

ISO/IEC JTC 1/SC 2/WG 2 **N3448**

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TITLE: Comments on N3297: Proposal to encode Tangut characters in UCS Plane 1 and Charts
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The UK welcomes the proposal to encode the Tangut script, and wishes to express its appreciation to Dr. Richard Cook for a detailed and well thought out proposal.

However, it is important that a proposal of this magnitude is carefully reviewed by experts in the field of Tangut studies, and that there is broad consensus on the character repertoire and ordering. We have been in contact with a number of Tangut scholars, and whilst we have had some positive feedback, we have been told that more time is required to thoroughly review the proposal and check all of the nearly 6,000 proposed characters. We would therefore not wish to see the proposal added to an amendment at this stage.

One issue in particular that has been raised is the question of Tangut radicals. Almost all the modern Tangut dictionaries include a radical-based index of Tangut characters. Some examples are appended to this document:

- Appendix A : Table of 357 radicals used in Li Fanwen's *Xia-Han Zidian* 夏漢字典 (Beijing, 1997)
- Appendix B : Table of 444 radicals used in *Wenhai Yanjiu* 文海研究 (Beijing, 1983)
- Appendix C : Table of 329 radicals used in Tatsuo Nishida's *Seikabun Kojiten* 西夏文小字典 (Tokyo, 1964)

We believe that it is essential that the Tangut proposal includes a set of radicals, so that radical indices such as these can be represented in electronic text. Note that unlike Han radicals, the majority of Tangut radicals defined in these dictionaries do not exist as free-form characters and so cannot be represented unless they are separately encoded. The actual radical scheme used varies from author to author, so we strongly recommend that the set of Tangut radical characters encoded is a superset of all the radicals used in the various dictionaries.

Furthermore, in addition to the actual radicals used in dictionaries there are a relatively small number of other recurring elements found in Tangut characters that it would be advisable to encode (these mostly occur as the right hand side component of characters, but have not been used as radicals in dictionaries as most Tangut radicals are artificially chosen from the topmost or left side component of a character). It would be very useful to encode all component elements used in Tangut characters, not just those used as radicals, for use in discussion of the composition of Tangut characters (something that is very important to scholars of the Tangut script) and for use in component-based input methods for the Tangut script.

Finally, we would like the proposal to address Tangut character strokes. Most Tangut strokes are the same as strokes used for Han ideographs, but there may be some strokes peculiar to Tangut that it would be beneficial to encode (we suggest adding any such strokes to the space at the end of the CJK Strokes block, 31E4..31EF). For example, Li Fanwen's *Tangut-Chinese Dictionary* shows 24 basic strokes:

甲 筆形和代號:

| 筆名 | 號碼 | 筆形 | 字例 | 說明 | |
|----|----|----|-------|---------|----------------|
| 單筆 | 橫 | 1 | 一 一 ㄥ | 𐰇 𐰈 𐰉 𐰊 | 橫和橫上下鈎 |
| | 垂 | 2 | / \ | 𐰋 𐰌 𐰍 𐰎 | 直和撇 |
| | 點 | 3 | 、 丶 | 𐰏 𐰐 𐰑 𐰒 | 點和捺 |
| 復筆 | 又 | 4 | × 十 卄 | 𐰓 𐰔 𐰕 𐰖 | 兩筆交叉和橫穿一筆 |
| | 卌 | 5 | 卌 卌 卌 | 𐰗 𐰘 𐰙 𐰚 | 一筆橫穿三筆, 直穿二至三筆 |
| | 卍 | 6 | 卍 卍 | 𐰛 𐰜 | 一筆橫、直穿四筆 |
| 筆 | 角 | 7 | 厂 𠃉 𠃊 | 𐰝 𐰞 𐰟 𐰠 | 一筆轉折和兩筆相接而成的角 |
| | 八 | 8 | ㄨ ㄨ | 𐰡 𐰢 𐰣 𐰤 | 類似漢字八和八的變形 |
| | 小 | 9 | ㄣ 卌 卌 | 𐰥 𐰦 𐰧 𐰨 | 類似漢字小和小的變形 |

Appendix A : Table of radicals used in Li Fanwen's *Xia-Han Zidian* 夏漢字典 (Beijing, 1997)

(一) 筆畫部首

| 筆 畫 | 部 首 | | | |
|--------|---------|------------------------|-------------|----------|
| | 、 點 | 一 橫 | 豎 | 丿 撇 |
| 一 畫 | | 一 1 7 1 | 1 | 丿 3 4 3 |
| 二 畫 | 亅 4 7 4 | 二 5 𠄎 5 冫 6 彡 6 彳 7 | 川 7 凵 9 凵 9 | 彡 9 彳 11 |

| | | | | |
|----------------|---|---|--|--|
| <p>三 畫</p> | <p>十 11 广 11 艸 12 了 15 ㄣ 15</p> | <p>子 16 于 16 冫 16 冫 16 𠂇 17 𠂇 17 才 17 才 17 彳 17 彳 18 彳 19 彳 19 云 19 卅 20 彡 20 彡 20 彡 20</p> | <p>尸 20 冂 20 巾 20 冂 21</p> | <p>彡 18 彡 21 冂 21 女 21 彡 21 彡 22 冂 22</p> |
| <p>四 畫</p> | <p>爻 22 冂 22 九 22 冂 22 冂 23 九 23 了 24 彡 24 彡 24 彡 24 彡 24 冂 25</p> | <p>冂 25 冂 26 冂 26 冂 26 冂 26 冂 27 冂 27 冂 27 冂 27 彡 27 彡 28 彡 28 彡 29 彡 29 彡 29 冂 29 冂 31 彡 31 彡 32 彡 32 云 33 卅 33</p> | <p>冂 37 冂 37 冂 37 冂 37 冂 37</p> | <p>冂 37 彡 37 冂 37 冂 37 冂 38 彡 38 冂 38 冂 38 彡 44 彡 44 彡 45 冂 45</p> |
| <p>五 畫</p> | <p>爻 45 冂 45 冂 46 彡 46 彡 46 冂 46 彡 46 冂 46 冂 46 冂 46 冂 46 冂 47 冂 47 冂 47 彡 47 彡 47 彡 47 卅 48 冂 48 冂 49 彡 49</p> | <p>冂 49 冂 49 冂 49 冂 49 冂 49 冂 49 冂 49 冂 50 冂 50 冂 50 冂 50 冂 50 冂 50 冂 50 冂 50 冂 51 冂 51 彡 51 彡 51 彡 51 彡 51 冂 51 彡 51 冂 51 冂 51 冂 51 冂 51 冂 52 冂 52 冂 52 冂 52 冂 52 冂 52 彡 53 彡 53 冂 53 冂 53 卅 53 卅 53 卅 53 卅 53 卅 53 卅 54</p> | <p>冂 55 冂 55 冂 55 冂 55 冂 55 冂 55</p> | <p>爻 55 彡 57 彡 58 彡 58 冂 58 冂 59 彡 59 彡 59 冂 59 冂 59 冂 59 冂 59</p> |
| <p>六 畫</p> | <p>冂 60 冂 60 冂 60 冂 60 冂 60 彡 61 冂 61 冂 61 冂 61 冂 61 冂 61 冂 61 彡 61 彡 61 彡 63 冂 64 冂 64 冂 64 冂 64 冂 65 冂 65</p> | <p>冂 65 冂 65 冂 65 冂 65 冂 65 彡 65 彡 65 彡 65 冂 65 彡 65 彡 65 彡 65 彡 66 冂 66 冂 66 冂 66 冂 66 冂 66 冂 66 冂 66 冂 67 冂 67 冂 67 冂 67 冂 67 冂 67 冂 67 冂 67</p> | <p>冂 67 冂 67 冂 67 冂 67 冂 67</p> | <p>爻 67 彡 68 冂 68 冂 68 冂 68 冂 68 冂 68 冂 68 冂 68 冂 68</p> |

| | | | | |
|----------------------------|--|--|--------------------------------------|--------------------------------------|
| <p>七 畫</p> | <p>苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁶⁹ 苜⁷⁰ 苜⁷⁰ 苜⁷¹</p> | <p>苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷¹ 苜⁷² 苜⁷² 苜⁷² 苜⁷² 苜⁷² 苜⁷² 苜⁷² 苜⁷² 苜⁷² 苜⁷² 苜⁷³ 苜⁷³ 苜⁷³</p> | | <p>苜⁷³ 苜⁷³</p> |
| <p>八 畫</p> | <p>苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴</p> | <p>苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁴ 苜⁷⁵ 苜⁷⁵ 苜⁷⁵ 苜⁷⁵ 苜⁷⁵ 苜⁷⁵</p> | <p>苜⁷⁵ 苜⁷⁵</p> | |
| <p>九 畫 以 上</p> | <p>苜⁷⁵ 苜⁷⁵ 苜⁷⁵ 苜⁷⁵ 苜⁷⁵ 苜⁷⁵ 苜⁷⁵ 苜⁷⁶ 苜⁷⁶ 苜⁷⁶ 苜⁷⁶</p> | <p>苜⁷⁵ 苜⁷⁵ 苜⁷⁵ 苜⁷⁶ 苜⁷⁶ 苜⁷⁶ 苜⁷⁶ 苜⁷⁶ 苜⁷⁶ 苜⁷⁶ 苜⁷⁶ 苜⁷⁶</p> | | |

Appendix C : Table of radicals used in Tatsuo Nishida's *Seikabun Kojiten* 西夏文小字典 (Tokyo, 1964)

西夏文字小字典目次

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| 001 一 | 309 | 028 𠂇 | 344 | 055 𠂇 | 365 |
| 002 𠂇 | 310 | 029 𠂇 | 346 | 056 𠂇 | 364 |
| 003 二 | 311 | 030 𠂇 | 346 | 057 𠂇 | 365 |
| 004 𠂇 | 311 | 031 介 | 346 | 058 𠂇 | 365 |
| 005 一 | 312 | 032 𠂇 | 347 | 059 𠂇 | 365 |
| 006 𠂇 | 312 | 033 𠂇 | 347 | 060 𠂇 | 366 |
| 007 二 | 313 | 034 𠂇 | 348 | 061 𠂇 | 366 |
| 008 𠂇 | 319 | 035 𠂇 | 348 | 062 𠂇 | 367 |
| 009 二 | 320 | 036 𠂇 | 348 | 063 𠂇 | 367 |
| 010 二 | 322 | 037 𠂇 | 348 | 064 𠂇 | 367 |
| 011 𠂇 | 324 | 038 𠂇 | 349 | 065 𠂇 | 367 |
| 012 𠂇 | 324 | 039 𠂇 | 349 | 066 𠂇 | 367 |
| 013 二 | 324 | 040 𠂇 | 353 | 067 𠂇 | 367 |
| 014 二 | 324 | 041 𠂇 | 353 | 068 𠂇 | 367 |
| 015 𠂇 | 324 | 042 𠂇 | 359 | 069 𠂇 | 368 |
| 016 𠂇 | 324 | 043 𠂇 | 359 | 070 𠂇 | 368 |
| 017 𠂇 | 324 | 044 𠂇 | 359 | 071 𠂇 | 369 |
| 018 𠂇 | 334 | 045 𠂇 | 359 | 072 𠂇 | 369 |
| 019 𠂇 | 337 | 046 𠂇 | 360 | 073 𠂇 | 369 |
| 020 𠂇 | 338 | 047 𠂇 | 360 | 074 𠂇 | 370 |
| 021 𠂇 | 339 | 048 𠂇 | 361 | 074b 𠂇 | 370 |
| 022 𠂇 | 340 | 049 𠂇 | 361 | 075 𠂇 | 370 |
| 023 𠂇 | 340 | 050 𠂇 | 362 | 076 𠂇 | 371 |
| 024 𠂇 | 340 | 051 𠂇 | 362 | 077 𠂇 | 371 |
| 025 𠂇 | 340 | 052 𠂇 | 363 | 078 𠂇 | 371 |
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| 083 | 𐄄 | 374 | 113 | 𐄄 | 390 | 142 | 𐄄 | 993 |
| 084 | 𐄅 | 374 | 114 | 𐄅 | 390 | 143 | 𐄅 | 993 |
| 085 | 𐄆 | 374 | 115 | 𐄆 | 390 | 144 | 𐄆 | 399 |
| 086 | 𐄇 | 375 | 116 | 𐄇 | 390 | 145 | 𐄇 | 401 |
| 087 | 𐄈 | 375 | 117 | 𐄈 | 391 | 146 | 𐄈 | 401 |
| 088 | 𐄉 | 376 | 118 | 𐄉 | 391 | 147 | 𐄉 | 401 |
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| 090 | 𐄋 | 377 | 120 | 𐄋 | 391 | 148 | 𐄋 | 402 |
| 091 | 𐄌 | 377 | 121 | 𐄌 | 391 | 149 | 𐄌 | 402 |
| 092 | 𐄍 | 377 | 122 | 𐄍 | 392 | 150 | 𐄍 | 402 |
| 093 | 𐄎 | 377 | 123 | 𐄎 | 392 | 151 | 𐄎 | 402 |
| 094 | 𐄏 | 377 | 123b | 𐄎 | 394 | 152 | 𐄎 | 402 |
| 095 | 𐄐 | 377 | 124 | 𐄎 | 394 | 153 | 𐄎 | 403 |
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| 259 | 𐵓 | 486 | 282 | 𐵓 | 493 | 305 | 𐵓 | 500 |
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| 261 | 𐵓 | 488 | 284 | 𐵓 | 493 | 307 | 𐵓 | 501 |
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| 264 | 𐵓 | 489 | 287 | 𐵓 | 494 | 310 | 𐵓 | 501 |
| 265 | 𐵓 | 489 | 288 | 𐵓 | 494 | 311 | 𐵓 | 501 |
| 266 | 𐵓 | 489 | 289 | 𐵓 | 494 | 312 | 𐵓 | 502 |
| 267 | 𐵓 | 489 | 290 | 𐵓 | 495 | 313 | 𐵓 | 502 |
| 268 | 𐵓 | 489 | 291 | 𐵓 | 495 | 314 | 𐵓 | 502 |
| 269 | 𐵓 | 489 | 292 | 𐵓 | 495 | 315 | 𐵓 | 502 |
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| 271 | 𐵓 | 491 | 294 | 𐵓 | 495 | 317 | 𐵓 | 503 |
| 272 | 𐵓 | 491 | 295 | 𐵓 | 495 | 318 | 𐵓 | 503 |
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| 274 | 𐵓 | 491 | 297 | 𐵓 | 496 | 017b | 𐵓 | 504 |
| 275 | 𐵓 | 491 | 298 | 𐵓 | 498 | 017c | 𐵓 | 504 |
| 276 | 𐵓 | 492 | 299 | 𐵓 | 498 | 017d | 𐵓 | 504 |
| 277 | 𐵓 | 492 | 300 | 𐵓 | 499 | 017e | 𐵓 | 505 |
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