

Choices made in the Grammar Matrix customization system

1. General information

Our language is called Nishnaabemwin, also called Ojibway or Odawa. Its Ethnologue code is ojb.

2. Word order

The basic word order of Nishnaabemwin is free – completely, unequivocally, distressingly free. It is impossible to generate disfluencies in Nishnaabemwin simply by rearranging the words in simple sentences. Here are some example word orders:

#3

Source: a:548

Vetted: s

Judgment: g

Phenomena: wo

Gii-zegzi Nenbozh

Gii-zegzi Nenbozh

PAST-be.frightened.3.SG.ANIM Nenabush.3.SG.ANIM

'Nenabush was frightened'

#4

Source: a:548

Vetted: s

Judgment: g

Phenomena: wo

Nenbozh gii-zegzi

Nenbozh gii-zegzi

Nenabush.3.SG.ANIM PAST-be.frightened.3.SG.ANIM

'Nenabush was frightened'

#7

Source: a:125

Vetted: s

Judgment: g

Phenomena: wo, pn

Nnamaa gii-zhitoonan maamin jiimaan

Nnamaa gii-zhitoonan maamin jiimaan

my.1.SG-mother.3.SG.ANIM PAST-make.3.SG.ANIM this.X.PL boat.X.PL.INAN

'My mother made these boats'

#13

Source: a:216

Vetted: s

Judgment: g

Phenomena: wo, pn, def

Wjiigdahaan wi wiigwaam wa kwe

Wjiigdahaan wi wiigwaam wa kwe

sweeps.out.3.SG.ANIM that.X.SG house.X.SG that.3.SG woman.3.SG.ANIM

'That women is sweeping out that house'

Nishnaabemwin does have determiners as independent words, and while the order is not fixed, the preference is for Det-Noun:

#14
Source: author
Vetted: f
Judgment: g
Phenomena: wo, pn, def
Wgii-wwabmigoon wa kwe niwi binoojiinyan
Wgii-wwabmigoon wa kwe niwi binoojiinyan
PAST-see.3.SG.ANIM that.3.SG woman.3.SG.ANIM that.3.PL child.3.PL.ANIM
'That woman saw the children'

For the moment, we are assuming that Nishnaabemwin does not have auxiliary verbs.

3. Number

Nishnaabemwin distinguishes two numbers: singular and plural. Number is inflected on determiners, nouns and verbs, and transitive verbs agree in number with both their subjects and objects:

#1
Source: a:776
Vetted: s
Judgment: g
Phenomena: wo
Waagaakwad wii-giinboode
Waagaakwad wii-giinboode
axe.X.SG.INAN FUT-want.sharpening.X.SG.INAN
'The axe needs sharpening'

#8
Source: author
Vetted: f
Judgment: g
Phenomena: wo, pn
Gii-yaawag-sh giwi kwewag
Gii-yaawag-sh giwi kwewag
PAST-be.there.3.PL.ANIM that.3.PL woman.3.PL.ANIM
'Those women were there'

#25
Source: author
Vetted: f
Judgment: u
Phenomena: agr
Gii-yaawag-sh maaba nishnaabe
Gii-yaawag-sh maaba nishnaabe
PAST-be.there.3.PL.ANIM this.3.SG Indian.3.SG.ANIM
'This Indian were there'

In example #25, the subject (“maaba nishnaabe”) is singular while the verb (“gii-yaawag-sh”) is inflected for a plural subject, so the sentence is ungrammatical.

4. Person

Nishnaabemwin has three values for person: 1st, 2nd, and 3rd. Additionally, Nishnaabemwin distinguishes between the inclusive and exclusive first person plurals. Like number, person is inflected on determiners, nouns, and verbs, and agreement is (almost) always enforced. Other places in its grammar, Nishnaabemwin uses “unspecified actors”, and this can be thought of as a 4th person.

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#11
Source: author
Vetted: f
Judgment: g
Phenomena: wo, pn
Niin giwi kwewag nwii-gnawenmaag
Niin giwi kwewag nwii-gnawenmaag
I.1.SG that.3.PL woman.3.PL.ANIM FUT-take.charge.of.1.SG.ANIM
'I will take charge of those women'
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#12
Source: a:613
Vetted: s
Judgment: g
Phenomena: wo, pn
Giin ggii-mmaazhiiwii
Giin ggii-mmaazhiiwii
you.2.SG PAST-do.poorly.2.SG.ANIM
'You did poorly'
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#26
Source: author
Vetted: f
Judgment: u
Phenomena: agr
Giin giwi kwewag nwii-gnawenmaag
giin giwi kwewag nwii-gnawenmaag
you.2.SG that.3.PL woman.3.PL.ANIM FUT-take.charge.of.1.SG.ANIM
'You will take charge of those women'
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In example #26, the subject is 2nd person singular, but the verb is marked for 1st person singular, so the string is ungrammatical.

5. Nishnaabemwin partitions nouns into animate and inanimate genders. Gender is marked only on nouns and verbs.

```
#1
Source: a:776
Vetted: s
Judgment: g
Phenomena: wo
Waagaakwad wii-giinboode
Waagaakwad wii-giinboode
axe.3.SG.INAN FUT-want.sharpening.X.SG.INAN
'The axe needs sharpening'
```

#3
Source: a:548
Vetted: s
Judgment: g
Phenomena: wo
Gii-zegzi Nenbozh
Gii-zegzi Nenbozh
PAST-be.frightened.3.SG.ANIM Nenabush.3.SG.ANIM
'Nenabush was frightened'

#22
Source: author
Vetted: f
Judgment: u
Phenomena: agr
Gii-zegzi wiiyaas
Gii-zegzi wiiyaas
PAST-be.frightened.3.SG.ANIM meat.3.SG.INAN
'The meat was frightened'

Enforcing agreement in animacy between nouns and verbs renders #22 ungrammatical, and has the nice effect of syntactically disallowing pragmatically odd semantically nonsensical statements.

6. Case

Nishnaabemwin does not have a case system for establishing relationships between nouns and the verbs of which they are arguments. Nouns can be inflected into a locative mode, but these are used as modifiers.

7. Direct-inverse

Nishnaabemwin is a direct-inverse language, meaning that the assigning of subject and object roles in a sentence is not done by word order or case, but by the relative positions of each noun on a topicality hierarchy. Essentially, this hierarchy is ordered according to how likely a given noun is to be the subject of the sentence. Accordingly, person is the primary distinction, with 2nd person taking precedence over 1st, and both taking precedence over 4th, which takes precedence over 4th. If person cannot distinguish the verb's arguments, then the animate noun takes precedence over the inanimate one. Finally, if both gender and person are shared, an additional feature called "obviation" is used, with proximate (near) nouns taking precedence over obviative (distant) ones. The noun which is higher in the topicality hierarchy is the subject, and the other is the object. The sentence below displays the effects of this hierarchy, with the direct meaning of the sentence given:

#7
Source: a:125
Vetted: s
Judgment: g
Phenomena: wo, pn
Nnamaa gii-zhitoonan maamin jiimaan
Nnamaa gii-zhitoonan maamin jiimaan
my.1.SG-mother.3.SG.ANIM PAST-make.3.SG.ANIM this.3.PL boat.3.PL.INAN
'My mother made these boats'

If the desired meaning were 'These boats made my mother', then the verb would be inflected with an *inverse* marking to show that the inverse interpretation would be required.

8. Other Features

As mentioned above, a new feature, “obviation” was required to complete the topicality hierarchy for Nishnaabemwin. In fact, obviation is a feature marked on nouns and verbs which also must show agreement. We have elected, however, to leave implementing this agreement to a later date. Our noun and verb classes are too fine-grained as it is (see the next section, Lexicon), and obviation should be introduced as part of a morphophonological analyzer. We have not used it in any contrastive pairs in our test suite.

9. Lexicon

At present, we do not have a morphophonological analyzer for Nishnaabemwin, and this is a significant handicap because the morphology is so complex. Using the customization system, we can ensure that person, number, gender, and obviation agree in a sentence, but we have no way to generate the words corresponding to the various combinations of these features’ values using an underspecified base form. Instead, we divide the lexical items into different classes according to their values for number, person, gender, and obviation. When a morphophonological analyzer is introduced, the type system will simplify considerably. Verbs will be divided into intransitive, transitive, and ditransitive types, as well as being grouped according to the animacy of its potential subjects and objects. Nouns are even simpler. There are different inflectional paradigms in Nishnaabemwin, but syntactically all nouns behave identically. Even names can take determiners, and the distinction between mass nouns and count nouns is purely semantic – determiners are optional for both.

Properties illustrated in the test suite but not implemented in the grammar

While it was mentioned above that Nishnaabemwin prefers a Det-Noun ordering, this is flexible. But the freeness of noun phrases does not stop there, and this is not implementable using the customization system. In Nishnaabemwin, determiners and nouns can appear in any order, and they don’t even have to be adjacent:

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#10
Source: author
Vetted: f
Judgment: g
Phenomena: wo, pn
Maaba gii-zegzi nishnaabe
Maaba gii-zegzi nishnaabe
this.3.SG PAST-be.frightened.3.SG.ANIM Indian.3.SG.ANIM
'This Indian was frightened'
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Examples like this are quite common in Nishnaabemwin, and while this sentence is grammatical, the parser will not accept it because the determiner is expected to be adjacent to the noun. Here the main verb intervenes.

Coverage of grammar over test suite

The test suite contained 20 grammatical sentences and 6 ungrammatical strings. Using the grammar generated by our answers to the customization questionnaire detailed above, we attempted to parse each of these strings. Of the 20 grammatical sentences, 18 were expected to parse and 2 were expected to fail (10, 16). Of the 18 sentences expected to parse, 12 parsed and 6 failed (6, 11, 14, 15, 18, 19). Neither of the sentences expected to fail and none of the 6 ungrammatical strings generated a parse.

The failure to parse sentences we expected to be parsable is somewhat mysterious. For example, test example #13 is superficially similar to #14, but in the latter a bare-NP rule was applied to the noun *kwe* ‘woman’, preventing attachment of the determiner and loss of grammaticality:

#13
Source: a:216
Vetted: s
Judgment: g
Phenomena: wo, pn, def
Wjiigdahaan wi wiigwaam wa kwe
Wjiigdahaan wi wiigwaam wa kwe
sweeps.out.3.SG.ANIM that.3.SG house.3.SG that.3.SG woman.3.SG.ANIM
'That women is sweeping out that house'

#14
Source: author
Vetted: f
Judgment: g
Phenomena: wo, pn, def
Wgii-wwabmigoon wa kwe niwi binoojiinyan
Wgii-wwabmigoon wa kwe niwi binoojiinyan
PAST-see.3.SG.ANIM that.3.SG woman.3.SG.ANIM that.3.PL child.3.PL.ANIM
'That woman saw the children'

Perhaps not coincidentally, four of the unparsable examples use the verb “wbii-wwabmigoon”. These examples were all due to the author, created for the purpose of probing particular grammatical phenomena. It is possible that an impoverished understanding of the language has led the author to violate some constraints in formulating these examples, and that they are in fact ungrammatical.

Places where the customization system is inadequate

One grammatical sentence which we expected not to parse (and didn't) was an instance of the phenomenon in Nishnaabemwin by which numbers and demonstrative pronouns can co-occur:

#16
Source: author
Vetted: f
Judgment: g
Phenomena: wo, pn, indef
Bezhiig wa nishnaabe wgii-wwabmigoon binoojiinyan
Bezhiig wa nishnaabe wgii-wwabmigoon binoojiinyan
one that.3.SG Indian.3.SG.ANIM PAST-see.3.SG.ANIM child.3.PL.ANIM
'This one Indian saw children'

More generally, the customization system is a little too coarse-grained for Nishnaabemwin's system of pronouns and quantifiers. There is a strong tendency for quantifiers to precede determiners and for determiners to precede nouns, but these need not be the case. There is, however, a rule that negative and universal quantifiers enforce Quant – Det – Noun ordering. Such special cases cannot be specified by the customization system.

Finally, a significant but understandable omission from the customization system is information structure. While this is a poorly developed area of the Grammar Matrix, it is an essential aspect of Nishnaabemwin because it is the only phenomenon which has a predictable influence on word order. Improvements in this area may not change many grammaticality judgments given by the system, but they would be of great use in generating more realistic text.