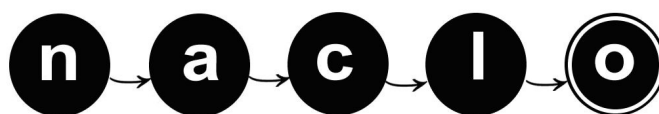
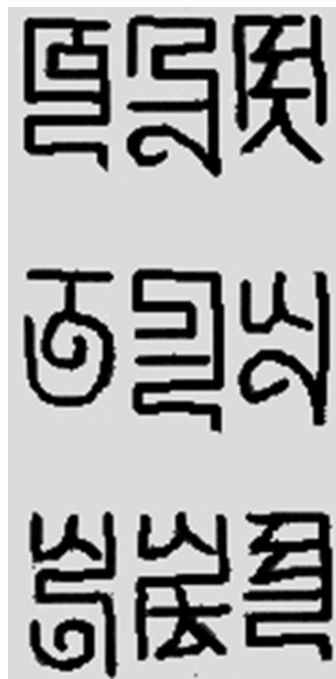


Q. 100 Surnames (1/3)

Q-1

13a.	Kïi	15f.	Kïue	19e.	Tsam
13g.	Maũ	15g.	Ma	20b.	Fang
14c.	Sriũ	16g.	Yan	20c.	Giũ
14e.	Xĩang	17a.	Mue	22c.	Tso
15b.	Ngĩũan	18b.	Xĩa	23d.	Hũa
15d.	Min	18g.	Ling	24c.	‘U

Q-2



Q. 100 Surnames (2/3)

To begin, we can notice that, given the complexity of the glyphs and the frequent recurrence of sub-glyph shapes within them, that the glyphs likely consist of multiple sub-parts.

We can then notice that the diversity of shapes at the top of the glyphs is much greater than the shapes at the bottom: there are a few dozen possible "tops" and only a handle of possible "bottoms". This, when compared to the names in the table, shows that the top shapes of glyphs represent the possible beginnings of names, of which there are many, and the bottoms represent the ends, of which there are few. This imbalance helps to confirm our earlier insight: that sub-glyphs represent sub-parts of names in some systematic manner. It also gives us a hypothesis about the overall writing direction of the text: that it might be top-to-bottom overall as well.

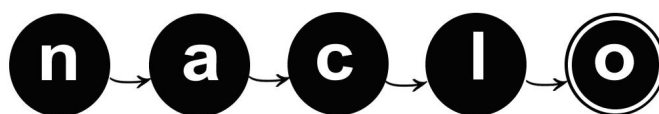
At this point, there are several ways to try to fix what part of the poem these two pages represent. One way is by rhyme scheme: given that the poem is made of 8-name rhyming couplets, there should be a pattern of repeating "bottom" shapes every eight characters. Given the 8x7 shape of the pages, if the text is written horizontally (in either direction), this pattern should occur in vertical lines, and if the text is written vertically (in either direction), this patterns should occur in diagonal lines.

It is easy to see that there are no such vertical-line patterns (especially not at the ends of lines where we would hope them to be). There is, however, an every-eight-characters diagonal rhyme pattern running through the text: from 3rd row/1st column ("3a") upward and rightward to 1c, wrapping around to 7e and then up to 1k, wrapping around again to 7m, then up to 4p.

Going by the bottom shape, the rhyme scheme of the segment pictured here looks to be something like AAAAABBBBAAAAA. There is only one place in the poem this could be: the BBBB glyphs have to represent Kũa, Lau, Fa, and Ma and the rest represent names ending in -ng. This result, however, is still compatible with two writing directions (upward then left-to-right, or downward then right-to-left). The former of these is unlikely given the downward writing direction within glyphs, but it is still at least possible. Looking at the "top" shapes decides it for us: we have an ABCDEFAGCHGIDJ pattern, and this only fits one way with the pattern of name beginnings the text (the downward then right-to-left direction).

This is one way of determining the position and direction of the manuscript relative to the poem; other ways are equally valid and can receive equal points.

(CONTINUED ON THE NEXT PAGE)



Q. 100 Surnames (3/3)

Now that we know which glyphs represent which, we can begin to determine what exactly the sub-glyph shapes represent. If you've come this far, this process will be mostly straightforward. There are four "classes" of glyphs, which I'll call A, B, C, and D:

- A: initial sounds (representing word-initial b, p, dz, kh, y, tr, tsh, etc.)
- B: "on-glides" (ĩ, ũ, etc.), written after initials
- C: vowels (i, u, e, etc.), written after on-glides (if any)
- D: codas (m, ng, ĩ, etc.), written last

Depending on where in a word a sound occurs, a sound like [ng] or [ũ] might have be in a different class and thus have a different shape.

One complication to watch out for is that there is no shape for [a]. If there is no other class C (vowel) glyph in the word, that word's vowel is [a]. You can tell the difference between (say) Hũa and Haũ, even though [a] is not written, by the shape [ũ] gets: the class B or class D shape.

The other complication to note is that when class B [ũ] and [ĩ] co-occur, they are written in 'Phags-pa in an order opposite from what we would expect.

