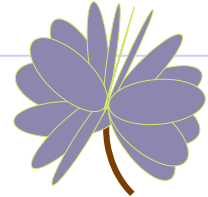



Chapter 2. The Writing System

Last update: 2024-04-05

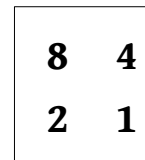
2.1. Character Shape Basis



Nwehu Nuswei (NN) is based on binary numbers, as explained in the Overview. Each word is composed of four letters: Consonant+Vowel+Consonant+Vowel (CVCV). Because this is always the case, the same grapheme (letter) may theoretically be used for both a consonant and a vowel. The position would then determine whether any given grapheme represents its consonant sound (positions 1 and 3) or its vowel sound (positions 2 and 4). However, after some experience with written NN, it became apparent that distinctive shapes for consonants and vowels are very helpful in learning and interpreting the written language.

Graphemes are all based on the concept of a square with a dot in each corner: . Each dot represents one of the four bits (binary digits) that make up a "nybble" (four-bit number):

Dp 2.1: Bit-Square



The general principle is that a grapheme somehow touches each of the bits that are turned on in its number. The simplest representation of this is a braille-like set of dots:

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111

Display 2.2: Bit-square for each grapheme

2.2. NN Writing Styles and Fonts

Several fonts have been designed based on this general principle. Each font includes upper case, lower case, and numbers 0-15. After a period of experimentation (2021-07-28), the following principles were defined for clarity:

- All fonts distinguish consonants from vowels
- Numbers follow the same principle of touching bit-positions, but are based on a horizontal line to distinguish them from letters, which are based on a vertical line or stalk.

- *Hu* (letter 0) is vertical, may have half-width arms, never at top or bottom of print-space; the arms of the *H*-consonant are straight or slightly inclined upward; those of the *U*-vowel are curved downward
- Flex-glyphs (lower-case) 5 and above may have ascenders⁴
- All flex-glyphs except 0, 4, 8, and 12 may have descenders
- Consonant glyphs have straight arm(s), generally from the top or bottom of a vertical stalk
- Vowel glyphs have curved arm(s) or bow(s) from the top, center, or bottom of a vertical stalk

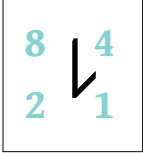
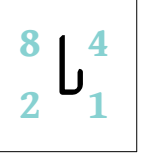

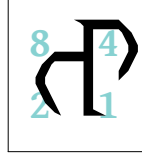

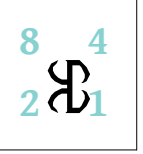
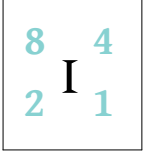
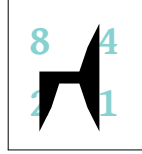
So in general, consonants have a more rectilinear appearance, and vowels are more curvilinear. This is intended to make the distinction more intuitive without overly constraining the imaginative development of fonts.

In November, 2023, Dr. Martha F. Krieg pointed out that people with even a slight degree of dyslexia often have difficulty distinguishing between mirror images of symbols. Ten of the sixteen symbols are potential mirror images of one another, making it potentially difficult for many people to read NN easily unless a consistent distinction is made. In response, several fonts were designed using elements that differ on the left and right sides. The main difference is to attach the more horizontal elements to the vertical elements in different places: for example, on the right attached at the upper and lower ends of the stalk, while on the left attached to (or near) the center. Fonts “NN Sans Asym”, NN Serif Roman, and “NN Serif Thorns” are shown to illustrate this design in *Op* 2.4 “NN Writing Styles and Fonts” below.

To demonstrate how the printed styles were designed to fit the general principle, *Op* 2.3 shows a few letters in bit-squares.

4 In printers’ terminology, lower-case (“small”) letters can be described in terms of their “x-height”, that is, the height of a lower-case **x** above the base-line of a line of letters. Portions of the letter that rise above the x-height are called “ascenders”, while portions dropping below are known as “descenders”. Letters like **a e u s z** are x-height; **b d h l t** have ascenders; and **g j p q** have descenders. None of the letters used in modern English have both, though **þ** “thorn” (current in Icelandic and formerly in Old and Middle English) have both, as do several characters of the International Phonetic Alphabet (IPA).

Dp 2.3: Sample NN letters in bit-squares

 <p>Consonant Xi</p>	 <p>Vowel Xi</p>	 <p>Consonant No</p>	 <p>Vowel No</p>
 <p>Consonant Bwoi</p>	 <p>Vowel Bwoi</p>	 <p>Consonant Hu</p>	 <p>Number 7</p>

Fonts have been created using free online system “Fontstruct”, www.fontstruct.com.

2.3. Sample Fonts

Dp 2.4: NN Writing Styles and Fonts. Consonant and vowel forms are shown for each letter

Number	Name	NN Sans Asym			NN Serif Roman			NN Serif Thorns		
		Caps	Lower	Numbers	Caps	Lower	Numbers	Caps	Lower	Numbers
0	Hu	ḥḥ	ḥḥ	—	ḥḥ	ḥḥ	+	ḥḥ	ḥḥ	—
1	Xi	ḫḫ	ḫḫ	ḫ	ḫḫ	ḫḫ	ḫ	ḫḫ	ḫḫ	ḫ
2	Se	ḣḣ	ḣḣ	ḣ	ḣḣ	ḣḣ	ḣ	ḣḣ	ḣḣ	ḣ
3	Fei	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
4	Ra	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
5	Yai	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
6	No	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
7	Moi	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
8	Kw	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
9	Cwi	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
A	Twe	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
B	Pwei	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
C	Gwa	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
D	Jwai	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
E	Dwo	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ
F	Bwoi	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ	ḥḥ	ḥḥ	ḥ