Our way in is the three-syllable words. There are three of them: E, S, and T, which must be fumbuka, lumonso, and yimbila, in some order. Remember that the language is built on consonant-vowel combinations, so the three-syllable words can be divided as fu-mbu-ka, lu-mo-nso, and yi-mbi-la. Notice that the syllables -fu, -mo, -nso, and -la appear in other words: fula, mongo, and wonso. After scanning the shapes, we can see that E shares its first syllable with K, and that S shares its final syllable with K, so it is likely that K is fula, E is fumbuka, and S is yimbila. Thus T is lumonso, the last of the three-syllable words. Since the final syllable of T matches the final syllable of A, A must be wonso. And since the middle syllable of T is the first syllable of Q, then Q is mongo. The -ngo also appears in ngombe, so I must be ngombe, since it is the only one that starts with the last syllable of Q. That’s seven words solved, but this code-breaking technique only takes us so far.

The next step is to look for clues in the shapes themselves, especially the ones that we know from above. Certain elements of syllables reappear, such as a figure that looks like a boxy “M,” which is associated with the vowel sound “u,” as in fumbuka, where it appears twice. Similarly, a rectangle is associated with the “o” vowel, and a cut ribbon shape (a quadrilateral with a pointy corner) with an “a” sound.

Interestingly, there is only one word where both syllables have this cut ribbon shape—R—and only one word with an “a” in each syllable, R must be maza. Notice that the cut ribbon shape is not in the same position, and in some of the other words it is pointing in a different direction. These variations don’t impact the vowel sound it imparts.

Six of the remaining words have a “u”: tutti, mfumvu, kutu, mpunda, mpuku, and zuba, and, as expected, six transliterations with the boxy “M” shape (though some have it upside down). Two of these words share the beginning -mpu, so they must be C and U. Since ku also appears in another word, we can deduce that C is mpuku and U is mpunda, J is kutu. O is mfumvu, since it has two “u” sounds. Of the two remaining words in this group, tutti and zuba, one has a repeating shape in both syllables. One can assume that that shape relates to the “t” sound, making H as tutti and N as zuba.

Our count of solved words is now up to 14, leaving eight to go: tewa, tiya, mfinda, mwisi, zenga, simba, venza, and nani. From the second syllable of tutti, we deduce that B must be tiya. From the second syllable of mpunda, we see that D must be mfinda. From looking at repeated elements, the -si in mwisi and simba means they must be L and G. The position of the “a” syllable, the cut ribbon shape, means P is nani.

This leaves only three “e” words: venza, tewa, and zenga, which must be F, M, and V, in some order. F contains the shape we associate with “t” from tuti, so we can be pretty confident that that one is tewa. We can do a similar comparison to relate -ngo to -nga. The second symbol of M looks like the -ngo from mongo but with the “o” (a rectangle) replaced by an “a” (the cut ribbon) so we finally see that V must be venza.

For more information on how the symbols are combined to create syllables, see en.wikipedia.org/wiki/Mandombe_script.

Source: North American Computational Linguistics Olympiad 2021

A Divine Script From the Congo

By Alex Bellos