TO: **Unicode Technical Committee**

FROM: **Deborah Anderson, Script Encoding Initiative, UC Berkeley**

SUBJECT: **Introducing the Toto script**

DATE: **17 July 2019**

The Toto (txo) language has a population of only 1500 living in a single jungle village in India near Bhutan. The script for Toto was designed by Dhaniram Toto who is an elder in the Toto community. The script was officially launched in the community on 22nd May 2015. Until the development of this script, there was very little interest in language development. Since the development of their own script there is renewed interest in writing their own language. Having their own script has granted the Toto a sense of status. Currently, there is limited use in the community. There is one NGO multi-lingual school which teaches the script in a half-hour weekly class. Work on a primer began but is not completed.

The script supports the 30 phonemes found in the language. Tone is only used when the lack of it would confuse two words (the same could be said of vowel length). When tone is used it can either be rising or falling, and it is pronounced across the entire word (or phrase) - most easily heard in the final syllable. Tone is carried in the lexical stem but generally heard most in the suffix morphemes. A character for rising tone is included in this proposal. Falling tone is not marked. The tone marker appears only on vowels, and it is currently placed on the first vowel of the stem.

Another supra-segmental that is only used when required for contrast is vowel length. Vowel length is indicated by doubling the vowels.

Breathiness is only on vowels. Front vowels all have contrasting breathy versions, but not back vowels. Mid and close front vowels also have rounded versions that contrast. There is a combining mark that represents breathiness.

There are no glides or diphthongs in the language although the front rounded vowels are often spoken as diphthongs of other vowels in normal speech.

Unlike other Indic scripts, the script is not syllable based and does not have an implicit "a" vowel sign associated with each consonant. Thus, the naming of characters should not include an "a" after the consonant.

On the final page is a chart of the characters and names of characters for the Toto script.

Digits

There are currently no script-specific digits. A column including 10 free slots may be needed in the future if the community decides to encode script-specific digits.

Punctuation

Latin script punctuation is currently being used with the Toto script.

Potential issues

Since rising tone is only marked on vowels, there should not be any confusion on the similarity of the marks on TOTO LETTER N and TOTO LETTER NG.

The mark that is on TOTO LETTER W is not a breathiness mark. Since this is not a vowel, it should not be confused.

Although outsiders may consider these similarities confusing, this is how Dhaniram Toto designed these characters.

Unicode Character Properties

```
E630;TOTO LETTER P;Lo;0;L;;;;;N;;;;;
E631;TOTO LETTER B;Lo;0;L;;;;;N;;;;;
E632;TOTO LETTER T;Lo;0;L;;;;;N;;;;;
E633;TOTO LETTER D;Lo;0;L;;;;;N;;;;;
E634;TOTO LETTER K;Lo;0;L;;;;;N;;;;;
E635;TOTO LETTER G;Lo;0;L;;;;;N;;;;;
E636;TOTO LETTER M;Lo;0;L;;;;;N;;;;;
E637;TOTO LETTER N;Lo;0;L;;;;;N;;;;;
E638;TOTO LETTER NG;Lo;0;L;;;;;N;;;;;
E639;TOTO LETTER S;Lo;0;L;;;;;N;;;;;
E63A;TOTO LETTER CH;Lo;0;L;;;;;N;;;;;
E63B;TOTO LETTER Y;Lo;0;L;;;;;N;;;;;
E63C;TOTO LETTER W;Lo;0;L;;;;;N;;;;;
E63D;TOTO LETTER J;Lo;0;L;;;;;N;;;;;
E63E;TOTO LETTER H;Lo;0;L;;;;;N;;;;;
E63F;TOTO LETTER R;Lo;0;L;;;;;N;;;;;
E640;TOTO LETTER L;Lo;0;L;;;;;N;;;;;
E641;TOTO LETTER I;Lo;0;L;;;;;N;;;;;
E642;TOTO LETTER BREATHY I;Lo;0;L;E641 E64F;;;;N;;;;;
E643;TOTO LETTER IU;Lo;0;L;;;;;N;;;;;
E644;TOTO LETTER BREATHY IU;Lo;0;L;E644 E64F;;;;N;;;;;
E645;TOTO LETTER U;Lo;0;L;;;;;N;;;;;
E646;TOTO LETTER E;Lo;0;L;;;;;N;;;;;
E647;TOTO LETTER BREATHY E;Lo;0;L;E647 E64F;;;;N;;;;;
E648;TOTO LETTER EO;Lo;0;L;;;;;N;;;;;
E649;TOTO LETTER BREATHY EO;Lo;0;L;E648 E64F;;;;N;;;;;
E64A;TOTO LETTER O;Lo;0;L;;;;;N;;;;;
E64B;TOTO LETTER AE;Lo;0;L;;;;;N;;;;;
E64C;TOTO LETTER BREATHY AE;Lo;0;L;E64C E64F;;;;N;;;;;
E64D;TOTO LETTER A;Lo;0;L;;;;;N;;;;;
E64E;TOTO SIGN RISING TONE;Mn;230;NSM;;;;;N;;;;;
E64F;TOTO SIGN BREATHINESS;Mn;220;NSM;;;;;N;;;;;
```

The Breathy vowels have decompositions. However, the NFC form should be the precomposed character.

Collation

The community has not yet expressed a sort order. At this point the dictionaries mentioned in the reference section are using the sort order used in the chart:

ᘊ < ᖋ < ᘃ < ᘗ < ᖌ < ᕷ < ᑫ < ᘍᘍ < ᘓ < ᘉ < ᐃ < ᐁ < ᘊ < ᘊ < ᑊ < < < ᘃ

< ᘔ < ᘔ < ⊙ < ᘕ < ᘂ < ᐁ < ᐁ < ᑕ < ᑔ < ᘇ < ᕼ < ᕼ < ᐱ

Figures

ꛋꘋ

Suchana Toto

(x2)

(x2)

(x2)

(x2)

Figure 1. "Rising Sun" song in Toto script

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Toto Dictionary

TOTO   **ENGLISH**

ꠀ ꠀ ꠀ ꠀ ꠀ ꠀ ꠀ ꠀ ꠀ ꠀ

ꠁꠞꠙꠖ

Noun. deer

ꠁꠞꠘꠞ

Noun. owner

ꠁꠛꠅꠘꠤ

Noun. betel nut

ꠁꠛꠅꠘꠤ ꠅꠘꠤ

Noun. betel nut wrapped in leaf

ꠁꠖꠌꠅꠘ

Verb. carry with self

ꠁꠌꠅꠘ

Verb. know

ꠁꠖꠙꠔ

Noun. branch

ꠁꠌ

Noun. tent

ꠁꠌꠌꠠꠅꠘ

Verb. interrupting

ꠁꠅꠘ
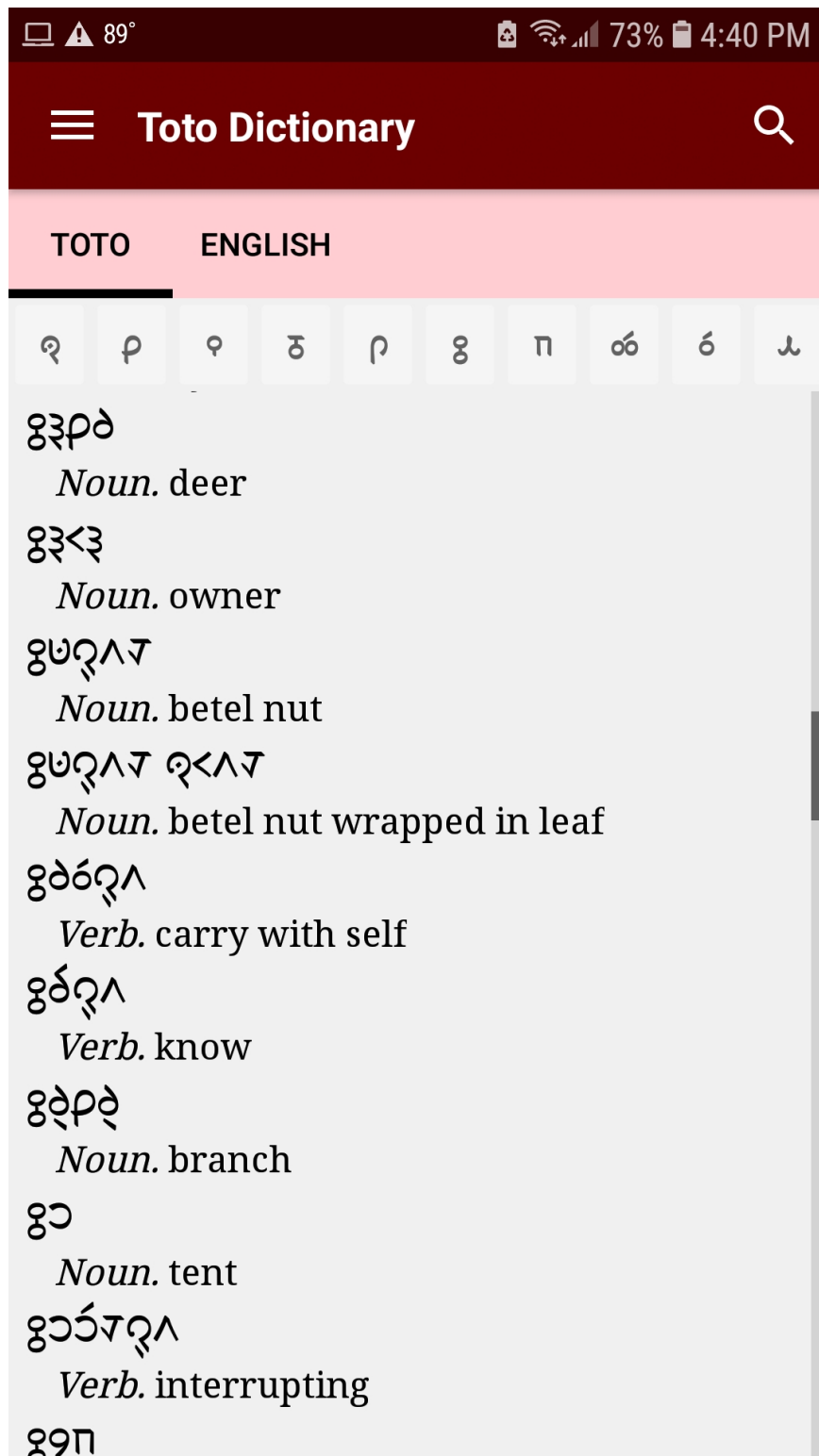
Figure 2. Android app of Toto dictionary

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ꓱ𝑉𝑈 ꓵꓥ 𝞴ꓳꓵꓥꓑꓜꓱ ꓵꓥ ꓴꓑꓜꓒ9 𝞴ꓥ ꓑꓥꓳꓽꓥꓯꓵꓓꓜ ꓱ◁9 𝞴ꓼ9ꓮꓼꓑ9 9ꓛꓹꓥ. ꓴꓒꓜ ꓵꓥ
ꓹꓓꓽꓒꓼ 𝑉ꓣꓼꓹꓥꓽꓼꓳꓵꓑꓜ ꓴꓹꓥ 𝑉ꓴꓳꓼꓵꓵ. ꓹꓣꓑꓹꓹ ꓵꓥ ꓲ ꓱ𝑉ꓥꓒꓽ◁ꓳ ꓵꓹꓼꓒꓑ9
ꓹꓥꓳ◁ꓥꓳꓜꓽ ꓹꓼꓳꓹꓥ 𝑉ꓳꓳꓴꓹꓹꓥ. ꓴꓒꓽꓑ9 ꓲ ꓽꓳꓼꓵꓽꓽꓑ𝑉 𝑉ꓥꓼꓹꓯꓵꓵꓵꓼꓳ
ꓵꓥꓼꓽꓳꓵꓜꓽ. ꓥꓼ9 ꓴꓒꓽꓑ9 𝑉ꓥꓼꓹꓯꓵꓹꓥ ꓲ ꓽꓳꓼꓥꓼꓽꓑ𝑉 ꓵꓥꓲꓼ ꓵꓥꓵꓥꓳꓼꓵ.

ꓱ𝑉𝑈 ꓵꓥ 9ꓹꓽꓲ ꓽ ꓳꓼꓽꓵ9 ꓹꓽꓼꓵ ꓹꓥꓼꓵꓵꓵ 𝞴ꓳꓵꓥꓒꓽꓑ9 ꓹꓹ9ꓹ 𝞴ꓒꓽꓑ9 𝞴𝞴ꓵꓽꓼ
◁ꓹꓼꓼꓹꓵꓵꓜꓽ. 𝞴ꓒ9 ꓶꓴꓑꓵꓼ ꓵꓥꓹꓑꓵꓼꓼꓵꓥ ꓲ ꓱ𝑉ꓵ ꓹꓥꓼꓵꓵꓵ ꓒꓥꓼꓳꓼꓵꓹ𝞴
𝞴ꓳꓵꓵꓒꓽꓑ9 𝞴ꓵ, ꓵꓥꓹꓵꓹ𝞴 ꓒꓽꓼꓵꓵꓵ ꓲ ꓱ𝑉ꓵꓒ9 ꓵꓽ9◁9ꓵ9 ꓵꓽ9ꓽ ꓶꓳꓹꓵꓵꓜꓽ. ꓱꓹꓴ ꓲ
ꓱ𝑉ꓵ ꓹꓽꓵꓜꓽ 𝞴ꓳꓵꓥꓵꓽꓳ "ꓵꓽꓹꓥ ꓲ ꓽꓳꓵꓹꓴ ꓶꓥ? ꓒꓲ◁9 ꓽ 9ꓥꓳꓵꓥ ꓵꓥ."

𝞴ꓳꓵꓥ ꓶꓲꓼꓳꓵꓜ "ꓽ ꓵꓥ ꓱ◁9 9ꓳꓒ9 𝑉ꓵꓼꓽ ꓹꓥꓼꓯ◁ꓹꓳꓵꓜꓽ ꓒꓵꓒꓽꓑ9 ꓶꓵꓳꓹꓵꓳꓹ ꓵꓥ."

"ꓥꓼ9 ꓳꓳꓵꓹꓽ ꓵꓥ 9ꓴꓳꓵꓽꓳ ꓵꓴꓹꓴꓴ◁ꓵꓳ ꓶꓵ?" ꓹꓽꓑꓜꓽ ꓲ ꓱ𝑉ꓵ.

"ꓥꓵꓥ," 𝞴ꓳꓵꓵ ꓶꓲꓽꓳꓜꓽ "ꓥꓵꓵ, ꓥꓵꓵ. ꓵꓵꓳꓹꓵꓹꓵꓳꓶꓵ ꓵꓥ ꓽꓳꓳꓵꓒꓽ ꓵꓥ 𝑉ꓵꓳꓹꓵꓵꓽꓳ
𝞴ꓥꓵꓣꓑ9 ◁ꓴꓼꓹ, ꓵꓶ ◁ꓹꓳꓳꓒꓑ9 ◁ꓴꓼꓹ, ꓥꓼ9 ꓽꓳꓳꓵꓒꓽ ꓵꓥ 𝑉9ꓳꓒꓑ9 ꓒꓥꓳꓳꓵꓜꓒ9 ◁ꓴꓹꓵ
ꓵꓥ ꓒꓥꓳꓳꓵꓜꓒ9 ꓵꓴ◁ꓴꓼꓹ."

Figure 3. "Story of the Bees" by Prakash Toto. Toto Writer's Guide. TOTO SIGN RISING TONE is marked in red.

	𑢝𑢝𑢚𑢐𑢓	ন নাবী	**n** naboe
	𑢝𑢓𑢞𑢒𑢧	ঙ ঙোকা ◌ং	**ng** ngoka
	𑢥𑢧	স সা	**s** sa
	𑢤𑢚𑢦𑢚𑢝	চ চেরেং	**ch** chereng
	𑢭𑢚𑢶𑢐	য় য়্যাগী	**y** yaegoe
	𑢣𑢚𑢭𑢓	ওয় ওয়্যাতী	**w** waeti
	𑢳𑢜𑢧𑢭	জ জুসী	**j** jusi
	𑢣𑢧𑢝𑢥𑢧	হ হাংসা	**h** hangsa

Figure 4. Example from Toto Writer's Guide demonstrating use of Toto script, Bengali script and Latin script in the Toto language.

References

Toto Dictionary (https://toto.webonary.org/). Somewhat out-of-date.

2018. Toto Writer's Guide. 𑢙𑢝𑢙𑢐𑢳𑢔𑢝 𑢝𑢧𑢝𑢜𑢧 𑢋𑢳𑢝𑢧𑢝𑢜𑢧. Unpublished.

Android app of a 680 word dictionary
here https://play.google.com/store/apps/details?id=in.threestrands.txo.lexicon

	E63	E64	E65
0	꘰ E630	꙰ E640	
1	ꙂE631	ꙮ E641	
2	ꙂE632	ꙮ E642	
3	ꙴ E633	☉ E643	
4	ꙵ E634	☉꙰ E644	
5	ꙶ E635	ꙺ E645	
6	Π E636	꙳ E646	
7	ꙷ E637	꙳꙰ E647	
8	ꙸ E638	Ɔ E648	
9	ꙹ E639	Ɔ꙰ E649	
A	◁ E63A	� E64A	
B	ꚗ E63B	Н E64B	
C	꙰ E63C	Н꙰ E64C	
D	ꚙ E63D	Λ E64D	
E	Ո E63E	꙼ E64E	
F	< E63F	꙽ E64F	

Basic Consonants

E630 ꘰ TOTO LETTER P
E631 ꙂTOTO LETTER B
E632 ꙂTOTO LETTER T
E633 ꙴ TOTO LETTER D
E634 ꙵ TOTO LETTER K
E635 ꙶ TOTO LETTER G
E636 Π TOTO LETTER M
E637 ꙷ TOTO LETTER N
E638 ꙸ TOTO LETTER NG
E639 ꙹ TOTO LETTER S
E63A ◁ TOTO LETTER CH
E63B ꚗ TOTO LETTER Y
E63C ꙰ TOTO LETTER W
E63D ꚙ TOTO LETTER J
E63E Ո TOTO LETTER H
E63F < TOTO LETTER R
E640 ꙰ TOTO LETTER L

Basic Vowels

E641 ꙮ TOTO LETTER I
E642 ꙮ TOTO LETTER BREATHY I
≡ E641 ꙮ E64F ꙼
E643 ☉ TOTO LETTER IU
E644 ☉ TOTO LETTER BREATHY IU
≡ E643 ☉ E64F ꙼
E645 ꙺ TOTO LETTER U
E646 ꙳ TOTO LETTER E
E647 ꙳ TOTO LETTER BREATHY E
≡ E646 ꙳ E64F ꙼
E648 Ɔ TOTO LETTER EO
E649 Ɔ TOTO LETTER BREATHY EO
≡ E648 Ɔ E64F ꙼
E64A ꙙ TOTO LETTER O
E64B Н TOTO LETTER AE
E64C Н TOTO LETTER BREATHY AE
≡ E64B Н E64F ꙼
E64D Λ TOTO LETTER A

Various signs

E64E ꙼ TOTO SIGN RISING TONE
E64F ꙼ TOTO SIGN BREATHINESS