Universal Multiple-Octet Coded Character Set
International Organization for Standardization
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Title:	**Preliminary proposal to encode "Unifon" characters in the UCS**
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1. Introduction to Unifon. Unifon was developed as an auxiliary "phonetic" alphabet designed to facilitate access to literacy to English-speaking children, by presenting to them a writing system that worked by sound. Tests showed that children were able to learn to read rather quickly using this system, and, having made that breakthrough, were able to transition to traditional English orthography relatively easily. Unifon was developed in the 1950s by Dr John R. Malone, an economist and newspaper equipment consultant who became interested in phonetic writing while consulting with the Bendix Corporation, which was interested in questions of aviation communication. That work was abandoned when the International Air Transport Association selected English as the language of international airline communications in 1957. But Malone's interest in phonetic writing resurfaced when his young son complained about difficulties learning to read. From about 1960 to the 1980s, Margaret S. Ratz used Unifon to teach first-graders at Principia College in Elsah, Illinois. A variety of teaching materials exist using Unifon. From the 1974 to his death in 1993 John M. Culkin, a specialist in media studies, also promoted Unifon.

Of greater significance is the use made of Unifon in the 1970s and 1980s to write Native American languages. Unifon was adapted principally by Tom Parsons of Humboldt State University to provide a practical orthography for several the Hupa, Yurok, Tolowa, and Karok languages. These orthographies were used for a nunber of years and although other orthographies are used for these languages now, many valuable documents using Unifon exist which should be able to take advantage of UCS encoding.

2. Structure. Unifon is a bicameral script written left to right. Most Unifon text is written in all caps, but the system as developed and described does permit the use of casing pairs. The fundamental question is the relation between Unifon and the Latin script. Unifon uses 40 characters when used for writing English; a number of additional characters were used for the Native American languages, and a few characters were used in earlier versions of Unifon but were later replaced by other characters.

3. Encoding model. There are two possibilities for encoding Unifon. One is to treat it as a separate script like Lisu. The other is to treat it as a set of Latin extensions. If the former option is chosen, a set of capital and a set of small letters will need to be encoded: there is considerable overlap between many of these letters and the Latin script (like AΛBⱢDEƎFGHIJKLMNOPRSTUVWYƵ). If the latter option is chosen, two things have to be taken into consideration. The first is that a large number of Unifon characters should be unified with existing Latin characters (as shown just above). The

second is that it needs to be recognized that when Unifon is used as a casing script, it is always intended to be displayed as styled text, THAT IS, IN SMALL-CAPS. This has some implications for the design of lower-case letters for the code charts, but that should not be particularly problematic if standard design principles are applied.

4. Combining diacritical marks. Generic diacritical marks are used in Unifon orthography. In Tolowa, U+0301 COMBINING ACUTE ACCENT is used to indicate stress, and both U+0304 COMBINING MACRON and U+0331 COMBINING MACRON BELOW are used to "harden" and "soften" the sound made by X [x].

5. Glyphs. The 40 basic Unifon letters as used for English phonemes are as follows:

AΔΛBȻDEƗRFGHIⱠJKLMNⱮOQⴲⵁⵔPRSȘTħɦUⱢVWƩYZ

The 33-letter alphabet used for Hupa was as follows:

ΛΔBCϽDEIJGH╫⏄KLMNOQⴲⵁⵔGⱮⱮSTUⱢWYⱧXƵX̄

The 26-letter alphabet used for Karuk was as follows:

AΔCϽIFH╫⏄KMNOQPⱮRSTΘUⱢVWYX

The 30-letter alphabet used for Tolowa was as follows:

ⱧXBCϽDEIGH╫⏄JKLMNⱮOⴲⵁⵔGIPRSTUⱢWY

A 32-letter alphabet used for Yurok was as follows:

AΔΛCϽEIƎGH╫⏄KLMNOQⴲⵁⵔGIPRSTUⱢWYⱧXX̄

A 42-letter "Indian Unifon Single-Sound Alphabet" is given as follows:

ⱧXAΔΛBCϽDEIƎFGH╫⏄JKLMNⱮOQⴲⵁⵔGIPRSTΘⱢUⱢⱣVWƩYZ

A number of other letters (not listed in the alphabets above) derive from earlier versions of Unifon:

ЧƗØꞀⱠ

6. Issues. In this preliminary proposal I have left open the question as to whether Unifon should be encoded as a unique script or as a set of extensions to Latin. If the latter, a unification exercise will have to be undertaken, and then capital and small letters will need to be encoded. Overunification with existing letters should be avoided, since some Unifon characters have superficial resemblances to existing characters but the usual shapes of those would not be acceptable in Unifon and the usual Unifon shapes would not be acceptable to users of those existing characters. UTC and National Body feedback is invited. The code chart below gives the Unifon characters seen as a character set of its own.

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	E88	E89	E8A	E8B	E8C	E8D	E8E	E8F
0	A E880	L E890	U E8A0	Ө E8B0	A E8C0	L E8D0	U E8E0	Ө E8F0
1	Δ E881	M E891	Ụ E8A1	Ⱨ E8B1	Δ E8C1	M E8D1	Ụ E8E1	Ⱨ E8F1
2	Λ E882	N E892	Ū E8A2	Ⱳ E8B2	Λ E8C2	N E8D2	Ū E8E2	Ⱳ E8F2
3	B E883	ⱴ E893	V E8A3	X E8B3	B E8C3	ⱴ E8D3	V E8E3	X E8F3
4	Ȼ E884	O E894	W E8A4	Ч E8B4	Ȼ E8C4	O E8D4	W E8E4	Ч E8F4
5	D E885	Ω E895	Ƶ E8A5	Ɪ E8B5	D E8C5	Ω E8D5	Ƶ E8E5	Ɪ E8F5
6	E E886	Φ E896	Y E8A6	Ø E8B6	E E8C6	Φ E8D6	Y E8E6	Ø E8F6
7	Ŧ E887	Ꝋ E897	Z E8A7	ſ E8B7	Ŧ E8C7	Ꝋ E8D7	Z E8E7	ſ E8F7
8	Ꝛ E888	Ꝍ E898	C E8A8	X E8B8	Ꝛ E8C8	Ꝍ E8D8	C E8E8	X E8F8
9	F E889	P E899	Ɔ E8A9	 E8B9	F E8C9	P E8D9	Ɔ E8E9	 E8F9
A	G E88A	R E89A	Ǝ E8AA	 E8BA	G E8CA	R E8DA	Ǝ E8EA	 E8FA
B	H E88B	S E89B	ⱨ E8AB	 E8BB	H E8CB	S E8DB	ⱨ E8EB	 E8FB
C	Ɪ E88C	Ȿ E89C	ⴗ E8AC	H̄ E8BC	Ɪ E8CC	Ȿ E8DC	ⴗ E8EC	H̄ E8FC
D	± E88D	T E89D	Ł E8AD	K̄ E8BD	± E8CD	T E8DD	Ł E8ED	K̄ E8FD
E	J E88E	ħ E89E	Ɵ E8AE	X̄ E8BE	J E8CE	ħ E8DE	Ɵ E8EE	X̄ E8FE
F	K E88F	Ꜧ E89F	⊥ E8AF	X̱ E8BF	K E8CF	Ꜧ E8DF	⊥ E8EF	X̱ E8FF

Capital letters

E880	A	UNIFON CAPITAL LETTER ADD
E881	Δ	UNIFON CAPITAL LETTER ALE
E882	Λ	UNIFON CAPITAL LETTER ALL
E883	B	UNIFON CAPITAL LETTER BAN
E884	₡	UNIFON CAPITAL LETTER CHUM
E885	D	UNIFON CAPITAL LETTER DIG
E886	E	UNIFON CAPITAL LETTER EVERY
E887	Ɇ	UNIFON CAPITAL LETTER EVIL
E888	Ɽ	UNIFON CAPITAL LETTER HER
E889	F	UNIFON CAPITAL LETTER FLY
E88A	G	UNIFON CAPITAL LETTER GO
E88B	H	UNIFON CAPITAL LETTER HOME
E88C	I	UNIFON CAPITAL LETTER IT
E88D	ɫ	UNIFON CAPITAL LETTER ICE
E88E	J	UNIFON CAPITAL LETTER JAM
E88F	K	UNIFON CAPITAL LETTER KISS
E890	L	UNIFON CAPITAL LETTER LIE
E891	M	UNIFON CAPITAL LETTER MY
E892	N	UNIFON CAPITAL LETTER NO
E893	Ɱ	UNIFON CAPITAL LETTER SING
E894	O	UNIFON CAPITAL LETTER GOT
E895	Ω	UNIFON CAPITAL LETTER OVER
E896	Φ	UNIFON CAPITAL LETTER BOOK
E897	Ϙ	UNIFON CAPITAL LETTER NOW
E898	Ꝋ	UNIFON CAPITAL LETTER TOY
E899	P	UNIFON CAPITAL LETTER PUN
E89A	R	UNIFON CAPITAL LETTER RUN
E89B	S	UNIFON CAPITAL LETTER SUN

• used for sh in orthographies that use E8A8 C cell

E89C	Ȿ	UNIFON CAPITAL LETTER SHUN
E89D	T	UNIFON CAPITAL LETTER TON
E89E	ħ	UNIFON CAPITAL LETTER THE
E89F	Ⱨ	UNIFON CAPITAL LETTER THIING
E8A0	U	UNIFON CAPITAL LETTER UP
E8A1	Ɯ	UNIFON CAPITAL LETTER YOU
E8A2	Ʊ	UNIFON CAPITAL LETTER DO
E8A3	V	UNIFON CAPITAL LETTER VERY
E8A4	W	UNIFON CAPITAL LETTER WIT
E8A5	Ʃ	UNIFON CAPITAL LETTER VISION
E8A6	Y	UNIFON CAPITAL LETTER YES
E8A7	Z	UNIFON CAPITAL LETTER ZEBRA

Native American capital letters

E8A8	C	UNIFON CAPITAL LETTER CHILL

• used in Hupa, Karuk, Tolowa, Yurok

E8A9	Ɔ	UNIFON CAPITAL LETTER CELL

• used in Hupa, Karuk, Tolowa, Yurok

E8AA	Ǝ	UNIFON CAPITAL LETTER BUR

• used in Yurok

E8AB	Ⱨ	UNIFON CAPITAL LETTER BIT

• used in Hupa, Karuk, Tolowa, Yurok

E8AC	ⸯ	UNIFON CAPITAL LETTER BITE

• used in Hupa, Karuk, Tolowa, Yurok

E8AD	Ł	UNIFON CAPITAL LETTER LIE WITH STROKE
E8AE	Ꝏ	UNIFON CAPITAL LETTER BOY

• used in Hupa, Tolowa, Yurok

E8AF	⊥	UNIFON CAPITAL LETTER THERE
E8B0	Θ	UNIFON CAPITAL LETTER THIRST

• used in Karuk

E8B1	Ħ	UNIFON CAPITAL LETTER TLO

• used in Hupa, Tolowa, Yurok

E8B2	Ɯ	UNIFON CAPITAL LETTER KHAH

• used in Hupa, Karuk, Tolowa, Yurok

E8B3	X	UNIFON CAPITAL LETTER EWE
E8B4	Ч	UNIFON CAPITAL LETTER CHAY
E8B5	Ɪ	UNIFON CAPITAL LETTER HE
E8B6	Ø	UNIFON CAPITAL LETTER OUT
E8B7	Ɩ	UNIFON CAPITAL LETTER JAY
E8B8	Ӽ	UNIFON CAPITAL LETTER ZHAY

Archaic capital letters

E8BC	Ħ	UNIFON CAPITAL LETTER HAH
E8BD	Ꝅ	UNIFON CAPITAL LETTER KAH
E8BE	X̄	UNIFON CAPITAL LETTER GHAH
E8BF	X̱	UNIFON CAPITAL LETTER XAH

Small letters

E8C0	A	UNIFON SMALL LETTER ADD
E8C1	Δ	UNIFON SMALL LETTER ALE
E8C2	Λ	UNIFON SMALL LETTER ALL
E8C3	B	UNIFON SMALL LETTER BAN
E8C4	₡	UNIFON SMALL LETTER CHUM
E8C5	D	UNIFON SMALL LETTER DIG
E8C6	E	UNIFON SMALL LETTER EVERY
E8C7	Ɇ	UNIFON SMALL LETTER EVIL
E8C8	Ɽ	UNIFON SMALL LETTER HER
E8C9	F	UNIFON SMALL LETTER FLY
E8CA	G	UNIFON SMALL LETTER GO
E8CB	H	UNIFON SMALL LETTER HOME
E8CC	I	UNIFON SMALL LETTER IT
E8CD	ɫ	UNIFON SMALL LETTER ICE
E8CE	J	UNIFON SMALL LETTER JAM
E8CF	K	UNIFON SMALL LETTER KISS
E8D0	L	UNIFON SMALL LETTER LIE
E8D1	M	UNIFON SMALL LETTER MY
E8D2	N	UNIFON SMALL LETTER NO
E8D3	Ɱ	UNIFON SMALL LETTER SING
E8D4	O	UNIFON SMALL LETTER GOT
E8D5	Ω	UNIFON SMALL LETTER OVER
E8D6	Φ	UNIFON SMALL LETTER BOOK
E8D7	Ϙ	UNIFON SMALL LETTER NOW
E8D8	Ꝋ	UNIFON SMALL LETTER TOY
E8D9	P	UNIFON SMALL LETTER PUN
E8DA	R	UNIFON SMALL LETTER RUN
E8DB	S	UNIFON SMALL LETTER SUN

• used for sh in orthographies that use E8A8 C cell

E8DC	Ȿ	UNIFON SMALL LETTER SHUN
E8DD	T	UNIFON SMALL LETTER TON
E8DE	ħ	UNIFON SMALL LETTER THE
E8DF	Ⱨ	UNIFON SMALL LETTER THIING
E8E0	U	UNIFON SMALL LETTER UP
E8E1	Ɯ	UNIFON SMALL LETTER YOU
E8E2	Ʊ	UNIFON SMALL LETTER DO
E8E3	V	UNIFON SMALL LETTER VERY
E8E4	W	UNIFON SMALL LETTER WIT
E8E5	Ʃ	UNIFON SMALL LETTER VISION
E8E6	Y	UNIFON SMALL LETTER YES
E8E7	Z	UNIFON SMALL LETTER ZEBRA

Native American small letters

E8E8	C	UNIFON SMALL LETTER CHILL
E8E9	Ɔ	UNIFON SMALL LETTER CELL
E8EA	Ǝ	UNIFON SMALL LETTER BUR
E8EB	Ⱨ	UNIFON SMALL LETTER BIT
E8EC	ⸯ	UNIFON SMALL LETTER BITE
E8ED	Ł	UNIFON SMALL LETTER LIE WITH STROKE
E8EE	Ꝏ	UNIFON SMALL LETTER BOY
E8EF	⊥	UNIFON SMALL LETTER THERE
E8F0	Θ	UNIFON SMALL LETTER THIRST

E8F1 ᚼ UNIFON SMALL LETTER TLO
E8F2 ⱳ UNIFON SMALL LETTER KHAH
E8F3 ᚷ UNIFON SMALL LETTER EWE
E8F4 ɥ UNIFON SMALL LETTER CHAY
E8F5 ɪ UNIFON SMALL LETTER HE
E8F6 ø UNIFON SMALL LETTER OUT
E8F7 ɾ UNIFON SMALL LETTER JAY
E8F8 ӽ UNIFON SMALL LETTER ZHAY

Archaic small letters

E8FC ħ UNIFON SMALL LETTER HAH
E8FD ҟ UNIFON SMALL LETTER KAH
E8FE x̄ UNIFON SMALL LETTER GHAH
E8FF χ UNIFON SMALL LETTER XAH