					
Semblative	-eþet	-eþot	-eþest	-eþit	-eþot	-eþist

Table 14.13: Participle form inflections for species I₃.

Hcase \ Hnumber	Singular	Dual	Plural	Generic
Nominative	-ΛΣ	-Λc	-Λ$^{\pi}$	-Λ^{+}Φ̣
Accusative	-Λn	-ôr	-on	-Λ^{+}Φ̣en
Dative	-Λs^{1}	-^{t}Λs	-os	-Λ^{+}Φ̣es
Genitive	-Λ$^{\gamma}$n	-^{t}Λ$^{\gamma}$n	-in	-^{n}eΦ̣
Locative	-Λ$^{\gamma}$s	-Λ$^{\gamma}$śta	-is	-eΦ̣o
Instrumental	-Λ$^{\gamma}$ls	-Λ$^{\gamma}$lþa	-ils	-eΦ̣os
Abessive	-Λ$^{\gamma}$ma	-Λ$^{\gamma}$nva	-ima	-elceΦ̣
Semblative	-it	-iċta	-et	-icþ

Table 14.14: Participle form inflections for species II$_4$ (celestial endings).
^{1} -o if Σ is ⟦s⟧.

- infix ⟦-eł-⟧ to get the respective forms with dative rcase,

- infix ⟦-Λn-⟧ to get the respective forms with genitive-of-nominative rcase, where Λ is the first vowel of the nominative-rcase ending,

- infix ⟦-Λnl-⟧ to get the respective forms with genitive-of-accusative rcase, and

- infix ⟦-Λnł-⟧ to get the respective forms with genitive-of-dative rcase.

The ending can be one of ⟦-a⟧, ⟦-e⟧, ⟦-o⟧, ⟦-as⟧, ⟦-es⟧, ⟦-ar⟧, ⟦-er⟧, ⟦-os⟧ or ⟦-or⟧, or ⟦-on⟧. The last three endings encompass the terrestrial ending set (Table 14.15), and the others encompass the celestial ending set (Table 14.15).

Let Λ be the vowel of the ending and Σ its (possibly empty) coda. Then the celestial ending set is as follows:

The terrestrial ending set is as follows:

Hcase \ Hnumber	Singular	Dual	Plural	Generic
Nominative	-oΣ	-oc	-or^{1}	-u
Accusative	-on^{2}	-ar	-en	-aΦ̣
Dative	-os^{3}	-ocþ	-erþ	-as
Genitive	-el	-acel	-il	-eΦ̣
Locative	-ecþ	-ecþ	-acþ	-eceΦ̣
Instrumental	-els	-elþa	-ils	-eΦ̣os
Abessive	-ema	-enva	-ima	-elceΦ̣
Semblative	-ot	-oċtos	-ot	-ocþ

Table 14.15: Participle form inflections for species II$_4$ (terrestrial endings). In this case, Λ is always ⟦o⟧.
^{1} -es when Σ is ⟦r⟧.
^{2} -an when Σ is ⟦n⟧.
^{3} -oþ when Σ is ⟦s⟧.

Species II$_3$

In species II$_3$, the stem is followed by the rcase infix, which come in two sets: ⟦-es- -est- -ist- -ens- -ent- -int-⟧ (*s*-INFIXES) and ⟦-ev- -eft- -ift- -env- -enf- -inf-⟧ (*v*-INFIXES).

The rcase infix is then followed by the hcase–hnumber suffix (Table 14.16). The generic-hnumber forms are identical to the singular-hnumber forms.

Hcase \ Hnumber	Sg. / Gc.	Dual	Plural
Nominative	-a	-ac	-o
Accusative	-an	-or	-on
Dative	-as	-acþ	-os
Genitive	-en	-er	-in
Locative	-al	-al	-al
Instrumental	-aþ	-aþ	-oþ
Abessive	-af / -ał	-af / -ał	-ef / -eł
Semblative	-et	-ecþ	-it

Table 14.16: Hcase–hnumber suffixes for species II₃.

The abessive-hcase suffixes use ⟦f⟧ for the *s*-infixes and ⟦ł⟧ for the *v*-infixes.

14.6.3 Genus III

Genus I participles distinguish rcase and hcase. The forms with singular hnumber also distinguish hgender; otherwise, both hnumber and hgender are unspecified.

Species III₂

Species III₂ specifies only the forms in which the rcase is accusative or dative (Table 14.17). The rest are derived from these as such:

- Infix ⟦-en-⟧ between the stem and the ending of the accusative-rcase form to get the respective forms with nominative rcase. If the ending starts with ⟦e⟧, in which case infix ⟦-an-⟧ instead.

- Infix ⟦-il-⟧ between the stem and the ending of the accusative-rcase form to get the respective forms with genitive-of-nominative rcase.

- Infix ⟦-ag-⟧ between the stem and the ending of the accusative-rcase form to get the respective forms with genitive-of-accusative rcase. However, the infix is ⟦-aþ-⟧ for the locative-hcase forms.

- Infix ⟦-eg-⟧ between the stem and the ending of the dative-rcase form to get the respective forms with genitive-of-dative rcase.

Hnumber	Singular			Other
Hcase \ Hgender	Celestial	Terrestrial	Human	—
Accusative rcase				
Nominative	-ar	-on	-ar	-als
Accusative	-an	-anon	-an	-alna
Dative	-arþ	-os	-as	-arþ
Genitive	-en	-el	-en	-il
Locative	-eca	-ecos	-eac	-ego
Instrumental	-eli	-els	-eli	-ili
Abessive	-eno	-enos	-eno	-ene
Semblative	-et	-ot	-est	-et
Dative rcase				
Nominative	-or	-eħon	-or	-els
Accusative	-aħon	-onon	-aħon	-ana
Dative	-orþ	-eħos	-orþ	-orþ
Genitive	-in	-il	-in	-in
Locative	-oca	-ecos	-avac	-avo
Instrumental	-ore	-ore	-ore	-ori
Abessive	-one	-one	-one	-oneþ
Semblative	-aħet	-aħot	-aħest	-aħet

Table 14.17: Participle form inflections for species III_2.

In addition, the R stem is used for both nominative and accusative rcases.

14.7   Converbs (adverbial forms)

Converbs are divided into two categories:

- REDUCED COORDINATION: the actions referred to by the converbal clause and the main clause are separate.

- EMERGENT COORDINATION: the actions referred to by the converbal clause and the main clause form a larger action as a whole.

In both of these categories, the converbal clause and the main clause might not match in subject, but in that case, it must be made clear that the respective subjects are different.

Often, such a mismatch occurs because a non-subject argument in the converbal clause should become the subject in the main clause. If this is not already clear, then the clitic ⟨='ul⟩ can be used on the argument in the converbal clause to mark that it is also the subject of the main clause.

Sometimes, the subject in the converbal clause should not be the subject of a main clause. If this is not otherwise clear, then the clitic ⟨='els⟩ can be used on the converb to make it so.

In addition, Ŋarâþ Crîþ has *so*-clauses, which also act adverbially.

14.7.1   Reduced coordination

In reduced coordination, the converb is formed through an affix on the verb stem indicating the conjunction in question instead of the usual conjugation:

Operation \ Infinitive ending	-at	-it
X and Y	-ame	-ime
X or Y (inclusive)	-age	-ige
X or Y (exclusive)	-are	-ire
X to some and Y to others	-amec	-imec
not only X but also Y	-eacþ	-iacþ

Table 14.18: Affixes on the converb for reduced conjunction, where X is the statement stated by the converbal clause and Y the statement stated by the main clause.

After an onset containing a voiced obstruent, the ⟦-age⟧ and ⟦-ige⟧ affixes become ⟦-ahe⟧ and ⟦-ihe⟧, respectively. After an onset of ⟦m⟧, affixes beginning with ⟦-ame-⟧ and ⟦-ime-⟧ have these replaced with ⟦-ase⟧ and ⟦-ise⟧, respectively.

14.7.2   Emergent coordination

In emergent coordination, the final ⟦-t⟧ of the infinitive form of the first verb is replaced with ⟦-rþ⟧ if the onset of the following word is either null or a plosive alone, or ⟦-þ⟧ otherwise. (Note that the operation is necessarily "and".)

For the verb ⟨minait⟩ *be alone*, the final vowel is changed to ⟦e⟧.

The use of emergent coordination can be seen as a serial verb construction.

14.7.3   *So*-clauses

So-clauses are adverbial clauses consisting of a finite verb phrase followed by a conjunction such as ⟨so⟩, called the *so*-particle:

- ⟨A so B⟩: *if A, then B*, with emphatic form ⟨sono⟩. Can be combined with the clitic ⟨'moc⟩ to mean *even if* or *even though*. Also used to express correlative comparisons when the main verbs of both A and B are differentiated with respect to the same variable.

- ⟨A fose B⟩: *because A, B*. In other words, A is the cause and B is the effect.

- ⟨A dôm B⟩: *B to the extent that A; B so much that A*. That is, A is the result of B.

14.8   Nominalized forms

Table 14.19 lists the nominalized forms of a verb by case and mood.

In the nominative case, the particle ⟨o⟩ is optional but may be retained for clarity.

The mood distinction encodes a difference in modality in the dative and semblative cases only. In the locative, instrumental, and abessive, it encodes a distinction between adverbial and adnominal forms.

In the dative case, the indicative mood is used for realis actions, as well as general activities:

(40)   šinaf d·endilt idesa neman racru.

šin-af   d·end-ilt   i-desa   nem-an   racr-u.
all-NOM.GC hunt-INF.DAT ADN-BELOW some-ACC.SG know-3GC

Everybody knows (something) about hunting.

Case \ Mood	Indicative	Subjunctive
Nominative	o IΘt	–
Accusative	on IΘt	–
Dative	○Iilt	○Ii$\Phi_I$os
Genitive	–	en IΘt
Locative	●Leve	sa ●IΘt
Instrumental	●Leveca	sec ●IΘt
Abessive	●Leveþa	seþ ●IΘt
Semblative	it IΘt	eti IΘt

Table 14.19: Nominalized forms by case and mood.

The subjunctive mood, of course, indicates irrealis actions. A similar distinction exists for the semblative case.

Some of the nominalized forms are made of a particle plus the infinitive form, possibly mutated.

(41)   on mêgennančat triłepjô.

   on   mê<genna>nč-at   trił-e-pjô.
   INF.ACC eat<DDT.REC>-INF   recommend-1SG-1DU.INCL

   I suggest to us to eat more slowly.

(42)   eleþ šileifos mîrm·oru.

   el-eþ   šile-ifos   mîrm·or-u.
   sun-NOM.SG shine-INF.DAT.SUBJ predict-3GC

   It is predicted that the sun will shine.

(43)   cþereve elnat łanes.

   cþer-eve   eln-at   łan-es.
   write-INF.LOC neat-INF   must-2SG

   When you write, you must do it neatly.

In such a nominalized form of an auxiliary verb, the particle also precedes all other verbs in the auxiliary chain. In such a nominalized VP of a non-auxiliary verb, the last word of a noun phrase attached to it may be moved between the particle and the infinitive. In this case, the moved word takes the same mutation that the infinitive would.

When a nominalized VP in the locative, instrumental, or abessive case is an object of a modifying relational, the nominative forms are used.

A pronominal subject of a nominalized VP is marked using a possessive clitic on the infinitive:

(44)   trecai v·alilt'pe nîs faras miłersos noštecþis.

    trec-ai   *v·al-ilt='pe*   *nîs*   *far-as*   *miłers-os*
    field-LOC.PL reside-INF.DAT=POSS.1 through often-LOC.DI pasture-LOC.PL

       nos-t-ecþis.
       walk-PAST-1PL.EXCL.INV

    During our residence in the country we often walked in the pastures.

(45)   anoþ varmjoneve'pe intaras môvarþ sarħi menaþ.

    an-oþ   *varmjon-eve='pe*   *intar-as*   *môv-arþ*   *sarħ-i*
    sky-DAT.SG observe-INF.LOC=POSS.1 void-LOC.SG float-REL.ACC,DAT.CEL thing-DAT.SG

       men-a-þ.
       see-1SG-PAST

    When I looked into the sky, I saw something floating in the air.

Like participles, nominalized verbs can take object affixes before the verb stem. The vitreous set is used regardless of material. Mutations apply to the start of the word, not to the start of the stem: ⟨p·emečilt⟩, not *⟨pem·ečilt⟩. As usual, an object prefix that would be eclipsed is lenited instead: ⟨p·emičeve⟩, not *⟨vpemičeve⟩. Object affixes occasionally stand in for nominative arguments; in this case, the singular set is always used.

The genitive-case nominalized form is sometimes used to form another type of relative clause, especially when the common argument in the embedded clause is an oblique argument. This use is chiefly informal, with the participle form (perhaps in an applicative voice) being preferred in formal language.

The instrumental-case nominalized form is used as a resultative:

(46)   šinen m·olon mêntreveca sâna elto gasnelsal.

    šin-en   *m·ol-on*   *mêntr-eveca*   *sân-a*   *elt-o*   *g\asnels-al.*
    all-GEN.SG nut-ACC.CO eat-INF.INST bear-NOM.SG river-DAT.SG PFV\return-3SG.INV

    Having eaten all of the nuts, the bear returns to the river.

The abessive case, in contrast, is used to indicate the lack of a certain concurrent action:

(47)   le neffełen voðeveþa cehas.

    le   *neff-ełen*   *voð-eveþa*   *ceh-as.*
    IMP sheep-ACC.GC buy-INF.ABESS come-2SG

    Come here without buying any sheep.

14.9   Irregular verbs

The conjugation of most verbs can be derived from at most seven principal parts. Nevertheless, a few verbs are truly irregular.

14.9.1   APN-irregular verbs

As the name suggests, APN-ɪʀʀᴇɢᴜʟᴀʀ ᴠᴇʀʙꜱ specify finite forms according to aspect (relative to tense), person, and number. All APN-irregular verbs are vitreous; object suffixes apply as usual, while the past suffix is always ⟦-þ⟧ or ⟦-ta⟧ – that is, P^t is never used.

eþit, ve, velta, verła, verłena, vepraþos, gispeve, …

Person \ Number	Singular	Dual	Plural	Generic
Direct aspect				
1st excl.	ve	ven	vjaþ	vef
1st incl.		veac	vea	
2nd	ves	vesen	velar	velaf
3rd	veła	vełan	von	ver
Inverse aspect				
1st excl.	vel	vins	vjaþis	vesif
1st incl.		veacel	varel	
2nd	verþ	vinse	veris	vełesaf
3rd	vełal	vełans	veron	vros

Table 14.20: Conjugation of eþit, ve, velta, verła, verłena, vepraþos, gispeve, …, listing the irregular finite forms.

eseþit, efa, efaþ, esperła, esperłena, espeþraþos, gedispeve, …

The forms of this verb, which is the inchoative form of ⟨eþit⟩, are independent of aspect.

Person \ Number	Singular	Dual	Plural	Generic
1st excl.	efa	eson	esoþ	esef
1st incl.		iste	ise	
2nd	sos	essen	esołar	esaf
3rd	esoła	esołan	espo	eris

Table 14.21: Conjugation of eseþit, efa, efaþ, esperła, esperłena, espeþraþos, gedispeve, …, listing the irregular finite forms.

telit, ce, celta, cerła, cerłena, cirłaþos, dtołeve, …

Person \ Number	Singular	Dual	Plural	Generic
Direct aspect				
1st excl.	ce	cen	čaþ	cef
1st incl.		cjor	cea	
2nd	ces	cesen	cełar	cełaf
3rd	ceła	cełan	cþon	cir
Inverse aspect				
1st excl.	cel	cins	čaþis	cesif
1st incl.		tacel	cjarel	
2nd	cerþ	cinse	ceris	cełesaf
3rd	cełal	cełans	ceþen	cþaros

Table 14.22: Conjugation of telit, ce, celta, cerła, cerłena, cirłaþos, dtołeve, …, listing the irregular finite forms.

varit, tan, oveþ, saltan, salteši, sortaþon, voreve, …

Person \ Number	Singular	Dual	Plural	Generic
Direct aspect				
1st excl.	tan	tar	tare	tanfe
1st incl.		târ	târe	
2nd	tas	tasen	tai	tasfe
3rd	teha	tehan	tejen	toru
Inverse aspect				
1st excl.	ove	ovins	ovicþ	oveł
1st incl.		orins	oricþ	
2nd	opres	ovesis	overis	overeł
3rd	ovel	ovens	ovelt	voris

Table 14.23: Conjugation of varit, tan, oveþ, saltan, salteši, sortaþon, voreve, …, listing the irregular finite forms.

nepit, nea, nepelta, nelpa, nelpeta, nolpaþos, nolpeve, ...

Person \ Number	Singular	Dual	Plural	Generic
Direct aspect				
1st excl.	nea	nean	nepacþ	nêf
1st incl.		nefên	nepâcþ	
2nd	nepas	nepans	nepar	nepał
3rd	nae	nepan	nepo	nepu
Inverse aspect				
1st excl.	nepel	nenfe	nencþis	nêf
1st incl.		nenfôr	nencþîs	
2nd	nefras	nefrašt	nefris	nepał
3rd	naeł	naens	nares	nepos

Table 14.24: Conjugation of nepit, nea, nepelta, nelpa, nelpeta, nolpaþos, nolpeve, ..., listing the irregular finite forms.

14.10   Interactions with predicate modifiers

14.10.1   Comparatives

Given a verb, the derived verb prefixed with ⟦mir△-⟧ (⟦ła△-⟧) means '(S) performs the action in question to a greater (lesser) degree than (O) by a margin of (I)':

(48)   mirvesralo.

　　mir-vesr-a-lo.
　　CMP-STRONG-1SG-3PL

　　I am stronger than they are.

　　If the base action mentions a direct or indirect object, then the argument is retained in the clause eclipsed:

(49)   #môra #saþon giviner âreþþas mirm·ečaþ.

#môr-a	*#saþ-on*	*g\ivin-er*	*â-reþþas*
NAME-NOM.SG	NAME-ACC.SG	CDARG\mushroom-ACC.PL	NNOM-FOUR.DAT.CEL

　　mir-m·eč-a-þ.
　　CMP.GT-FIND-3SG-PAST

　　#môra found four more mushrooms than #saþo.

　　The verbs ⟨mirit⟩ *greater than* and ⟨łavrit⟩ *less than* also exist.
　　Equal comparisons are formed by using the relational ⟨peŋan⟩ whose object is the noun phrase to which another, of the same case, is being compared:

(50)   #môra #saþo peŋan vadanor mečaþ.

#môr-a   #saþ-o   peŋan   vad-anor   meč-a-þ.
NAME-NOM.SG NAME-NOM.SG CMP.EQ tuber-ACC.PL find-3SG-PAST

#môra found as many tubers as #saþo.

Superlatives are formed using the relational ⟨îþ⟩, which takes a genitive object:

(51)   #môra rascen îþ raga.

#môr-a   rasc-en   îþ   rag-a.
NAME-NOM.SG family-GEN.SG SUP tall-3SG

#môra is the tallest in their family.

14.10.2   Voice

The default voice is the active voice. There is no passive voice in Ŋarâþ Crîþ because the subject may be omitted instead:

(52)   +tjare siljes šeproþ.

+tjar-e   silj-es   šepr-oþ.
(name)-ACC.SG afternoon-LOC.SG execute-3GC.PAST.PFV

+tjaris was executed in the afternoon.

(53)   rešitas tfoson elens'po fêtećto gcemuþ.

rešit-as   tfos-on   el-ens='po   fê-tećto   g\cem-u-þ.
cloak-DAT.SG cross_parent-ACC.SG year-ACC.SG=SEP 3GC-BEFORE PFV\give-3SG-PAST

The cloak was given to my (mother/father) a year ago.

The causative voice

The causative voice is formed by prefixing ⟦do-⟧. It adds a 'cause' argument to the verb as the subject, changing its valency.

- In an intransitive or semitransitive verb, the old subject becomes the direct object, making it transitive or ditransitive.

- In a transitive verb, the old subject becomes the direct object, and the old object becomes the indirect object, making it ditransitive.

- In a ditransitive verb, the old subject becomes the direct object, the old object becomes the indirect object, and the old indirect object becomes the object of the relational ⟨ro⟩, making it a ditransitive verb with one additional oblique argument.

- Auxiliary verbs simply delegate to their targets.

The causative prefix can function either as an inflectional affix or a derivational one:

(54)   ša entas gðenic've ndoelpanveþ?

ša   ent-as   gðen-ic='ve   n\do-elp-an-ve-þ?
INT that_thing.CEL-DAT.SG parent-NOM.DU=POSS.2 PFV\CAUS-WEAR-3DU-2SG-PAST

Did your parents make you wear that?

(55)   le jonas tê vrêman docjašas.

le   jon-as   tê   vrêm-an   do-cjaš-as.
IMP now-LOC.DI that.CEL book-ACC.SG CAUS-FALL-2SG

Drop that book right now.

When two consecutive causative prefixes are added to a verb, then they take the form ⟦reld·o-⟧:

(56)   efreþ têrmasor reld·odranlêta.

efr-eþ   têrm-asor   reld·o-dranl-ta.
commander-NOM.SG hostage-DAT.PL CAUS.CAUS-DIE-3SG.PAST.PFV

The commander ordered the hostages to be killed.

Note that ⟨têrmon⟩ is in the dative case. If it were in the accusative case instead, then the meaning would be different:

(57)   efreþ têrmanor reld·odranlêta.

efr-eþ   têrm-anor   reld·o-dranl-ta.
commander-NOM.SG hostage-ACC.PL CAUS.CAUS-DIE-3SG.PAST.PFV

The commander ordered the hostages to kill.

In addition, the causative prefix and a terminative prefix ⟦er○-⟧ immediately following it fuse into ⟦dar○-⟧:

(58)   mêva lê gedesos niðes ndarc·atlepeþ.

mêv-a   lê   g\edes-os   nið-es   n\dar-c·atl-e-pe-þ.
rain-NOM.CO this.CEL assignment-DAT.SG early_time-LOC.DI CAUS.PFV\TERM-COMPLETE-3SG-1SG-PAST

I finished the assignment early because of the rain.

The applicative voices

Ŋarâþ Crîþ has various applicative voices, which promote an oblique adjunct (either a noun phrase in a non-core case or an adverbial relational phrase) to the dative case. The former dative argument, if present, is demoted to where the oblique was.

The applicative voices are primarily used to relativize an oblique argument by promoting it into the dative case.

Case or relation	Prefix
Locative	si-
Instrumental	ca-
Abessive	þa-
Semblative	ħit-
ar	la-
jas	sa-
nîs	na-
uc	ħic-
roc, rille	tar-

Table 14.25: Applicative prefixes in Ŋarâþ Crîþ

(59) melco pecacatleþanon om inorelt člačirþ osjas &taran rema þal!

melc-o	*pe-ca-catl-eþanon*		*om*	*inor-elt*
parallel_parent-NOM.SG	1SG-APPL.INST-HIT-REL.DAT,ACC.TER		that.TER	stick-ACC.SV

člač-irþ	*os-jas*	*&tar-an*	*rem-a*	*þal!*
break-SER	3SG.TER-FROM	woodchip-ACC.CO	make-1SG	ASSERT

I'll break that stick my (dad/mom) hit me with and turn it into woodchips!

(60) #mjôras sieriśteþo #flirora cadils nelsit ħarte.

#mjôr-as	*si-eriśt-eþo*		*#fliror-a*	*cad-ils*
(name)-LOC.SG	APPL.LOC-MEET-REL.DAT,DAT.CEL		(name)-NOM.SG	island-DAT.SG

nels-it	*ħar-te.*
go-INF	do_again-3SG.PAST.PFV

#flirora went once more to the island where they met #môra.

They are also used to make an oblique argument a shifted subject of an auxiliary verb or relational:

(61) artfoteþa þanelsit pečit rjotileśta.

artfoþ-eþa	*þa-nels-it*	*peč-it*	*rjot-i-les-ta.*
city-ABESS.SG	APPL.ABESS-GO-INF	avoid-INF	fail-3PL-3SG.HUM-PAST

She couldn't stop them from going to the city without her.

(62) eltin šimerin cþîšari fjones alals âŋa cþîfsocon siveła.

elt-in	*šim-erin*	*cþîš-ecþ*	*fjon-es*	*al-als*	*âŋa*
river-GEN.SG	end-ACC.SG	near-REL.NOM,LOC.SG	place-LOC.SG	east-DAT.DI	bending

cþîfsoc-on	*si-veła.*
acute_angle-NOM.SG	APPL.LOC-EXIST.3SG

Near the mouth of the river, its course turns sharply towards the East.

In (61) and (62), the dative argument is understood to be the shifted subject by the use of the applicative.

14.10.3   Auxiliary verbs

The verb modified by an auxiliary verb is called its TARGET, which appears in the infinitive form immediately before the auxiliary verb. The particle ⟨fel⟩ can stand in place of a target if one is not specified. In addition, the target of an auxiliary verb can be an auxiliary verb itself, with its own target *ad infinitum.*

A clause using an auxiliary verb may select a SHIFTED SUBJECT ((Š)) among the nominative, accusative, and dative arguments. The shifted subject may have a special role in the meaning of an auxiliary verb, such as carrying the volition for the performance or nonperformance of the target action.

An auxiliary is POSITIVE DEFINITE (NEGATIVE DEFINITE) if the truth of the action or state described implies that the action or state described by the target is true (false). It is INDEFINITE if neither such implication holds.

Modal auxiliaries

MODAL AUXILIARIES can be classified by their FORCE and FLAVOR. Ŋarâþ Crîþ distinguishes the following flavors:

- SITUATIONAL: according to the situation at hand

- DYNAMIC: according to the abilities of (Š)

- FACULTATIVE: according to the knowledge of (Š) to perform (T)

- DEONTIC: according to some set of norms

- CONSCIENTIOUS: according to the conscientious beliefs of (Š) (*i.e.* whether (Š) has a conscientious objection against performing or not performing a certain action)

- EPISTEMIC: according to beliefs inferred through other information

- AKINDYNIC: according to concerns for the safety of (Š)

The modal auxiliaries of Ŋarâþ Crîþ according to this classification is shown in Table 14.26. There are a handful of modal auxiliary verbs that do not fit neatly into the grid above:

- ⟨gevat⟩: used in questions to make a request

- ⟨rendat⟩: desiderative = *(Š) desires that (T) happens.*

- ⟨ehiltat⟩: *(Š) feels a desire to (T) on a physiological level*

- ⟨fonat⟩: negation of ⟨rendat⟩ = *(Š) has no desire for (T) to happen*

- ⟨verat⟩: volitive = *(Š) intends to (T)*

- ⟨senlat⟩ = *(Š) attempts to (T)*; also *(Š) intends to (T)*

Flavor \ Force	Necessity	Non-necessity	Possibility	Impossibility	Probability
Situational	marðat		pentat	rjotat	
Dynamic			pentat	geðat	
Facultative			racfit	cricþit	
Deontic	łanat	rečit	sarait		
Conscientious			neħrit	velrjotat	
Epistemic	vrasit cenmirat		þarat		lerjat
Akindynic			esenvit	toprat	

Table 14.26: Modal auxiliaries in Ŋarâþ Crîþ.

Degree auxiliaries

DEGREE AUXILIARIES show the extent to which the target action or state holds:

- ⟨šonat⟩ = *(T) is done completely*

- ⟨iširit⟩ = *(T) is true at least slightly*

- ⟨vasrit⟩ = *(Š) does (T) with the desired effect*

A subset of degree auxiliaries are NEGATIVE AUXILIARIES, which are used to negate the target in some way. Negative auxiliaries are necessarily negative definite, while other degree auxiliaries are positive definite.

- ⟨pečit⟩ = *(Š) avoids inadvertently doing (T)* (*i.e.* the volition belongs to (Š))

- ⟨tersat⟩ = *(Š) insists against doing (T)*

- ⟨garit⟩ = *(Š) stops oneself from doing (T)*

- ⟨vandrit⟩ = *(Š) leaves something uninvolved in an action (T)*

- ⟨selcit⟩ = *(Š) knowingly fails to fulfill their responsibility or obligation to do (T)*

- ⟨anðat⟩ = *(T) has not yet occurred*

- ⟨iselgit⟩ = *(Š) fails to do (T) due to forgetfulness*

Aspectual auxiliaries

Other auxiliary verbs indicate aspect. Most such auxiliaries are positive definite.

- ⟨ħarat⟩ = *(T) is done again; (T) is done to a further degree than previously mentioned*

- ⟨nevlat⟩ = *(Š) does (T) repeatedly*

- ⟨anłit⟩ = *(Š) does (T) in response to an earlier action against them*

- ⟨nespat⟩ = *(Š) does (T) habitually*

Form	Gloss	Nominative (= (Š))	Accusative	Dative
is	ROT0	(S)	(O)	(I)
pa○	ROT1	(O)	(I)	(S)
jâ●	ROT2	(I)	(S)	(O)

Table 14.27: The rotarg particles.

- ⟨cfortlat⟩ = *(Š) begins to (T)*

- ⟨denecit⟩ = *(Š) continues to (T)*

- ⟨vespat⟩ = *(Š) does (T) for the first time in a long time*

- ⟨cagesit⟩ = *(Š) does (T) for the first time in such a long time that the speaker does not remember when it last happened*

- ⟨ennelit⟩ = *(Š) has done (T) as a result of actions over a long time*

Others

- ⟨vjełat⟩ = *(Š) has the character of doing (T)*

- ⟨cefsit⟩ = *(Š) has difficulty doing (T)*

- ⟨glanpit⟩ = *(T) occurs at a monetary cost to (Š)*

- ⟨vratrat⟩ = *(Š) does not eat until they have completed (T)*

Explicitly specifying the shifted subject

Although the shifted subject is usually clear from the context, it is sometimes necessary to specify explicitly which argument it is. The ROTARG PARTICLES can be used immediately before the target of an auxiliary verb in order to assign each of (S), (O), and (I) to the nominative, accusative, and dative cases, specifying the nominative-case argument to be (Š).

For instance, ⟨cengrit⟩ is glossed as *(S) throws (O) at (I)* – that is, (S) refers to the thrower, (O) refers to the object being thrown, and (I) refers to the target toward which it is thrown. In ⟨is cengrit⟩, the thrower is specified in the nominative case, the object thrown is in the accusative, and the target in the dative; thus, it can be glossed as *(S) throws (O) at (I)* with the constraint that (S) will be the same as the (Š) for an auxiliary verb.

In ⟨pa c·engrit⟩, the thrower is specified in the dative case, the object thrown is in the nominative, and the target is in the accusative. This phrase can be glossed as *(I) throws (S) at (O)* and would be used as the target of an auxiliary verb if (Š) should refer to the object being thrown.

Likewise, in ⟨jâ gcengrit⟩, the thrower is specified in the accusative case, the object thrown is in the dative, and the target is in the nominative. This phrase can be glossed as *(O) throws (I) at (S)* and would be used as the target of an auxiliary verb if (Š) should refer to the target at which something is thrown.

14.11 Modality

Most verb forms can be used in both realis and irrealis contexts:

(63) eši mêvan têmit ħar.

    eši   *mêv-an*   *têm-it*   *ħar-∅.*
    here.LOC.DI rain-ACC.CO precipitate-INF do_again-3SG

    It is raining here again.

(64) enven sodas mêvan têma so mîþanelên.

    env-en   *sod-as*   *mêv-an*   *têm-a*   *so mîþanel-ên.*
    day-GEN.SG next-LOC.SG rain-ACC.CO precipitate-3SG if play_mîþanela-1DU.INCL

    If it rains tomorrow, we'll play *mîþanela*.

(65) vesro avona celcorin ndofonraþ.

    vesr-o   *avon-a*   *celc-orin*   *n\do-fonr-a-þ.*
    strong-REL.NOM,NOM.SG wind-NOM.DI building-ACC.SG PFV\CAUS-COLLAPSE-3SG-PAST

    The strong wind caused the building to collapse.

(66) ŋepriłir vesrelta so fonrit vpečaþ viþca.

    ŋeprił-ir   *vesr-el-ta*   *so fonr-it*   *v\peč-a-þ*   *viþca.*
    support-NOM.DI strong-3SG.INV-PAST if collapse-INF PFV\avoid-3SG-PAST COND

    If the supports were stronger, then it would not have collapsed.

    The exception to this property are the dative- and semblative-case nominalized forms (Section 14.8), which have separate indicative and subjunctive forms.

    The following sections cover modalities that are not covered by auxiliary verbs (Subsection 14.10.3).

14.11.1 Imperative

Imperative sentences are formed using the headp ⟨le⟩. The verb in the main clause is conjugated as usual, except that the aspect is always imperfective. In addition, resinous verbs have special forms for second-person singular subjects.

(67) le enven saden cintos reftos etor cehas.

    le *env-en*   *sad-en*   *cint-os*   *reft-os*   *etor*   *ceh-as.*
    IMP day-GEN.SG next-GEN.SG morning-LOC.SG library-DAT.SG in_front_of arrive-2SG

    Arrive in front of the library tomorrow morning.

(68)   le cupas jorniłtau.

   le   cup-as   jornił-þau.
   IMP immediately-LOC.DI stand-IMP.2SG

   Stand up immediately.

When used with a first-person verb, ⟨le⟩ marks the hortative. In this case, the subject ending of the main verb is always put in the first-person exclusive, regardless of the actual clusivity of the subject, unless the verb is followed by a tailp.

(69)   le nêrgim·oþena dofenran.

   le   nêrgim·oþ-ena   do-fenr-an.
   IMP living_room-ACC.SG CAUS-clean-1DU.EXCL

   Let's clean the living room.

(70)   le nelsâcþ þal!

   le   nels-âcþ   þal!
   IMP go-1PL.INCL ASSERT

   Let's go!

To command the listener to take a non-subject role of a verb, the verb ⟨menat⟩ *(S) sees, makes sure of (I)* is used.

(71)   le felja reflit p·ečiłos menes.

   le   felj-a   refl-it   p·eč-iłos   men-es.
   IMP this_idea-NOM.SG surprise-INF avoid-INF.DAT see-2SG

   Don't be surprised by this idea.

14.11.2   Conditional

Conditional sentences are formed using the tailp ⟨viþca⟩:

(72)   šinen ðês lârne cermjôri visêrče viþca.

   šin-en   ðês   lâr-ne   cermjôr-i   visêrč-e   viþca.
   all-GEN.SG occurrence-LOC.SG cat-ACC.SG dog-DAT.SG choose-1SG COND

   I would always choose a dog over a cat.

Chapter 15

Relationals

In this chapter, we cover relationals.

15.1   Valency and case frame

All predicates have at least a nominative-case argument (the SUBJECT). Most relationals are divalent; the second argument (the OBJECT) is dative by default.

Some relationals, such as ⟨tfel⟩ *(S) is on the other side of (O) relative to (O′)*, are trivalent. In this case, one of the objects is termed the MAIN OBJECT and the other is called the ANCILLARY OBJECT. In divalent relationals, of course, the main object is the only one involved.

If a relational encodes a spatial relationship between one entity and another, then two additional relationals (RELATIONALS OF MOTION) are derived: the ALLATIVE, encoding motion toward the main object and the ABLATIVE encoding motion away from the main object. The complement of an allative relational is inflected in the accusative case. The complement of an ablative relational is dative for third- and sixth-declension nouns and abessive otherwise, although in colloquial language, the locative may be used instead.

When a fifth-declension noun is the object of the relational ⟨es⟩ *(S) is contained inside (O); (S) is in progress of doing (O)* (in static motion), it is inflected in the locative case rather than the dative.

15.2   Attachment

A relational can be used ADVERBIALLY or ADNOMINALLY, that is, modifying either a verb phrase or a noun phrase. We call this distinction ATTACHMENT. Adnominal usage simply places the affected noun phrase as the subject of the action depicted by the relational. Adverbial usage, on the other hand, does one of the following: (1) place the action depicted by the VP as the subject of the relational, (2) indicate that as a result of the action, a shifted subject of the VP starts to participate as a subject of the relational.

15.3   Inflection

Each relational has an ABSOLUTE (A), ADVERBIAL (V), ADNOMINAL (N), and CONJUNCT (C) form. The A, V, and N forms are stems, while the conjunct form is a sequence of one or more simple syllables. When A, V, or N occurs word-finally, it is assumed to be fused with the null consonant.

Most relationals have either V or N be equal to A. Those where A = V are called adverbial relationals, while those with A = N are called adnominal relationals. A few relationals have both V and N be distinct from A.

The consonantal conjunct form of a relation is C, while the vocalic conjunct form is A. However, if A ends in a vowel, then this is removed from the vocalic conjunct form.

15.3.1 Modifying forms

A relational that is not a relational of motion takes the form **[<object prefix>] + <N or V>**.

The object prefix is like the object affix in verb conjugation; in other words, it is used if the object is pronominal. Nevertheless, it has different forms from the verbal object affixes:

Person \ Number	Singular	Dual	Plural	Generic
1st excl.	e(l)-	ec-	en-	ef-
1st incl.		êc-	ên-	
2nd	o-	oc-	on-	of-
3rd celestial	er-			
3rd terrestrial	os-			
3rd human	an-	or-	ran-	
3rd epicene		ac-	ren-	fê(s)-
Reflexive	ce(n)-			
Reciprocal	re(þ)-			

Table 15.1: Object affixes.

(The consonants in brackets are included only if the stem starts with ⟦e-⟧ or ⟦ê-⟧.)

As an exception, a relational at the head of a postposed relational phrase without an object prefix uses the A stem instead of the V stem.

A relational of motion takes the form **[<object prefix>] + <A> + <motion suffix>**. The motion suffix takes one of the following forms depending on the direction of motion and the attachment of the resulting relational:

Direction \ Attachment	Adverbial	Adnominal
Allative	⟦-ar⟧	⟦-ara⟧
Ablative	⟦-jas⟧*	⟦-eis⟧

Table 15.2: Motion suffixes.

The ablative adverbial motion suffix varies depending on the form of A:

- If A ends in a vowel, then the suffix is always ⟦-jas⟧.

- Otherwise, if the last syllable of A has an ⟦e⟧ or ⟦ê⟧, then it is always ⟦-as⟧.

- Otherwise, if the last syllable of A has an ⟦a⟧ or ⟦â⟧, then it is always ⟦-es⟧.

- Otherwise, it is ⟦-es⟧ if bit 1 of the letter sum of A is set and ⟦-as⟧ if it is unset.

If a motion suffix that starts with a vowel follows a stem ending in a vowel of the same quality, then the final vowel of the stem is inverted and the initial vowel of the suffix is omitted.

Person \ Number	Singular	Dual	Plural	Generic
None	-(e)s			
1st excl.	-ef	-ecþ	-if	-af
1st incl.		-êcþ	-îf	
2nd	-or	-ocþ	-orþ	-of
3rd celestial	-ir			
3rd terrestrial	-jos			
3rd human	-aren	-oł	-ens	
3rd epicene		-ac	-erþ	-∅
Reflexive	-ef			
Reciprocal	-iren			

<div align="center">Table 15.3: Ancillary object affixes (for onset ends).</div>

In trivalent relationals, the ancillary object affixes occur at the end of the relational. If there is no motion suffix, then such a suffix occurs at an onset end:

Otherwise, the ancillary object suffix occurs at a syllabic end and a different set of suffixes is used:

Person \ Number	Singular	Dual	Plural	Generic
None	-(e)s			
1st excl.	-ef	-ecþ	-if	-af
1st incl.		-êcþ	-îf	
2nd	-or	-ocþ	-orþ	-of
3rd celestial	-ir			
3rd terrestrial	-jos			
3rd human	-ran	-lor	-ren	
3rd epicene		-ac	-erþ	-∅
Reflexive	-lef			
Reciprocal	-rin			

<div align="center">Table 15.4: Ancillary object affixes (for syllabic ends).</div>

After a vowel or a ⟦-l⟧, the suffix for an explicit ancillary object becomes ⟦-s⟧.

If both the main and ancillary objects are specified as noun phrases to an attributive relational, then the ancillary object is eclipsed and follows the main object.

15.3.2 Finite forms

A relational can be used predicatively using a finite form that attaches it to a scaffolding verb, either affirmative or negative. Thus the relational acts like a verb syntactically.

The anatomy of the finite form of a relational is **[<motion prefix>] + <C> + <finite form of scaffolding verb>**. The scaffolding verb can be either ⟨eþit⟩ (for the affirmative) or ⟨telit⟩ (for the negative).

The motion prefix is ⟦ar-⟧ for allative motion and ⟦as-⟧ for for ablative motion.

The object affix on the scaffolding verb refers to the main object in divalent relationals. In trivalent relationals, it refers to the main object by default, but if the main object is explicitly specified as a noun phrase, then the object affix refers to the ancillary object instead.

If the ancillary object is specified as a noun phrase, then it is preceded by the particle ⟨os⟩ and eclipsed.

If a relational is a target of an auxiliary, then the scaffolding verb contracts to ⟦-is⟧ for ⟨eþit⟩ and ⟦-ceſt⟧ for ⟨telit⟩. If such a relational previously governed the dative, then it now governs the accusative in this case.

Immediately before a *so*-particle, the unmarked form of a relational is always used in place of the finite form if (S) is in the third person.

15.3.3   Nominalized forms

The nominalized form of a verb describes the action referenced by the verb. In contraſt, the nominalized form of a relational describes the subject involved in the ſtate described and is always a noun with mass clareþ. Relationals are classified by how their nominalized forms are derived.

Type I relationals, which are moſt often short, common, and describing spatial relation-ships, give rise to firſt-declension celeſtial ⟦-e⟧ nouns. Given a nominal multisyllable B, which is C for non-motion relationals and A plus the appropriate adverbial motion affix for relational motions, the ſtems are ⟦Btar⟧, ⟦Btor⟧, and ⟦Btel⟧ and Λ is ⟦e⟧.

To derive the nominalized form of a type II relational, we define a nominal ſtem B. For non-motion relationals, this is equal to A if N has more syllables as A, and N otherwise. For relationals of motion, this is A plus the appropriate adnominal motion suffix.

(For both Type I and Type II relationals, the derivation of B for relationals of motion follows the same syncope rules as the attributive forms.)

The resulting noun is a second-declension celeſtial ⟦-er⟧ noun (with Λ = ⟦e⟧) if the letter sum of N is odd and a third-declension terreſtrial ⟦-os⟧ noun if the letter sum is even.

If B contains only one full syllable and its final bridge consiſts of at moſt one consonant and no ⟦j⟧, then the N ſtem is ⟦Bal⟧, the L ſtem is either ⟦Bel⟧ or ⟦Bil⟧, and the S ſtem is ⟦Bal⟧. In particular, the L ſtem is ⟦Bil⟧ if the laſt vowel in B is ⟦e⟧ or ⟦ê⟧ and ⟦Bel⟧ otherwise.

Otherwise, if B ends with a vowel, then the N ſtem is ⟦Bs⟧ and the S ſtem is ⟦Bd⟧. The L ſtem is derived from the N ſtem by doing the following:

- If the final vowel is ⟦a⟧ or ⟦e⟧, then change it to ⟦o⟧.

- If the final vowel is ⟦o⟧, then change it to ⟦a⟧.

- If the final vowel has a low tone, then change it to high.

- Otherwise, change the final bridge to ⟦-ſt-⟧.

If B has two or more full syllables and does not end with a vowel, then the N ſtem is ⟦B⟧, and the S ſtem is ⟦B⟧. The L ſtem depends on the motion suffix:

- If there is no motion suffix, then the L ſtem is the conjunct form followed by ⟦l⟧.

- If the allative suffix would be used, then the L ſtem is ⟦A^þer⟧.

- If the ablative suffix would be used, then the L ſtem is ⟦A^tas⟧.

A genitive noun phrase modifying a nominalized form of a relational indicates the object of the ſtate described.

15.4 Interactions with predicate modifiers

A noun phrase in the accusative case plus the clitic ⟨='po⟩ is a predicate modifier that acts on relationals implying separation between two objects (spatially or temporally) and describes the degree to which they are separated. For nouns that are units of measure other than ⟨enva⟩ or ⟨elva⟩, using the semblative case has the equivalent effect as ⟨='po⟩.

The particle ⟨pâ⟩ directly before a relational describing a spatial relationship can be translated as *directly* or *precisely*. With the relational ⟨nîs⟩ describing a span of time over which an action takes place, ⟨pâ⟩ implies that the action is continuous.

Prefixing ⟨do-⟩ to a relational switches the order of (S) and (O); the case of the complement remains the same. Such a relational is used only on an attributive or nominalized form. That is, the same prefix on a finite relational is interpreted as a causative prefix as usual.

15.5 A tour of relationals

This section gives an overview of the relationals of Ŋarâþ Crîþ.

15.5.1 Spatial relationals

Relational	Gloss
ar	*toward*
jas	*away from*
nîs	*through*
âŋa	*bending toward*
es	*inside*
car	*outside of*
il	*on top of*
sêna	*above*
čil	*on (a vertical surface)*
desa	*below*
etor	*in front of*
þon	*in the midst of, in the middle of*
cþar	*around, surrounding*
cþarnîs	*revolving around*
meþos	*taking a winding path around*
fan	*next to, beside*
dełir	*next to a body of water*
nerła	*between*
tfel (3val)	*across*
lef	*perpendicular to*
fansêna	*above by an offset*

Table 15.5: Spatial relationals in Ŋarâþ Crîþ.

Some words denoting such relations are verbs instead of relationals:

- ⟨ecljat⟩ = *(S) is far from (I)*

- ⟨cþîšat⟩ = *(S) is near (O)*

15.5.2   Temporal relationals

Relational	Gloss
teċto	*before*
mîr	*after*
nîs	*during, while*
els	*by, no later than [(S) is completed on or before the time (O)]*

Table 15.6: Temporal relationals in Ŋarâþ Crîþ.

Some words denoting such relations are verbs instead of relationals:

- ⟨cjašit⟩ = *(S) begins at the time of (I)*

15.5.3   Syntactic relationals

These relationals are used solely for syntactic support.

- ⟨ro⟩ marks the former indirect object when the causative voice is applied on a ditransitive verb.

- ⟨peŋan⟩ is used to mark the compared object in an equal comparison.

- ⟨îþ⟩ forms the superlative. It is defined as *(S) performs an action to the greatest extent in or among (O).*

15.5.4   Mathematical relationals

These relationals denote mathematical relations.

- ⟨ema⟩ = *other than, not equal to.* Its antonym is the verb ⟨censit⟩.

- ⟨cor⟩ = *not one of.* Its antonym is the verb ⟨varit⟩.

- ⟨celna⟩ = *about the same as, about equal to.*

Some words denoting such relations are verbs instead of relationals:

- ⟨censit⟩ = *(S) is equal to (I)*

- ⟨varit⟩ = *(S) is one of (O)*

- ⟨mirit⟩ = *(S) is greater than (O) by a margin of (I)*

- ⟨łavrit⟩ = *(S) is less than (O) by a margin of (I)*

15.5.5 Other relationals

- ⟨dêt⟩: *instead of*

- ⟨ton⟩: ornative = *(S) has (O) attached to it as a feature or accessory*

- ⟨vôr⟩: *(O) is abundant within (S)*

- ⟨roc⟩ (becoming ⟨rille⟩ after the clitic ⟨=’moc⟩) = *on behalf of*

- ⟨nedo⟩ = *(S) happens in spite of (O)*

- ⟨uc⟩ = *(S) resembles (O) in appearance, visually or otherwise*

- ⟨mesa⟩ and ⟨rjas⟩ both translate to *between...*

- ⟨cire⟩: *(S) has a price of (O)*

- ⟨csel⟩: *(S) is done in response to a fear of (O)*

- ⟨creł⟩: *against*

- ⟨lef⟩, in addition to its spatial meaning, is used to mean *unrelated to.*

- ⟨es⟩, in addition to its spatial meaning, is used for the progressive aspect.

- ⟨desa⟩, in addition to its spatial meaning, is used to mean *regarding* or *related to.*

Part V

Lexicon

This part describes the various aspects of Ŋarâþ Crîþ's lexicon.

In this section, many words will be given by lemma alone instead of their full headwords, which can be found in the dictionary.

Chapter 16

Numerals

Ŋarâþ Crîþ has two sets of cardinal numerals: the LONG NUMERALS and the SHORT NUMERALS.

Feature	Long numerals	Short numerals
Length	Long	Short
Range (within integers)	1 – 16	All integers
Agreement	Case and sometimes gender	None
Use of counter words	Not used	Usually required
Order relative to noun phrase	After the noun phrase, possibly separated	Immediately after the noun phrase
Orthography	Always spelled out	Spelled out or figures

Table 16.1: Comparison between long numerals and short numerals.

16.1   Long numerals

The long numerals up to 6 are inflected for case and gender (Tables 16.2 to 16.7).

The rest of the long numerals (Tables 16.8 and 16.9) are inflected for case only.

The lemma form of a long numeral is its attributive form. Because long numerals inflect for case and possibly gender, they can be separated from their heads.

The following types of numerals can be derived from long numerals:

Case \ Gender	Celestial	Terrestrial	Human
Nominative	mina	minos	minal
Accusative	minan	minon	minan
Dative	minas	minoþ	minels
Genitive	minen	minen	minjel
Locative	monas	mjonos	monas
Instrumental	minca	cjamjonos	minca
Abessive	minþa	þjam·jonos	minþa
Semblative	menit	manot	menit

Table 16.2: The long numerals for 1.

Case \ Gender	Celestial	Terrestrial	Human
Nominative	nefa	nefor	nefac
Accusative	nefan	nefon	nefan
Dative	nefas	nefos	nefacþ
Genitive	nefen	nefar	nefen
Locative	nofas	njofor	nofas
Instrumental	nefca	cjanjofor	nefca
Abessive	nefoþa	þjanofor	nefocþa
Semblative	nefit	nefot	nefit

Table 16.3: The long numerals for 2.

Case \ Gender	Celestial	Terrestrial	Human
Nominative	prêno	prêngos	prêmo
Accusative	prênon	prêngon	prêmon
Dative	prênos	prênge	prêmos
Genitive	prênen	prêngel	prêmen
Locative	prônos	prôndos	siłas
Instrumental	prônca	cjaprôndos	ciþpiłas
Abessive	prônþa	þjap·rôndos	þilp·iłas
Semblative	prênit	prêngot	prêmit

Table 16.4: The long numerals for 3.

Case \ Gender	Celestial	Terrestrial	Human
Nominative	resiþ	sriel	resiþ
Accusative	resin	srilen	rešir
Dative	reþþas	sriles	reþþac
Genitive	resten	risil	rescor
Locative	risiþas	ristos	risiþas
Instrumental	rosicþa	cjaristos	rosicþa
Abessive	rosiþa	þjaristos	rosiþa
Semblative	rediþ	redot	rediþ

Table 16.5: The long numerals for 4.

Case \ Gender	Celestial	Terrestrial	Human
Nominative	glêma	glêmos	glêmac
Accusative	glêman	glêmon	glêmor
Dative	glêmas	glêmoþ	glêmecþ
Genitive	glêmen	glîmel	glêmjor
Locative	glômas	glâmos	glômas
Instrumental	glômeca	cjaglêmos	glômeca
Abessive	glômeþa	þjag·lêmos	glômeþa
Semblative	glêmit	glêmot	glêmit

Table 16.6: The long numerals for 5.

Case \ Gender	Celestial	Terrestrial	Human
Nominative	cfersîþ	cfêrson	cfêrsor
Accusative	cfersîn	cfêrsanon	cfêrsanor
Dative	cferþþâs	cfêrsos	cfêrsos
Genitive	cfersên	cfêršel	cfêršel
Locative	cfirsîþas	cfîrsion	cfîrsion
Instrumental	cforsîcþa	cfîrsiol	cfîrsiol
Abessive	cforsîþa	cfîrsiocþ	cfîrsiocþ
Semblative	cfelsiþ	cfêlsoþ	cfêlsoþ

Table 16.7: The long numerals for 6.

Case \ #	7	8	9	10	11
Nominative	plamis	ŋatir	nalarþ	emra	nalfo
Accusative	plamin	ŋatjan	nalan	emran	nalfon
Dative	plamiþa	ŋatis	nalþas	emras	nalfos
Genitive	plamen	ŋatin	naler	emren	nalfen
Locative	plemelt	ŋotis	nelarþ	imras	nolfos
Instrumental	plemilca	ŋotica	nolacþ	omrac	nolfoca
Abessive	plemilþa	ŋotirþa	nolerþ	omreþ	nofelþa
Semblative	plamit	ŋadir	nalirþ	emlit	nalfit

Table 16.8: The long numerals from 7 to 11.

Case \ #	12	13	14	15	16
Nominative	nedras	tfalja	grinjo	grimin	meþos
Accusative	nedran	tfaljan	grinjon	griman	meþon
Dative	nedraþ	tfaljas	grinjos	grimis	meþasos
Genitive	nedren	tfaljen	grinjen	grimir	meþel
Locative	nidraþ	tfoljas	gronjos	grjomis	moþos
Instrumental	nodracþa	tfoljac	grjonoc	gromir	cjameþos
Abessive	notreða	tfoljeþ	grjonoþ	grjomiþ	þjam·eþos
Semblative	nedlis	tfalit	grenit	grimit	meðot

Table 16.9: The long numerals from 12 to 16.

Case \ Gender	Celestial	Terrestrial	Human
Nominative	elaþ	elros	elacþ
Accusative	elor	eljon	elor
Dative	eli	eljos	elic
Genitive	eliþ	elþos	elicþ
Locative	elaþa	elaþos	elaþac
Instrumental	elica	elicon	eliħac
Abessive	eliþa	eliþon	eliþac
Semblative	elit	elot	elit

Table 16.10: The ordinal long numerals for 0.

Case \ Gender	Celestial	Terrestrial	Human
Nominative	gesaþ	geþos	gesacþ
Accusative	gesor	gešon	gesor
Dative	ges	geos	ges
Genitive	gešiþ	gešiþ	gešicþ
Locative	gjaþa	gjaþos	gjaþac
Instrumental	gecþa	gecþon	geþþac
Abessive	geþa	geþon	geþac
Semblative	gesit	gesot	gesit

Table 16.11: The ordinal long numerals for 1.

- To derive the pronominal form, prefix the particle ⟨a⟩ (as a separate word): ⟨prêno⟩ *three*; ⟨a prêno⟩ *three of them.*

- To refer to a number itself rather than the quantity it represents, prepend ⟦âħ-⟧ before a vowel or ⟦â-⟧ before a consonant to the celestial form, leniting the numeral: ⟨meþos⟩ *sixteen*; ⟨âm·eþos⟩ *the number '16'*

- To create an adverb denoting the number of times something occurs, append ⟦-el⟧ to the dative celestial form. Change any final ⟦-s⟧ to ⟦-r⟧, unless there is any ⟦r⟧ earlier in the numeral: ⟨nefas⟩ *two (dative)*; ⟨nefarel⟩ *twice*. Note that ⟨plamiþa⟩ is changed to ⟨plamiþel⟩.

16.1.1   Ordinal long numerals

Ordinal numerals start from zero, such that number 0 refers to the first object, 1 refers to the second, and so on. Negative numerals refer to objects from the end: −1 refers to the last object, −2 to the second-last object, and so on. Ordinal long numerals occur before the noun phrase they modify but need not be adjacent to them.

16.2   Short numerals

The short numerals up to 16 are listed in Table 16.15.

Short numerals up to $16^2 = 256$ of the form $16x + y$ are roughly formed as ⟦x-sraþ-y⟧. x is omitted if it equals 1, and y is omitted if it equals 0. ⟦-sraþ-⟧ fuses with certain values of y,

Case \ Gender	Celestial	Terrestrial	Human
Nominative	nefasaþ	nefaþos	nefasacþ
Accusative	nefasor	nefasor	nefasor
Dative	nefasel	nefasel	nefasel
Genitive	nefasaþ	nefašon	nefasecþ
Locative	nefosaþa	nefosaþos	nefosaþac
Instrumental	nefosacþa	nefosacþon	nefosaþþac
Abessive	nefoseþa	nefoseþon	nefoseþac
Semblative	nefagit	nafegot	nefagit

Table 16.12: The ordinal long numerals for 2.

Case \ Gender	Celestial	Terrestrial	Human
Nominative	prêsaþ	prêþon	prêsacþ
Accusative	prêsor	prêsor	prêsor
Dative	prêsacel	prêsacel	prêsacel
Genitive	prêsaþas	prêsaþon	prêsaþac
Locative	prôsaþa	prôsaþos	prôsaþac
Instrumental	prôsacþa	prôsacþon	prôsaþþac
Abessive	prôseþa	prôseþon	prôseþac
Semblative	prêvit	prêvot	prêvit

Table 16.13: The ordinal long numerals for 3.

Case \ Gender	Celestial	Terrestrial	Human
Nominative	mârda	mârdos	mârdac
Accusative	mârdan	mârdon	mârdan
Dative	mârdas	mârdor	mârdas
Genitive	mârden	mârdel	mârden
Locative	môrdes	môrdos	prôsaþac
Instrumental	môrdeca	cjamôrdos	môrdeca
Abessive	môrdeca	þjam·ôrdos	môrdeþa
Semblative	mârdit	mârdot	mârdot

Table 16.14: The ordinal long numerals for −1.

Hex	Dec	Base	After ⟨sraþ⟩
0	0	ces	-sraþ
1	1	vil	-sraþfil
2	2	sen	-sraþþen
3	3	en	-sraþien
4	4	tar	-sraþtar
5	5	do	-sraðo
6	6	mja	-sraþmja
7	7	len	-srałen
8	8	fe	-srafþe
9	9	ni	-sraþni
A	10	re	-sraþre
B	11	pin	-sraþpin
C	12	va	-sreþjon
D	13	ħas	-srelħas
E	14	go	-sracþo
F	15	łar	-sratłar
10	16	sraþ	

Table 16.15: The short numerals up to 16, along with their forms when fused with ⟨sraþ⟩ *sixteen.*

yielding the forms in the last column of Table 16.15.

Short numerals up to $16^4 = 65536$ of the form $256x + y$ are formed as ⟦x-flen-y⟧, where x is omitted if equal to 1 and y is omitted if zero.

Numerals beyond 65536 are formed by splitting the digits into groups of four from the least significant digit and using the words for powers of 65536 in Table 16.16. A coefficient of one on the highest power of 65536 in a short numeral is omitted. Any power of 65536 with a coefficient of zero is omitted.

Like long numerals, short numerals are used primarily as determiners. Unlike long numerals, they require classifiers for most nouns.

The following nouns do not have classifiers, but they must use a long numeral if available:

- Units of measurement

#	Name
16^4	dara
16^8	seta
16^{12}	riso
16^{16}	nanâ
16^{20}	gelten
16^{24}	sałar
16^{28}	lina
16^{32}	ðose

Table 16.16: Short numerals: powers of 65536.

Hex	Dec	Name
11	17	sraþfil
20	32	sensraþ
45	69	tarsraðo
BD	189	pinsrelħas
100	256	flen
107	263	flenlen
300	768	enflen
9B30	39 728	nisraþpinflenensraþ
1 87A4	100 260	darafesrałenflenresraþtar
4 9AC2	301 762	tardaranisraþrevasraþþen
1 0000 0500	4 294 968 576	setadoflen
31 0001 0000	210 453 463 040	ensraþfilsetavildara

Table 16.17: Examples of short numerals.

- The nouns ⟨sar⟩ *thing* or ⟨ðên⟩ *occurrence*

The numeral ⟨ces⟩, as well as any numeral that is or ends in ⟨ħas⟩ or ⟨sreþas⟩, triggers a lenition in the classifier.

Adding the particle ⟨ceþe⟩ before a short numeral negates it, eclipsing it. Since there are no negative long numerals, a negative short numeral can always be used for unclassified nouns.

To refer to the quantity described by a short numeral itself, a short numeral can be compounded with ⟨mener⟩ as the head. The nominative form of a nominal short numeral may be abbreviated using figures followed by a ⟨/⟩, especially in data.

Short numerals other than the ones for −1, 0, 1, 2, and 3 can be used as ordinal numerals by placing them immediately before the noun phrase being modified with no classifier. For conventionalized ordinal numerals, the short numerals are used even for −1, 0, 1, 2, and 3:

(73) 1 coþħas sêna ceriþo *cortai inoravonen 3 envas tec̣to ascemat łanu.

*vil coþħ-as   sêna cer-iþo   *cort-ai   inoravon-en*
one section-DAT.SG above remain-REL.NOM,CEL.DAT pipe-DAT.PL inoravona-GEN.SG

en   env-as   tec̣to ascem-at   łan-u.
three day-DAT.SG before return-INF muṣt-3GC

According to Section 2, the remaining pipes muṣt be returned before 3 Inoravona.

16.3 Non-integral numerals

16.3.1 Rational numerals

Some commonly-used fractions have long forms: ½ for each gender (Table 16.19), and ⅓, ⅔, and ⅕ without distinctions in gender (Table 16.20).

Rational numbers with a numerator of 1 are derived from the short numeral of the denominator plus a suffix that depends on case (Table 16.21). When the short numeral is monosyllabic, an extra syllable ⟦-râ-⟧ is infixed between the numeral and the suffix. Because of the presence of case agreement, these numerals are also considered long numerals.

Classifier	Description
-laþ	humans and other sapient species
-cef	birds
-del	fish
-cir	insects and arachnids
-mis	medium-sized (approx. 2 kg) to large animals
-þaf	small animals (less than 2 kg)
-nen	woody plants (such as trees)
-min	non-woody plants (such as grass)
-jen	fruits and nuts
-ðis	flexible flat objects
-čis	rigid flat objects
-gor	balls and other spherical objects
-če	cylindrical or reasonably thick rod-like objects
-sei	ring-like objects
-sin	branches, roots, arms, and legs; thin rod-like objects
-mic	grains or other small particles; small insects
-fin	drops of liquids
-ven	written works (such as books)
-cjan	artistic or intellectual works (other than written works)
-čar	rooms, houses, buildings
-čin	weapons
-tes	connections or links; chains
-ðe	events in time
-þrem	celestial bodies

Table 16.18: Classifiers for short numerals.

Case \ Gender	Celestial	Terrestrial	Human
Nominative	mâna	mânos	mânac
Accusative	mânan	mânon	mânor
Dative	môras	môros	môras
Genitive	mân	mân	mân
Locative	mâsor	mâsor	mâsor
Instrumental	mâŋa	cjamâsel	mâŋac
Abessive	mênþa	þjam·âsel	mênþac
Semblative	mânat	mânot	mânat

Table 16.19: The long numerals for ½.

Case \ #	1⁄3	2⁄3	1⁄5
Nominative	sêþa	nêþa	acasa
Accusative	sêþan	nêþan	acasan
Dative	sêþas	nêþas	acaras
Genitive	sêþen	nêþen	acasen
Locative	sajoþos	najoþos	acos
Instrumental	soþoca	neþoca	acita
Abessive	sotoþa	netoþa	arica
Semblative	saðat	nelðat	acadet

Table 16.20: The long numerals for other fractions.

Case	Suffix
Nominative	-ten
Accusative	-tane
Dative	-tens
Genitive	-teri
Locative	-tarþ
Instrumental	-tarco
Abessive	-tarþo
Semblative	-telca

Table 16.21: Suffixes for unit fractions.

(74)   edvel mjare varâten.

     edv-el   *mjar-e*   *va-râ-ten.*
     penny-NOM.SV shilling-NOM.SG twelve-FRACB-FRAC.NOM

     One penny is 1⁄12th of a shilling.

Vulgar fractions (i.e. of the form n/d) are formed using the unit fraction for $1/d$ immediately followed by the numeral for n. Since n does not receive a classifier, it must be long if there is a long form available for n, in which case its case and gender matches that of $1/d$.

(75)   nemiren acasan nefan mênčešta.

     nem-iren   *acas-an*   *nefan*   *mênč-es-ta.*
     apple-ACC.PL one_fifth-ACC two.ACC.CEL eat-2SG-PAST

     You ate two-fifths of an apple.

(76)   ânirâteri plamen

     â-ni-râ-teri   *plamen*
     NNOM-NINE-FRACB-FRAC.GEN seven.GEN

     of the number 7⁄9

(77)   a nisraþniten mjasraðo

      a   *ni-sraþ-ni-ten*   *mja-sraðo*
      NPN nine-sixteen-nine-FRAC.NOM six-sixteen.five

      101⁊153 of it

A mixed number $m + n/d$ is expressed by using the numeral for m (the long form if one is available, otherwise the short form), followed by the conjunction ⟨i⟩ plus the numeral for n/d.

(78)   nafsa mina i sêþa

      nafs-a   *mina*   *i*   *sêþa*
      nafsa-NOM.SG one.NOM.CEL MXN one_third-NOM

      1 ⅓ of a nafsa

If a mixed number is used pronominally, then only the numeral for m assumes its pronominal form:

(79)   a mina i sêþa

      a   *mina*   *i*   *sêþa*
      NPN one.NOM.CEL MXN one_third-NOM

      1 ⅓ of it

Likewise, a mixed number used nominally receives changes only to the numeral for m:

(80)   sraþvilm·ener i mjarâten glêma

      sraþvil-m·en-er   *i*   *mja-râ-ten*   *glêma*
      sixteen.one-number-NOM.SG MXN six-FRACB-FRAC.NOM five.NOM.CEL

      the number 17 ⅚

16.3.2   Inexact numerals

Inexact numerals are represented in scientific notation with base 16. The short-form digits of the significand are listed (with an implied decimal point after the first digit), followed by a suffix representing the exponent.

The exponent suffixes are listed in Table 16.22. Odd powers over 16^6 are derived from the power below, prepended with ⟦-lî-⟧. For instance, 16^{11} has the suffix ⟦-lîflerico⟧, from the suffix for 16^{10}.

Powers below 16^{-4} are derived from their corresponding reciprocals by prefixing ⟦-maga-⟧. For instance, 16^{-12} has the suffix ⟦-magaacþeno⟧, from the suffix for 16^{12}.

Note that adding or removing trailing zeroes in the significand changes the precision of the numeral[1]. A leading zero in the significand is not allowed unless it is the only digit.

Examples:

---

[1]https://en.wikipedia.org/wiki/Significant_figures

#	Name
16^{24}	-vanaso
16^{22}	-retraþo
16^{20}	-eŝrôto
16^{18}	-dasvito
16^{16}	-êsravo
16^{14}	-pertapo
16^{12}	-acþeno
16^{10}	-flerico
16^{8}	-nelepro
16^{6}	-cjamiþo
16^{5}	-lîþêrnero
16^{4}	-têrnero
16^{3}	-ermenroto
16^{2}	-henroto
16^{1}	-ermeþo
16^{0}	-mino
16^{-1}	-sevo
16^{-2}	-garpo
16^{-3}	-seħarpo
16^{-4}	-têramo

Table 16.22: Exponents for use in short numerals.

- ⟨ensentarenłarmino⟩ $3.243F_{16} \times 16^0$

- ⟨senvilcescenroto⟩ $2.10_{16} \times 16^2$

- ⟨senvilhenroto⟩ $2.1_{16} \times 16^2$, which is a different number.

- ⟨ceþeħarpo⟩ 0×16^{-3}; i.e. a quantity whose absolute value is less than 8×16^{-4}.

- ⟨lenłarfemjalîdasvito⟩ $7.F86_{16} \times 16^{19}$

Inexact numerals are considered short numerals and thus take classifiers.

An inexact numeral with ⟨pen⟩ in the significand is an INDEFINITE INEXACT NUMERAL, which shows only the order of magnitude of something. Unlike an inexact numeral with ⟨ces⟩ as the magnitude, an indefinite inexact numeral establishes a lower bound on the quantity.

The inexact exponents are also used as prefixes for units of measure in systematic systems.

While the inexact numerals are the preferred set for expressing inexact quantities, exact numerals are sometimes used for this purpose in poetic language. Thus, we can prefix ⟨pen⟩ to an exact numeral such as ⟨dara⟩ to get an INDEFINITE EXACT NUMERAL.

16.3.3   Complex numerals

Complex numerals are composed of the real part, followed by ⟦-perin-⟧ or ⟦-ŋilis-⟧, then the imaginary part. ⟦-perin-⟧ is used when the imaginary part is positive and ⟦-ŋilis-⟧ is used when it is negative. Both the real and the imaginary part are expressed as short numerals, and the resulting numeral is short.

If the real part is omitted, then it is assumed to be zero. If the imaginary part is omitted, then it is assumed to be either 1 or −1, depending on its sign. ⟦-ŋilis-⟧ has the form ⟦-ŋils⟧ word-finally.

The particle ⟨ceþe⟩ affects only the real part of the numeral.

If one or both components are exact but not integral, then a rational numeral is used with a common denominator, in which the numerator is a complex numeral.

Alternatively, one or both components may be inexact, in which case the other must either be integral or inexact. If both components are inexact, then they must still be listed in full.

(81)   mjaperindo

    mja-perin-do
    six-CPX-FIVE

    $6 + 5i$

(82)   tarŋiliþen

    tar-ŋilis-sen
    four-CPX.NEG-TWO

    $4 - 2i$

(83) perinen

perin-en
CPX.NEG-THREE

$3i$

(84) vilŋils

vil-ŋils
one-CPX.NEG

$1 - i$

(85) ceþe vfeperinva

ceþe   v\fe-perin-va
minus eight-CPX-TWELVE

$-8 + 12i$

(86) âsêþa mjaperinsen

â-sêþa   mja-perin-sen
NNOM-ONE_THIRD.NOM six-CPX-TWO

$\frac{1}{3}(6 + 2i) = 2 + \frac{2}{3}i$

(87) vilperinentarħaþenmino

vil-perin-en-tar-ħas-sen-mino
one-CPX-THREE-FOUR-THIRTEEN-TWO-INEXACT.16^0

$\underbrace{1}_{\text{exact}} + \underbrace{3.4D2_{16}}_{\text{4 SFs}}\,i$

16.4   Interrogative quantities

Ŋarâþ Crîþ has the determiner ⟨met⟩ *how many?, how much?*. The nominal counterpart is ⟨metos, mjotos, medot⟩ (IIIc.m).

16.5   Number agreement

The morphological number of a noun modified by a numeral agrees with that numeral. All nouns take the generic number for the numeral 0 and may optionally take it for other numerals. In addition, numerals other than 0 are compatible with a different number depending on the clareþ of the noun:

| | Fingers extended | |
Digit (Hex)	Main	Variant 1
0	–	
1	P	
2	RP	
3	MRP	
4	I	
5	IP	
6	IRP	
7	IMRP	
8	M	
9	MP	
A	IMP	
B	IM	IP
C	T	
D	TI	
E	TIM	IM
F	TIMRP	

Table 16.23: The gesture for each digit. The fingers from thumb to pinky are denoted T, I, M, R, and P.

- Singular nouns take the singular for –1 and 1, the dual for ±2, and the plural for all other numerals.

- Collective nouns take the singulative for 1 and the collective for all other numerals.

- Mass nouns always take the direct number when modified by a numeral.

16.6   Clitics for numerals

The distinctness clitic ⟨='ot⟩ indicates that the items being counted are unique. This clitic can be used on all numerals as well as on the determiners ⟨mel⟩ and ⟨dân⟩ but makes sense only with integral quantities.

The bounding clitic ⟨='ocþaf⟩ specifies the the numeral specifies an upper bound for the number of items (*no more than*). This clitic can be used on all numerals. It cannot be used on ⟨mel⟩, nor can it be used on ⟨dân⟩ (as it would be redundant).

16.7   Finger counting

The most common method of finger counting in the Ŋarâþ Crîþ-speaking area represents each hexadecimal digit with one hand.

16.8   Numeric prefixes

Ŋarâþ Crîþ has a set of prefixes used for derivation (e.g. in order to describe an entity of some number of parts). These are not based on the ordinary cardinal numeral system but rather on

Factor	x^1	x^2	x^3	x^4	x^5	x^6	x^{-1}	x^{-2}
2	la	le	li	lî	lê	lô	lo	lâ
3	še	ši	šê	šô	šî	šâ	ša	šo
5	te	to	tâ	tô	tê	ti	ta	tî
7	fi	fa	fo	fî	fê	fâ	se	sô
11	łi	ła	łê	ło	łô	łî	łâ	łe
13	ga	co	gi	gâ	gô	gê	ge	gî
17	cþa	cþâ	cþi	cþe	cþê	cþî	cþo	cþô
19	jo	cjo	njo	vjo	sjo	rjo	je	cje
23	ja	cja	nja	vja	sja	rja	nje	vje
29	ri	cri	vri	sri	fri	gri	sje	rje
31	tfa	tfâ	tfi	tfe	tfê	tfî	tfo	tfô

Table 16.24: Numeric prefixes in Ŋarâþ Crîþ.

Prefix	Gloss
vli-	one, mono-, uni-
vlê-	many, multi-, poly-
þra-	few, oligo-

Table 16.25: Special numeric prefixes.

the prime factorization of a number.

An ORDINARY PREFIX PHRASE consists of one or more prefixes from Table 16.24, such that the prefixes are sorted first by ascending base, then by descending exponent. A power greater than 6 or less than −2 is expressed by compounding multiple prefixes of the same base until the desired power is reached. A PREFIX PHRASE is either an ordinary prefix phrase or a prefix from table Table 16.25.

If a prefix phrase modifies a noun that is monosyllabic in the nominative case, then an infix ⟦-i-⟧ is added between them.

16.9 Numerals in writing

The general rule for writing numerals is that anything from the short numeral sytem may either be written with digits or spelled out, and that anything else is always spelled out. For instance, ⟨navo glêmac⟩ may not be written as **⟨navo 5⟩ or even as **⟨navo 5âc⟩, but ⟨navo sensraþpinlaþ⟩ may be written as ⟨navo 2Blaþ⟩. Similarly, ⟨nefasaþ forþ⟩ cannot be written using figures at all, while ⟨len forþ⟩ may be abbreviated as ⟨7 forþ⟩.

The short-numeral parts of rational numerals, which are as a whole considered long numerals, may also be abbreviated: ⟨sraþfilm·ener i mjarâten glêma⟩ to ⟨11m·ener i 6râten glêma⟩ (but *not* **⟨11m·ener i 6râten 5⟩).

Since the digits in inexact numerals are read one by one instead of respecting place value, a *til* is inserted after the first digit when an inexact numeral is abbreviated: ⟨senvilcescenroto⟩ to ⟨2·10henroto⟩.

16.10   Units of measure

For dimensions other than time, there are two systems of measure: the TRADITIONAL SYSTEM uses all units. The SYSTEMATIC SYSTEM uses only one of the units, prefixed with inexact exponents; sometimes, the systematic unit is used without any prefixes, using inexact numerals instead.

16.10.1   Date and time

The year is approximated as having 403 5⁄24 days; that is, the year length varies between 403 and 404 days, with five leap years per 24-year cycle. (In particular, the leap years fall on years 0, 5, 10, 15, and 20 mod 24.) This approximation drifts from the true year by about 1 day per 1234 years.

Unit	Conversion	Approximate SI equivalent
eleþ	$403\frac{5}{24}$ envo	408.61 (Earth) days
enva	48 elvo	24.32 hours
elva	48 cenðor	30.4 minutes
cenðos	48 rirêns	38 seconds
rirens		0.792 seconds

Table 16.26: Units of time.

The year is also divided into 13 half-months (senło; sg. senłas) of 31 or 32 days (approximating half of the lunar orbital period of 62.02 days). In non-leap years, each half-month is conveniently 31 days long. In leap years, the last half-month is extended by one day.

#	Name	Earth equivalent
0	serend·rênerþ	March 21 – April 17
1	tovresarta	April 18 – May 15
2	vôrvaron	May 16 – June 12
3	elþesêren	June 13 – July 10
4	šisonm·êva	July 11 – August 7
5	naram·jena	August 8 – September 5
6	ceâþcfiþar	September 6 – October 3
7	eltasnelserþ	October 4 – October 31
8	inoravona	November 1 – November 28
9	firjarcin	November 29 – December 26
10	ercig·ina	December 27 – January 23
11	sifłit·ano	January 24 – February 20
12	ginasferþ	February 21 – March 20

Table 16.27: The names of each half-month.

The calendar has a nine-day week. As a result, the day of week advances by two days every 24-year cycle, and the day-of-week pattern cycles every 216 years. The first six days of the week are considered work days, while the last two are rest days. The seventh day, in modern times, is a 'half-work' day.

#	Name	Associated element
0	peleſto	darkness, chaos
1	venes	fire
2	ħator	water
3	anar	earth
4	nerals	air
5	cþilgesna	ſtars
6	sivarja	moon
7	elvina	sun
8	felcaþa	light, order

Table 16.28: The names of the days of the week.

16.10.2   Length

Unit	Conversion	Approximate SI equivalent
nafsa	16 eletin	1.90 km
eleten	12 vetin	119 m
veten	8 avanto	9.92 m
avanta (syſtematic)	6 rjasir	1.24 m
rjaser	24 cento	20.7 cm
centa	256 sanin	8.6 mm
sanen		3.4 μm

Table 16.29: Units of length.

16.10.3   Currency

The traditional currency syſtem, which was used in the Federation of Crîþja, is almoſt isomorphic to the British pre-decimal currency syſtem. One erłol is equivalent to 20 mjari, and one mjare is equivalent to 12 edva. Unlike with the £sd syſtem, one edvel is divided into seven seedva, although the seedvel is used primarily as a unit of accounting.

In the full abbreviation, each unit has its own symbol, which is followed by the number of that unit involved. If there is more than one unit involved, then each such ſtring is separated by spaces. Units of which there are zero are omissible only from the left and the right; that is, **⟨9{rł2 e3}⟩ is not allowed and should be written as ⟨9{rł2 m0 e3}⟩ inſtead. Likewise, the unabbreviated reading liſts the units with their quantities, except that all units of which there are zero are omitted (i.e. ⟨erłoc nefa edva prêno'ce⟩).

In the condensed abbreviation, the *mjare* and *edva* amounts are separated with a *jedva*, with no ⟨m⟩ or ⟨e⟩. If there are zero *mjari*, then the part before the slash is ⟨0⟩; if there are zero *edva*, then the part after the slash is the *ŋos*, ⟨'⟩. Note that the condensed abbreviation is not applicable if there are any *seedva*.

In the abbreviated reading, which also does not admit any *seedva*, amounts less than one *mjare* are expressed using a numeric prefix (Seċtion 16.8) plus ⟨edva⟩. Amounts of one *mjare* or more are expressed as follows:

- If there are any *erłer*, then they are declared as they would in the unabbreviated reading. If there are no lower units, then the process ends here.

- The nominal form of the long numeral corresponding to the number of *mjari* is inserted. If there are no *mjari*, then ⟨inora⟩ *emptiness* is used instead. If there are 17, 18, or 19 *mjari*, then there is no appropriate long numeral and so the corresponding short numeral with the classifier ⟦-čis⟧ is used instead. Note that ⟨sraþfilčis⟩, ⟨sraþþenčis⟩, and ⟨sraþienčis⟩ are not declined.

- The conjunction ⟨i⟩ is used to separate the *mjare* and *edva* amounts.

- The short numeral corresponding to the number of *edva* is inserted.

Table 16.30: Expressions of various amounts of money in the traditional currency system.

Quantity	Abbreviation	Long	Short
1/7d.	9{s1}	seedvel mina	–
2/7d.	9{s2}	seedva nefa	–
3/7d.	9{s3}	seedva prêno	–
4/7d.	9{s4}	seedva resiþ	–
5/7d.	9{s5}	seedva glêma	–
6/7d.	9{s6}	seedva cfersîþ	–
1d.	9{e1}	edvel mina	vliedva
1 1/7d.	9{e1 s1}	edvel mina seedvel mina'ce	–
1 2/7d.	9{e1 s2}	edvel mina seedva nefa'ce	–
1 6/7d.	9{e1 s6}	edvel mina seedva cfersîþ'ce	–
2d.	9{e2}	edva nefa	laedva
2 4/7d.	9{e2 s4}	edva nefa seedva resiþ'ce	–
3d.	9{e3}	edva prêno	šeedva
4d.	9{e4}	edva resiþ	leedva
5d.	9{e5}	edva glêma	teedva
6d.	9{e6}	edva cfersîþ	lašeedva; lomjare
7d.	9{e7}	edva plamis	fiedva
8d.	9{e8}	edva ŋatir	liedva
9d.	9{e9}	edva nalarþ	šiedva
10d.	9{eA}	edva emra	lateedva
11d.	9{eB}	edva nalfo	ɫiedva
1s.	9{m1}; 9{1/'}	mjare mina	mjare; âmina i ces
1s. 1d.	9{m1 e1}; 9{1/1}	mjare mina edvel mina'ce	âmina i vil

Table 16.30: Expressions of various amounts of money in the traditional currency system.

Quantity	Abbreviation	Long	Short
1s. 2d.	9{m1 e2}; 9{1/2}	mjare mina edva nefa'ce	âmina i sen
1s. 3d.	9{m1 e3}; 9{1/3}	mjare mina edva prêno'ce	âmina i en
1s. 4d.	9{m1 e4}; 9{1/4}	mjare mina edva resiþ'ce	âmina i tar; venos
1s. 6d.	9{m1 e6}; 9{1/6}	mjare mina edva cfersîþ'ce	âmina i mja
1s. 9d.	9{m1 e9}; 9{1/9}	mjare mina edva nalarþ'ce	âmina i ni
2s.	9{m2}; 9{2/'}	mjarec nefa	ânefa i ces
2s. 6d.	9{m2 e6}; 9{2/6}	mjarec nefa edva cfersîþ'ce	ânefa i mja; cþîf
3s.	9{m3}; 9{3/'}	mjari prêno	âprêno i ces
3s. 6d.	9{m3 e6}; 9{3/6}	mjari prêno edva cfersîþ'ce	âprêno i mja
4s.	9{m4}; 9{4/'}	mjari resiþ	âresiþ i ces
4s. 6d.	9{m4 e6}; 9{4/6}	mjari resiþ edva cfersîþ'ce	âresiþ i mja
5s.	9{m5}; 9{5/'}	mjari glêma	âglêma i ces; catra
6s.	9{m6}; 9{6/'}	mjari cfersîþ	âcfersîþ i ces
10s.	9{mA}; 9{A/'}	mjari emra	âhemra i ces; ercjor
11s. 7d.	9{mB e7}; 9{B/7}	mjari nalfo edva plamis'ce	ânalfo i len
15s. 2d.	9{mF e2}; 9{F/2}	mjari grimin edva nefa'ce	âgrimin i sen
16s. 11d.	9{m10 eB}; 9{10/B}	mjari meþos edva nalfo'ce	âmeþos i pin
17s.	9{m11}; 9{11/'}	mjari sraþfil	sraþfilčis
17s. 5d.	9{m11 e5}; 9{11/5}	mjari sraþfil edva glêma'ce	sraþfilčis i do
18s.	9{m12}; 9{12/'}	mjari sraþþen	sraþþenčis
19s.	9{m13}; 9{13/'}	mjari sraþien	sraþienčis
19s. 11d.	9{m13 e11}; 9{13/B}	mjari sraþien edva nalfo'ce	sraþienčis i pin
19s. 11 6⁄7d.	9{m13 e11 s6}	mjari sraþien edva nalfo'ce seedva cfersîþ'ce	–

Table 16.30: Expressions of various amounts of money in the traditional currency system.

Quantity	Abbreviation	Long	Short
£1.	9{rł1}; 9{rł1 0/'}	erłol mina	erłol
£1. 0s. 1d.	9{rł1 m0 e1}; 9{rł1 0/1}	erłol mina edvel mina'ce	erłol mina i inora i vil
£1. 1s.	9{rł1 m1}; 9{rł1 1/'}	erłol mina mjare mina'ce	erłol mina i âmina
£1. 3s. 8d.	9{rł1 m3 e8}; 9{rł1 3/8}	erłol mina mjari prêno'ce edva ŋatir'ce	erłol mina i âpreno i fe
£2.	9{rł2}; 9{rł2 0/'}	erłoc nefa	–
£2. 3s. 6d.	9{rł2 m3 e6}; 9{rł2 3/6}	erłoc nefa mjari prêno'ce edva cfersîþ'ce	erłoc nefa i âpreno i mja
£14. 8s. 2d.	9{rłE m8 e2}; 9{rłE 8/2}	erłer grinjo mjari ŋatir'ce edva nefa'ce	erłer grinjo i âŋatir i sen
£34. 17s. 1d.	9{rł22 m11 e1}; 9{rł22 11/1}	erłer sensraþþen mjari sraþfil'ce edvel mina'ce	erłer sensraþþen i sraþfilčis i vil

Another format for expressing currency, used in accounting, is ⟨9{*E mmes*}⟩, in which the units below the *erłol* are expressed as fixed-width fields. For instance, £127. 19s. 11 6⁄7d. (⟨9{rł7F m13 eB s6}⟩ in the common format) can be expressed as ⟨9{7F 13B6}⟩. The right part of an amount expressed in the accounting format is read digit by digit, with the space read as ⟨inora⟩; thus the prior example would be read as ⟨lensratłar inora vilenpinmja⟩.

Rates of currency against currency (such as tax rates) are customarily given as an amount per *erłol*, giving a resolution of 1/1680 or roughly 0.06%.

Chapter 17

Derivations

This chapter outlines how new words can be made from existing ones in Ŋarâþ Crîþ.

17.1   Compounding

Closed compound nouns can be formed by combining a noun or verb with a noun. The 'head' of the compound comes second. If the head noun is neither terrestrial nor a form of ⟨vês⟩ *system*, then it is lenited. Principal forms are inherited from the head noun. The first element of a closed compound, the modifier, is inflected in one of its ᴄᴏɴᴊᴜɴᴄᴛ ꜰᴏʀᴍꜱ depending on whether the head starts with a vowel.

Ŋarâþ Crîþ supports two types of open compounds: ɢᴇɴɪᴛɪᴠᴇ ᴄᴏᴍᴘᴏᴜɴᴅꜱ and ᴢᴇʀᴏ ᴄᴏᴍ-ᴘᴏᴜɴᴅꜱ. Genitive compounds are made of a genitive noun phrase modifying a noun. The genitive noun phrase always has default number, and the genitive and the head noun cannot be separated by hyperbaton.

A zero compound is a head-initial compound where the second word either agrees with the case of the head noun or is uninflected. If the modifier is marked for case, then the two components can be separated as long as their relative order is preserved. Zero compounding is most often used for the names of languages, such as ⟨ŋarâþ crîþ⟩ and ⟨ŋarâþ @asoren⟩. This construction is similar to that of qualified names (Section 13.12).

17.2   Derivation

17.2.1   Verb to noun

For all of the following derivations, the derived nouns are in the celestial gender unless they refer to human beings.

The instrument derivation

The ɪɴꜱᴛʀᴜᴍᴇɴᴛ ᴅᴇʀɪᴠᴀᴛɪᴏɴ forms a noun that describes an instrument that performs an action. The resulting noun is a second-declension ⟦-ir⟧ noun whose:

- N stem is ⟦NΘł⟧,
- L stem is ⟦NΘ$^{\xi}$s⟧,
- S stem is ⟦NΘł⟧, and

- locative vowel is ⟦e⟧.

The agent derivation

The AGENT DERIVATION forms a noun that describes an animate being that performs an action. Ŋarâþ Crîþ has two different derivations: the DURABLE AGENT DERIVATION is used to derive nouns that refer to someone who usually performs the action over a long span of time. For instance, it could refer to those performing the action as part of their profession. The durable agent noun of a verb is a fourth-declension noun whose:

- N stem is ⟦Iið⟧ for most nouns. If I can be matched to ⟦I′a⟧, then it is ⟦I′eð⟧; if I can be matched to ⟦I′i⟧, then it is ⟦I′îð⟧.

- L stem is ⟦L$^{\flat}$⟧,

- S stem is ⟦Pîd⟧, and

- thematic and locative vowel are ⟦a⟧.

The TRANSIENT AGENT DERIVATION is used for referents that generally engage in the action over a more limited span of time. The transient agent noun of a verb is a second-declension ⟦-ir⟧ noun whose:

- N stem is ⟦NΘd⟧,

- L stem is ⟦NΘ$^{\xi}$d⟧,

- S stem is ⟦NΘd⟧, and

- locative vowel is ⟦e⟧.

Note that the distinction between the durable and transient agent derivations is lexical. That is, someone who becomes a teacher for one month before switching to another career would still have been a ⟨sareþ⟩, not a ⟨saradir⟩.

The patient derivation

The PATIENT DERIVATION forms a noun that describes something to which an action is done. The resulting noun is a second-declension ⟦-êr⟧ noun whose:

- N stem is the I stem of the verb,

- G stem is the N stem of the verb,

- L stem is the L stem of the verb,

- S stem is ⟦N(ê)r⟧, and

- locative vowel is ⟦i⟧.

The location derivation

The LOCATION DERIVATION forms a noun that describes a location at which an action happens. The resulting noun is a first-declension ⟦-es⟧ noun whose:

- N stem is ⟦IΘɫ⟧,

- L stem is ⟦IΘˠɫ⟧,

- S stem is ⟦NΘɫc⟧, and

- locative vowel is ⟦a⟧.

The quality derivation

The QUALITY DERIVATION forms a noun that describes the action or quality described the verb. This is a second-declension ⟦-erþ⟧ noun whose:

- N stem is the I stem of the verb,

- L stem is the L stem of the verb,

- S stem is the N stem of the verb, and

- locative vowel is ⟦e⟧.

If the I stem ends with ⟦-a-⟧ or ⟦-aħ-⟧, then the noun is a second-declension ⟦-arþ⟧ noun instead, with the final ⟦-a-⟧ or ⟦-aħ-⟧ removed from the noun's N and S stems.

If the I stem ends with ⟦-r-⟧, then the quality derivation might be an ⟦-eþ⟧ noun instead.

17.2.2 Verb to verb

Other aspects

The prefix ⟦es-⟧ forms an inceptive or inchoative form of a verb (*start ~ing*), and ⟦car○-⟧ forms a cessative (*stop ~ing*): ⟨mitrit⟩ *run*; ⟨esmitrit⟩ *start running*; ⟨carm·itrit⟩ *stop running*. The cessative prefix does not cause any mutation in inflected forms of ⟨eþit⟩ or ⟨telit⟩.

The prefix ⟦er○-⟧ forms a terminative form of a verb (*finish ~ing*) and is applicable only to lexically telic verbs. In participles, which do not mark for tense, it usually indicates an action that happened in the past.

17.2.3 Noun to noun

- Augmentative: ⟦ar-⟧

- Diminuitive: ⟦-in⟧, ⟦-(n)tin⟧, ⟦-(n)čin⟧, or ⟦e-⟧

17.2.4 Calculus

New words can also be derived by differentiating or integrating existing terms.

Each affix listed in Table 17.1 has a reciprocal counterpart. For most affixes, this is derived by inverting the tone of the second-to-last vowel of the affix (⟦-relne-⟧ *DDA* → ⟦-rêlne-⟧ *DDA.REC; 'reciprocal of the derivative with respect to 2-dimensional space'*), but the reciprocal of ⟦-mitra-⟧ is ⟦-genna-⟧. In the case of the nominal forms, this translates to inverting the tone of the last vowel of each stem. However, the I′ stem of the reciprocal of ⟦-senna-⟧ is ⟦sîn⟧.

Variable	Operation	Infix	Nominal
Time	Derivative (DDT)	mitra	mitra, motras, mitrit (Ic)
	Reciprocal (DDT.REC)	genna	genna, gelnas, gendit (Ic)
	Integral (IDT)	arcja	arcja, arpes, arcit (Ic)
Space (1D)	Derivative (DDX)	cþivo	cþivo, cþelvas, cþivit (Ic)
	Integral (IDX)	jando	jando, jondas, jandit (Ic)
Space (2D)	Derivative (DDA)	relne	relen, rjales, cjareles, cjarilo, relit (VIc)
	Integral (IDA)	senna	senan, sines, cjasines, cjasuno, sengit (VIc)
Space (3D)	Derivative (DDXV)	marša	marša, miršas, maršit (Ic)
	Integral (IDXV)	ganto	ganto, gentas, gandit (Ic)
Population	Derivative (DDP)	gille	gille, gelles, gildit (Ic)
	Integral (IDP)	grija	grija, rijes, riħit (Ic)

Table 17.1: Calculus affixes in Ŋarâþ Crîþ.

Infix forms

Different kinds of verbs can be modified with the calculus affixes by infixing the infix forms immediately after the last vowel of the stem.

The affixes can be used on stative verbs, turning its meaning from *(S) is high in y* to *(S) is high in dy/dt &c.*:

- ⟨ecljat⟩ *(S) is far from (I)*

- ⟨**emitra**cljat⟩ *(S) is moving quickly from (I)*

- ⟨**earcja**cljat⟩ *(S) has a high absement from (I)*

- ⟨**egenna**cljat⟩ *(S) is moving slowly from (I)*

Active verbs can take only ⟦-mitra-⟧ and ⟦-genna-⟧, indicating the speed at which the action is done.

Nominal forms

A compound of a noun (in its conjunct form) and the nominal form of a calculus affix can be used. Nouns that can be modified in this way include those that describe measurable quantities or objects: ⟨ariga⟩ *warmth*; ⟨arigamitra⟩ *rate of temperature change*; ⟨arigamarša⟩ *temperature gradient in 3D space*.

In addition, the numeral ⟨âmina⟩ and the determiners ⟨mel⟩ and ⟨dan⟩ can be combined with the affixes in the same way.

Chapter 18

Sensation & perception

18.1   Shape

Shape can be perceived with different senses.

18.1.1   Size

For overall size, Ŋarâþ Crîþ uses the verbs ⟨mervit⟩ *large* and ⟨nôrit⟩ *small*, the latter being colexified with *young*. ⟨gadosit⟩ is an intensified counterpart to ⟨mervit⟩.

18.2   Vision

The basic verb for seeing is ⟨menat⟩. ⟨vonat⟩ and ⟨varmenat⟩ imply a sense of volition on top.

18.2.1   Brightness

For *bright*, Ŋarâþ Crîþ uses the verb ⟨lirnat⟩ for *emitting a large amount of light* and ⟨csarneat⟩ for *well-lit*. The antonym of the former is the verb ⟨arelit⟩ (also meaning *difficult to see*). and that of the latter is the noun ⟨crîna⟩ (also meaning *black* or *dark in color*).

18.2.2   Color

Ŋarâþ Crîþ has the six basic color terms. Interestingly, color terms are asymmetric syntactically: only two color terms have both a nominal and verbal form.

Color	Noun	Verb
Transparent	magen	mirþit
Black	crîna	—
White	ineþa	—
Red	ceaþ	censit
Green or blue	—	naðasit
Yellow	tfora	—

Table 18.1: Basic color terms in Ŋarâþ Crîþ.

Color terms can be used attributively by using the genitive singular forms for nominal forms and the participles for verbal forms.

Verbal color terms can be used predicatively as is. Nominal color terms can be used predicatively by using the relational ⟨čil⟩ with the subject being the color and the object being the object with that color. If the colored object is not solid, then the verb ⟨eþit⟩ is used with the object in the locative case.

In addition, ⟨crîna⟩ and ⟨ineþa⟩ are used for the characteristic of being dark or pale in general.

[TODO: RGB and CMY primary color terms]

18.3   Sound

The basic verb for hearing is ⟨crešit⟩, from which ⟨varešit⟩ *listen to a person speaking; read carefully* is derived.

18.3.1   Pitch

For voices, ⟨firit⟩ is used to refer to high pitch (colexified with *thin (lamina)*); conversely, ⟨vrelat⟩ is used to refer to low pitch (colexified with *thick*).

18.3.2   Loudness

The main verbs describing loudness are ⟨vregit⟩ *loud* and ⟨cicþit⟩ *soft*. Their more extreme counterparts are ⟨gelgačit⟩ and the noun ⟨išiłte⟩.

18.3.3   Timbre

⟨cličit⟩ *rough, grating*

18.4   Touch

⟨tecsat⟩ is used for *touch* or *feel*.
    temperature: ⟨ercit⟩ *cold*
    hardness?: ⟨nêlit⟩ *soft*
    texture: ⟨cličit⟩ *rough*

18.5   Smell

⟨ħacal⟩ is used for *smell* or *odor*; ⟨calit⟩ is to sense it.

18.6   Taste

⟨ifoma⟩ is used for *taste* and *flavor*; ⟨evantat⟩ is to sense it. Ŋarâþ Crîþ does not generally distinguish *taste* and *flavor*.

Terms for specific tastes include ⟨celirat⟩ *sweet*, ⟨gelfat⟩ *bitter*, ? *salty*, ? *sour*, ? *umami*, ⟨cþîrvit⟩ *spicy*, ? *minty*, and ? *fatty*.

Terms for intensity of taste include ? *intense, flavorful* and ? *bland.*

18.7   Cognition

Chapter 19

Kinship

The most common kinship terms in Ŋarâþ Crîþ (Table 19.1) are determined not by the gender of the member, but rather whether it is the same or different as that of oneself. Derived terms are given using the period as used in programming languages (i.e. it should be read as the Japanese の).

Term	Abbreviation	Gloss
melco	ssP	parent of same gender as self
tfoso	osP	parent of opposite gender as self
nanda	ssC	child of same gender as self
laroþ	osC	child of opposite gender as self
armo	ssSb	sibling of same gender as self
melsas	osSb	sibling of opposite gender as self
veliša	SP	spouse

Table 19.1: Kinship terms in Ŋarâþ Crîþ.

Chapter 20

Loanwords

Loanwords and foreign names are marked with a *nef*, ⟨*⟩.

In the case of Ŋarâþ Crîþ, however, what counts as a 'loanword' is more complicated than in many other languages. Inherited words are not loanwords, and words borrowed from Necarasso Cryssesa v6 are not considered loanwords, either. Words borrowed from *desorin* are usually not considered to be loanwords, but recent borrowings from *tecŧer* are. Borrowings from other languages are naturally considered loanwords, but calques are not.

Sometimes, a word may be marked with a *nef* for reasons unrelated to borrowing. For instance, the words ⟨*sedapat⟩ *female* and ⟨*moganit⟩ *male* were inherited from an East Sylvic language and were originally written without *nefs* until the late Senârmortos period. In this case, the *nefs* seemed to be added in order to discourage these words from being used. Interestingly, the stigma arising from these *nefs* does not seem to apply to true loanwords.

20.1 Adaptation of foreign words

20.1.1 Graphemic adaptation

Generally, when borrowing from languages that use the Cenvos script or a script related to it, and whose orthographies in the script in question do not deviate too far from Ŋarâþ Crîþ usage, Ŋarâþ Crîþ prefers to borrow the word graphemically than phonemically.

[TODO: problems: phonotactics, use of foreign letters (⟨w x y z⟩, ⟨² ₂⟩ diacritics)]

20.1.2 Phonetic adaptation

20.1.3 Morphological adaptation

[TODO: particularly nouns]

Part VI

Appendix

Appendix A

Glossary

Click on a headword to go to the relevant part of the grammar.

Abessive case (Chapter ??)

The case that shows that a noun phrase is *not* used as an instrument or an accompaniment; that is, it is the negataion of the INSTRUMENTAL CASE.

Translations: Arka: vitsame

Absolute head particle (aheadp) (Section ??)

A head particle that always occurs at the beginning of an independent clause phrase.

Translations: Japanese: 絶対文頭純詞, Arka: anoiosnreit

Accusative case (Chapter ??)

The case that, among other things, indicates the 'direct object' of a verb phrase.

Translations: Japanese: 対格, Arka: yulsame

Ancilliary object (Chapter ??)

In trivalent relationals, the less salient of the two objects.

Translations: Arka: roxkomit

APN-irregular verb (Subsection ??)

An irregular verb whose finite forms are specified according to aspect, person, and number.

Applicative voice (Subsubsection ??)

The voice that promotes an oblique adjunct to the dative case, demoting the existing dative argument.

Translations: Japanese: 適用態

Aspect (Section ??)

A property of a conjugated verb that denotes how the action or state described by the verb extends over time. Ŋarâþ Crîþ has two aspects: IMPERFECTIVE and PERFECTIVE. The imperfective aspect is used for ongoing (such as progressive or habitual) actions. The perfective aspect is used for completed actions. In conjugation, aspects can be labeled as DIRECT or INDIRECT. The DIRECT ASPECT is imperfective for the present tense and perfective for the past tense; the INVERSE ASPECT is the other aspect.

Translations: Japanese: 相, Arka: nif

Aspectual auxiliary verb (Subsection ??)

An auxiliary verb that indicates aspect.

Attachment (Section ??)

Whether an attributive predicate is used adnominally or adverbially.

Auxiliary verb (Subsection ??)

A verb whose meaning fuses with that of another verb (the TARGET) and cannot stand without it. It is a type of predicate modifier.

Translations: Japanese: 助動詞, Arka: freyuyuo

Base letter (Subsection ??)

Of a manifested grapheme phrase, the letter before whatever mutation, if any, resulted in the MGF.

Basic personal pronouns (Subsubsection ??)

A set of personal pronouns for first, second, and third persons, the last of which are distinguished by gender. They are defective and lack forms for the CORE CASES.

Bias (Section ??)

A lexical property of a relational that determines whether adnominal or adverbial usage is unmarked.

Calculus affix (Section ??)

An affix that given a quantity, derives the derivative or integral of that quantity with respect to a certain variable. In Ŋarâþ Crîþ, they can manifest as suffixes or infixes depending on the nature of the derivation.

Canonical stroke order (Subsection ??)

The most common or accepted stroke order of a layer-2w* glyph.

Case (Chapter ??)

A feature of a declined noun indicating what role it plays in a sentence. Ŋarâþ Crîþ has eight cases.

Translations: Ŋarâþ Crîþ: neris, Japanese: 格, Arka: same

Cast affix (Section ??)

A marking used to use a relational in the attachment opposite of its bias. It is a suffix for celestial relationals and a prefix for terrestrial relationals.

Causative voice (Subsubsection ??)

The voice that adds a cause argument to a verb, demoting the other participants.

Translations: Japanese: 使役, Arka: sols

Cenvos (Section ??)

The script used by Ŋarâþ Crîþ natively.

Translations: Ŋarâþ Crîþ: cenvos

Choice question (Section ??)

A question that asks for a choice between two or more options.

Clareþ (Chapter ??)

A lexical feature of a noun that dictates what numbers it may take. Ŋarâþ Crîþ has three claroþ: SINGULAR, COLLECTIVE, and MASS.

Translations: Ŋarâþ Crîþ: clareþ

Classifier (Section ??)

A suffix attached to a short numeral to indicate what kind of objects are being counted.

Clitic (Section ??)

An entity that acts like an affix phonologically but like a separate word syntactically. In Ŋarâþ Crîþ, all clitics are postclitics and are marked with a *ŋos*, ⟨’⟩.

Translations: Japanese: 接語

Clitic boundary (Section ??)

The boundary between a clitic and another word, or between two clitics. The boundary marked by the *ŋos*.

Common argument (Section ??)

The argument shared between the relative clause and the matrix clause (the clause in which it is embedded).

Complex coda (Subsection ??)

A coda that can be pronounced only word-finally. Instances of such codas in the middle of a syntactic word are simplified during the conversion to layer 1, and such instances immediately before a clitic boundary are simplified during the conversion to layer 2.

Component (Section ??)

A part from which an inflected form of a word is built.

Compound datum (Section ??)

A datum that is either a list or a key-value list.

Compounding (Section ??)

A word-formation process in which a noun or a verb is combined with a noun to form a noun whose meaning is related to both of its constituents.

Conjunct head particle (cheadp) (Section ??)

A head particle that usually occurs at the beginning of an independent clause phrase but may move after the end of a *so*-clause.

Translations: Japanese: 相対文頭純詞, Arka: noidosnreit

Consonant mutation (Section ??)

The systematic modification of a consonant, triggered by a morphological environment. Ŋarâþ Crîþ has two types of mutations: LENITION and ECLIPSIS.

Translations: Japanese: 子音変異, Arka: amisomiyu

Constant (Section ??)

A component that stays the same regardless of the lexical item being inflected.

Converb (Section ??)

A verb used in a converbal clause, which is used adverbially. Its use can often be translated to a verbal coordination.

Translations: Japanese: 動副詞, Arka: yuofreyu

Coordinand (Section ??)

The phrases being joined by a COORDINATOR.

Coordinator (Section ??)

The conjunction of a coordinated phrase. In Ŋarâþ Crîþ, nominal coordinators appear as clitics and are sometimes fused with pronouns.

Translations: Japanese: 等位接続詞

Core case (Chapter ??)

A collective term for the nominative, accusative, dative, and genitive cases. In particular, basic personal pronouns lack forms for these cases.

Dative case (Chapter ??)

The case that, among other things, indicates the 'indirect object' of a verb phrase.

Translations: Japanese: 与格, Arka: alsame

Datum (Section ??)

A part of speech that is used to convey data. A datum can be used as a special independent clause phrase.

Degree auxiliary verb (Subsection ??)

An auxiliary verb that shows the extent to which the target action or state holds.

Demonstrative pro-form (Subsection ??)

One of the pronouns, determiners, or pro-verbs that is used to refer to something in a particular frame of reference.

Dependent clause (Section ??)

A clause that somehow modifies a constituent of another clause. This cataegory includes RELATIVE CLAUSES, CONVERBAL CLAUSES, *SO*-CLAUSES, and NOMINALIZED CLAUSES.

Translations: Japanese: 従属節, Arka: roxkyav

Dependent special independent clause phrase (dsICP) (Chapter ??)

A special independent clause phrase that requires another ICP in the same sentence, such as ⟨cirtel⟩ *by the way, incidentally* or ⟨olaśta⟩ *in addition, furthermore, moreover*.

Translations: Japanese: 従属特別主節句, Arka: roxkaalleśtyavsevet

Derivation (Section ??)

A word-formation process in which a noun or a verb is systematically modified to create a new related word.

Derivative (Section ??)

A string that can be derived systematically from the value of a theme for a given paradigm.

Translations: Arka: leveol

Digit (Section ??)

One of the sixteen graphemes that may be used to write short numerals.

Direct aspect (Section ??)

In the conjugation of verbs, the morphologically unmarked aspect. The direct aspect receives shorter subject suffixes, and the verb is not eclipsed. It is imperfective for the present tense and perfective for the past tense.

Translations: Arka: fremnif

Direct quotative (Section ??)

A quotative that describes speech exactly as it was or is expressed by someone.

Discretionary ligature (Subsection ??)

A ligature that is present in layer 2w*. These ligatures are not required to be used, nor can they be derived by simply connecting the ending stroke of one glyph to the starting stroke of another.

Ditransitive verb (Section ??)

A verb that takes a nominative argument, an accusative argument, and a dative argument.

Translations: Japanese: 二重他動詞, Arka: arkansyuo

Eclipsis (Section ??)

The mutation in Ŋarâþ Crîþ that tends to add voice to voiceless consonants and change voiced stops into nasals.

Translations: Arka: veltem

Effective fricative (Subsection ??)

A manifested grapheme phrase whose base letter represents a fricative phoneme; that is, whose base letter is any of ⟦f v þ ð s š h ħ⟧. Such consonants may appear before ⟦r⟧ or ⟦l⟧ as an onset.

Effective plosive (Subsection ??)

A manifested grapheme phrase whose base letter represents a plosive phoneme; that is, whose base letter is any of ⟦p t d c g⟧. Such consonants may appear before ⟦r⟧ or ⟦l⟧ as an onset.

Emphatic pronoun (Subsubsection ??)

A pronoun made of a reflexive pronoun with a possessive clitic attached, which acts roughly like a personal pronoun with an independent form but places focus on the referent.

Gender (Chapter ??)

A lexical feature of a noun that dictates agreement with certain other words. Also called NOUN CLASS. Ŋarâþ Crîþ has three genders: CELESTIAL, TERRESTRIAL, and HUMAN.

Translations: Japanese: 性, Arka: him

General independent clause phrase (gICP) (Chapter ??)

A clause phrase that falls into the typical pattern for Ŋarâþ Crîþ text, consisting of an independent clause and zero or more subordinate clauses.

Translations: Japanese: 普通主節句, Arka: leimlestyavsevet

Generic number (Chapter ??)

One of the five numbers of Ŋarâþ Crîþ, which is used on noun phrases that do not refer to a specific referent or referents.

Genitive case (Chapter ??)

The case that shows such things as possession, composition, description, or apposition.

Translations: Japanese: 属格, Arka: tilsame

Genus (Section ??)

A lexical property of a verb that includes a family of species whose participle forms are conjugated for in a similar way.

Glyph (Section ??)

The basic unit of representation in layers 2w, 2w*, 3w, and 4w. These represent the characters being written. Glyphs distinguish ligatures and final forms from their constituent letters.

Grapheme (Section ??)

The basic unit of representation in layers 0 and 1. Includes letters, digits, and punctuation.

Translations: Japanese: 書記素, Arka: haca

Head case (hcase) (Section ??)

The case of the common argument of a relative clause within the matrix clause. In Ŋarâþ Crîþ, this can be any of the eight cases.

Head gender (hgender) (Section ??)

The gender of the common argument of a relative clause within the matrix clause.

Head number (hnumber) (Section ??)

The number of the common argument of a relative clause within the matrix clause.

Head particle (headp) (Section ??)

A particle that occurs at the beginning of an independent clause phrase.

Translations: Japanese: 文頭純詞, Arka: osnreit

Imperfective aspect (Section ??)

The aspect used for ongoing (such as progressive or habitual) actions.

Translations: Japanese: 非完結相, Arka: reinnif

Impersonator stem (Section ??)

In some verbs, the participle forms use stems that are different from the possibly vowel-affected infinitive stem. A verb can have separate nominative-rcase and non-nominative-rcase impersonators.

Translations: Japanese: 真似幹

Indefinite auxiliary verb (Subsection ??)

An auxiliary verb whose truth of the action or state it describes makes no implication about the truth value of the action or state described by the target.

Translations: Japanese: 不定助動詞

Independent clause (Section ??)

A clause at the head of an independent clause phrase. If an independent clause ends in a verb, then that verb is in a finite form.

Translations: Japanese: 主節, Arka: lestyav

Independent clause phrase (ICP) (Chapter ??)

A unit of Ŋarâþ Crîþ text terminated by a *gen*, *tja*, *šac*, or *cjar*.

Translations: Japanese: 主節句, Arka: lestyavsevet

Independent verb (iverb) (Section ??)

A verb that is not an auxiliary verb.

Indirect quotative (Section ??)

A quotative that describes speech that is not necessarily the exact words used by someone but has an equivalent meaning.

Inexact numeral (Subsection ??)

A numeral that denotes a number that is only approximately known. Inexact numerals in Ŋarâþ Crîþ are represented in scientific notation.

Infinitive (Section ??)

The primary lemma form of the verb, which in Ŋarâþ Crîþ, ends in ⟦-at⟧ or ⟦-it⟧.

Translations: Japanese: 不定詞, Arka: iva

Instrumental case (Chapter ??)

The case that shows that a noun phrase is used as an instrument or an accompaniment; that is, it has comitative or instrumental function.

Translations: Japanese: 具格, Arka: konsame

Interjection (Chapter ??)

A word in the 'interjection' part of speech. This constitutes a special independent clause phrase.

Translations: Japanese: 感動詞, Arka: xivi

Interrogative pro-form (Subsection ??)

One of the pronouns, determiners, or pro-verbs that is used to ask a question.

Intransitive verb (Section ??)

A verb that takes only a nominative argument.

Translations: Japanese: 自動詞, Arka: reinoyuo

Inverse aspect (Section ??)

In the conjugation of verbs, the morphologically marked aspect. The inverse aspect receives longer subject suffixes, and the verb is eclipsed. It is perfective for the present tense and imperfective for the past tense.

Translations: Arka: flonnif

Irregular verb (Section ??)

A verb that is not conjugated using the regular rules of conjugation.

Translations: Arka: yuo alzettel

Kerning (Subsection ??)

> The alteration of the distance between two glyphs to make their placement less awkward.
>
> *Translations:* Japanese: カーニング

Layer (Chapter ??)

> One of the eight representations of Ŋarâþ Crîþ text. Each layer represents Ŋarâþ Crîþ text at a different layer of abstraction and exists in either the written or spoken mode.
>
> *Translations:* Ŋarâþ Crîþ: flef, Arka: hank

Layer-3w ligation (Subsection ??)

> The joining of the last stroke of a layer-3w glyph with the first stroke of the next. This can happen only when the two glyphs have compatible join types on their respective ends.

Lenition (Section ??)

> The mutation in Ŋarâþ Crîþ that tends to turn plosives into fricatives. Some consonants become null under lenition.
>
> *Translations:* Arka: hoomim

Letter (Section ??)

> Either a TRUE LETTER or a MARKER. A glyph that has a letter value.
>
> *Translations:* Ŋarâþ Crîþ: cenvos, Arka: hac

Letter number (Subsection ??)

> A number assigned to each letter in layer 1.

Letter sum (Subsection ??)

> The sum of the LETTER NUMBERS of each letter in a word. This value is used for some noun declension paradigms.

Ligature (Subsection ??)

> A composite of two or more graphemes that are somehow joined together.

Locative case (Chapter ??)

> The case that shows the location or time of an object or an action.
>
> *Translations:* Japanese: 処格, Arka: kasame

Long numeral (Section ??)

> A class of numerals dating back to VE¹ENCS. Absent from NCS5 and NCS6 but present in ŊCv7 and v9. They are longer than the short numerals and cannot be abbreviated using digits. In Ŋarâþ Crîþ v9, they agree for case and sometimes gender, and they are limited to 16.

Long numeral (Section ??)

> A class of numerals introduced in VE⁴ENCS. They are shorter than the long numerals and can be abbreviated using digits. In Ŋarâþ Crîþ v9, they show no agreement but usually require a classifier.

Main object (Chapter ??)

In trivalent relationals, the more salient of the two objects.

Translations: Arka: leſtomit

Manifeſted grapheme phrase (MGF) (Subsection ??)

A sequence of graphemes that is said to represent a single phoneme. Either a true letter not followed by a lenition marker (PLAIN LETTER), any of ⟦p t d č c g m f v ð⟧ followed by a lenition mark (LENITED LETTER), or, word-initially, one of the digraphs ⟦mp vp dt nd gc ŋg vf ðþ łł⟧ (ECLIPSED LETTER).

Marker (Section ??)

A LETTER that does not correspond to a phoneme but rather has a semantic role.

Mathematical relational (Subsection ??)

A relational that encodes a mtahematical relationship between two entities.

Modal auxiliary verb (Subsection ??)

An auxiliary verb that shows modality.

Morpheme boundary (Section ??)

The boundary between two morphemes of the same syntactic word. These are considered significant in layer 0.

Negative definite auxiliary verb (Subsection ??)

An auxiliary verb whose truth of the action or ſtate it describes implies that the action or ſtate described by the target is false.

Translations: Japanese: 負定助動詞

Nominalized verb phrase (Section ??)

A verb phrase used as a noun. This is formed by using the infinitive form of the verb, preceded by a nominalizing particle.

Translations: Arka: yuoasa

Nominative case (Chapter ??)

The case that indicates the subject of a verb phrase.

Translations: Japanese: 主格, Arka: solsame

Number (Chapter ??)

A feature of a declined noun indicating how many of the referent is present. Ŋarâþ Crîþ has five numbers: DIRECT, DUAL, PLURAL, SINGULATIVE, and GENERIC.

Translations: Japanese: 数, Arka: alx

Numeric prefix (Section ??)

One of a set of derivational prefixes for forming a term for something related to an aggregate of definite size of another object. They are based on the prime factorization of the number.

Numquote (Subsection ??)

A digit immediately preceding text surrounded by quotation or grouping marks, mainly used for secondary purposes that lack any dedicated punctuation.

Translations: Ŋarâþ Crîþ: menerevin, Arka: alxkert

Object (Chapter ??)

> A non-nominative argument of a verb or relational.
>
> *Translations:* Japanese: 目的語, Arka: omit

Orthographic word (oword) (Section ??)

> A sequence of graphemes separated by spaces. A clitic is considered to belong to the same oword as the word to which it is attached.

Paradigm (Section ??)

> A set of rules by which a lexical item can be inflected.

Paradigm (noun declension) (Section ??)

> A lexical property of a noun that governs how it is declined for case and number.

Partial lenition (Section ??)

> LENITION that does not delete ⟦f⟧, ⟦v⟧, or ⟦d⟧.
>
> *Translations:* Arka: vaikhoomim

Participation (ligation and shaping) (Subsection ??)

> A layer-2w* glyph is said to PARTICIPATE in typesetting if its shape is eligible to be altered by the process. All letters participate, but no numerals do so, nor does the space.
>
> *Translations:* Japanese: 参加, Arka: fakt

Participle (Section ??)

> A verb that is inflected to be used in a relative clause to modify a noun phrase.
>
> *Translations:* Japanese: 分詞, Arka: yuoayua

Perfective aspect (Section ??)

> The aspect used for completed actions.
>
> *Translations:* Japanese: 完結相, Arka: intnif

Polar question (Section ??)

> A question that asks whether or not a statement is true.

Positive definite auxiliary verb (Subsection ??)

> An auxiliary verb whose truth of the action or state it describes implies that the action or state described by the target is true.
>
> *Translations:* Japanese: 正定助動詞

Possessive clitic (Subsubsection ??)

> A clitic used on a noun phrase to mark possession.

Possessive construction (Subsubsection ??)

> A double-marked construction to show possession, in which the possessee receives a possessive clitic and the possessor receives the clitic ⟨=’(e)þ⟩.

Predicate (Chapter ??)

> A part of speech that describes an action or state.

Principal part (Section ??)

One of the inflected forms of a lexical entry that can collectively determine all other inflected forms.

Translations: Japanese: 主要形, Arka: tihmo

Punctuation (Section ??)

The class of glyphs that are classified as neither letters nor digits. Includes the clause-end punctuation ⟨.⟩, ⟨;⟩, ⟨?⟩, and ⟨!⟩; the clitic boundary mark ⟨'⟩; the lenition mark ⟨·⟩; the grouping brackets ⟨{}⟩; and the quotation marks ⟨«»⟩.

Translations: Ŋarâþ Crîþ: dono, Japanese: 句読点, Arka: valia

Quantifier (Subsection ??)

A pro-form such as the pronouns ⟨šino⟩ *all* or ⟨nema⟩ *some, any*, which acts as a quantifier over anything occuring after it.

Quotative (Section ??)

A construction that casts a string into a noun describing the string being conveyed (e.g. said or written). In Ŋarâþ Crîþ, this is achieved using a particle after the quotation.

Rational numeral (Subsection ??)

A numeral that denotes a rational number.

Reflexive pronoun (Subsubsection ??)

The personal pronoun cenþ, which has the meaning of *oneself.*

Relational (Chapter ??)

A type of predicate that encodes the relationship between two (or less often three) entities and resembles postpositions.

Relational of motion (Chapter ??)

A relational derived from a spatial relational that indicates motion of one entity to or from another entity.

Relative case (rcase) (Section ??)

The case of the common argument of a relative clause within the relative clause. In Ŋarâþ Crîþ, this can be the nominative, accusative, or dative, as well as the genitives of any of these separately.

Required ligature (Subsection ??)

A ligature that is present in layer 2w and is required to be used whenever possible.

Scaffolding verb (Section ??)

A form of ⟨eþit⟩ or ⟨telit⟩ on which a relational can be attached to use it predicatively.

Semblative case (Chapter ??)

The case that shows semblance in behavior. On a nominalized verb, it translates to 'such that', 'as though', or 'to the point that'.

Translations: Arka: yunsame

Semitransitive verb (Section ??)

A verb that takes a nominative argument and a dative argument.

Translations: Arka: yakkokkolyuo

Sentence (Chapter ??)

A unit of Ŋarâþ Crîþ text terminated by a *gen*, *šac*, or *cjar*.

Translations: Japanese: 文, Arka: vok

Shifted subject (Subsection ??)

An argument selected to have a special role in the meaning of an auxiliary verb, such as carrying the volition for the performance or nonperformance of the target action. This role can be assigned to the nominative, accusative, or dative argument of the target.

Simple coda (Subsection ??)

A coda that is simple enough to occur mid-word.

So-clause (Section ??)

A clause containing an independent verb phrase followed by a SO-PARTICLE.

So-particle (Section ??)

A conjunction such as ⟨so⟩ *if*, ⟨fose⟩ *because*, or ⟨dôm⟩ *to the extent of*, which is placed at the end of a SO-CLAUSE.

Spatial relational (Subsection ??)

A relational that encodes a spatial relationship between one entity and another. These relationals have two additional relationals (RELATIONALS) derived from them.

Special independent clause phrase (sICP) (Chapter ??)

A clause phrase that has a structure different from that of a general independen clause phrase. Special independent clause phrases include INTERJECTIONS, VOCATIVES, and DATA.

Translations: Japanese: 特別主節句, Arka: aallestyavsevet

Species (Section ??)

A lexical property of a verb that governs how a verb will be conjugated for its participle forms.

Stem (Section ??)

A VARIABLE that usually takes up a substantial part of the inflected form and is considered the essence of a lexical item.

Translations: Japanese: 語幹, Arka: veyutifl

Stress (Section ??)

A feature that was present in Ŋarâþ Crîþ v7 but in Ŋarâþ Crîþ v9 is used solely to calculate tone.

Translations: Japanese: アクセント, Arka: caf

Stroke-order variant (Subsection ??)

One of the variants of a layer-2w* glyph that differs only in stroke order. All strokes must be preserved, and no loops may be introduced or removed, but the relative stroke order might be different, and some strokes may be written in the reverse direction; furthermore, a stroke may be split at a turn, and two strokes may be joined where one ends and another begins.

Stylistic variant (Subsection ??)

> One of the variants of a topological variant, which may modify the strokes of the glyph themselves.

Subject (Chapter ??)

> The nominative argument of a verb or relational.
>
> *Translations:* Japanese: 主語, Arka: soi

Syntactic relational (Subsection ??)

> A relational that is defined to be used to support a certain syntactic construction.

Syntactic word (sword) (Section ??)

> A sequence of graphemes separated by either spaces or ŋos.

Tag question (Section ??)

> A question that asks whether or not a statement is true but leads toward an affirmative answer, asking for confirmation on a statement.

Tail particle (tailp) (Section ??)

> A particle that occurs at the end of an independent clause phrase, immediately after the verb (if present).
>
> *Translations:* Japanese: 文末純詞, Arka: hetreit

Target (Subsection ??)

> The verb modified by an auxiliary verb.
>
> *Translations:* Arka: lana

Temporal relational (Subsection ??)

> A relational that encodes a temporal relationship between one entity and another.

Tense (Section ??)

> A property of a conjugated verb that indicates the time in which an action or state occurred. Ŋarâþ Crîþ has two tenses: PRESENT (more precisely, NONPAST) and PAST.
>
> *Translations:* Japanese: 時制, Arka: mel

Theme (Section ??)

> A VARIABLE that is short (almost always one letter long) and might have DERIVATIVES.

Tone (Section ??)

> The phonological feature associated with the pitch of a syllable. Ŋarâþ Crîþ has two tones: HIGH and LOW, with the former being more common. This distinction evolved from the absence or presence of creaky voice in Ŋarâþ Crîþ v7.
>
> *Translations:* Japanese: 声調, Arka: eldem

Tone accounting unit (TAU) (Section ??)

> The maximal unit at which tone is calculated. In other words, calculating the tone of a given syllable requires looking only at the syllables in the same TAU.

Topological variant (Subsection ??)

One of the variants of a stroke-order variant, which may join strokes together, cause two different strokes to touch each other when they did not (or vice versa), or introduce or remove loops. Lengthening or shortening strokes to alter ligation properties also falls under this level.

Total lenition (Section ??)

Lenition that includes the deletion of ⟦f⟧, ⟦v⟧, or ⟦d⟧.

Translations: Arka: ilmhoomim

Transitive verb (Section ??)

A verb that takes a nominative argument and an accusative argument.

Translations: Japanese: 他動詞, Arka: kokkolyuo

True letter (Section ??)

A letter that corresponds to a phoneme.

Translations: Arka: fohac

Type I genus (Section ??)

A genus in which the participle forms are distinguished for hgender but not for hnumber.

Type II genus (Section ??)

A genus in which the participle forms are distinguished for hnumber but not for hgender.

USR Letter (Section ??)

One of ⟨w⟩, ⟨x⟩, ⟨y⟩, or ⟨z⟩. These letters are dedicated to be assigned to phonemes in foreign languages that are absent from Ŋarâþ Crîþ.

Valency class (Section ??)

A lexical property of a verb or relational that governs how many arguments it can take and what cases they assume.

Variable (Section ??)

A component that depends on the lexical item being inflected. They can be either stems or themes.

Translations: Arka: miyuvait

Verb (Chapter ??)

A part of speech that is inflected like a verb. That is, finite forms do not require a scaffolding verb, and adnominal forms require participle conjugations.

Translations: Japanese: 動詞, Arka: yuo

Vertical ligation (Subsection ??)

The practice of ligating two glyphs that lie on different lines.

Vocative (Chapter ??)

A noun phrase in the dative case used to address someone or something. This constitutes a special independent clause phrase.

Voice (Subsection ??)

A property of the inflected verb that modifies how the arguments of a verb map to the participants of the corresponding action. In Ŋarâþ Crîþ, voice is considered a predicate modifier.

Translations: Japanese: 態, Arka: xalt

Vowel (Subsection ??)

One of ⟦e o a î i ê ô â u⟧, or the phoneme represented by one of these.

Translations: Japanese: 母音, Arka: vesto

Vowel affection (Section ??)

A process by which the last vowel of the stem in some verbs changes in the present forms, past forms, or both, possibly with different vowels between the tenses.

Translations: Arka: vestomiyu

***Wh*-question (Section ??)**

A question that asks for an item in which an interrogative pro-form appears.