ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646[1]

A. Administrative

1. **Title: Mathematical Horizontal Bracket Characters**

2. Requester's name: Murray Sargent III

3. Requester type (Member body/Liaison/Individual contribution): Member body

4. Submission date: August 3, 2004

5. Requester's reference (if applicable):

6. Choose one of the following:

This is a complete proposal: Yes

or,   More information will be provided later:

B. Technical - General

1. Choose one of the following:

        a. This proposal is for a new script (set of characters):   _____

                Proposed name of script: _____

.   b. The proposal is for addition of character(s) to an existing block: Yes

                Name of the existing block: Miscellaneous Technical

2. Number of characters in proposal: 5

3. Proposed category (select one from below - see section 2.2 of P&P document):

 A-Contemporary __x__ B.1-Specialized (small collection) _____ B.2-Specialized (large collection)   _____

 C-Major extinct   _____ D-Attested extinct   _____ E-Minor extinct   _____

 F-Archaic Hieroglyphic or Ideographic   _____   G-Obscure or questionable usage symbols   _____

4. Proposed Level of Implementation (1, 2 or 3) (see Annex K in P&P document):   3

        Is a rationale provided for the choice?   _____

                If Yes, reference: _____

5. Is a repertoire including character names provided? Yes

        a. If YES, are the names in accordance with the "character naming guidelines"

                in Annex L of P&P document? Yes

        b. Are the character shapes attached in a legible form suitable for review? Yes

6. Who will provide the appropriate computerized font (ordered preference: True Type, or PostScript format) for
        publishing the standard? Microsoft Corporation

        If available now, identify source(s) for the font (include address, e-mail, ftp-site, etc.) and indicate the tools
        used: (fake for the moment using corresponding EastAsian characters)

7. References:

        a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided? Yes

        b. Are published examples of use (such as samples from newspapers, magazines, or other sources)
                of proposed characters attached? No, but references are readily available.

8. Special encoding issues:

        Does the proposal address other aspects of character data processing (if applicable) such as input,
        presentation, sorting, searching, indexing, transliteration etc. (if yes please enclose information)?
        Presentation is explained.

9. Additional Information:

Submitters are invited to provide any additional information about Properties of the proposed Character(s) or Script
that will assist in correct understanding of and correct linguistic processing of the proposed character(s) or script.
Examples of such properties are: Casing information, Numeric information, Currency information, Display behaviour
information such as line breaks, widths etc., Combining behaviour, Spacing behaviour, Directional behaviour, Default
Collation behaviour, relevance in Mark Up contexts, Compatibility equivalence and other Unicode normalization
related information. See the Unicode standard at http://www.unicode.org for such information on other scripts. Also
see http://www.unicode.org/Public/UNIDATA/UCD.html and associated Unicode Technical Reports for information
needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before? No
       If YES explain _____

2. Has contact been made to members of the user community (for example: National Body,
       user groups of the script or characters, other experts, etc.)? Yes
           If YES, with whom? Mathematical community
           If YES, available relevant documents: The TeXbook and the MathType User Manual

3. Information on the user community for the proposed characters (for example:
       size, demographics, information technology use, or publishing use) is included? Mathematics communities
       Reference: _____

4. The context of use for the proposed characters (type of use; common or rare) Technical documents
       Reference: The TeXbook and the MathType User Manual

5. Are the proposed characters in current use by the user community? Yes
       If YES, where? Reference: The TeXbook and the MathType User Manual

6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely
       in the BMP? Yes
           If YES, is a rationale provided? Yes
               If YES, reference: see below

7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)? Yes

8. Can any of the proposed characters be considered a presentation form of an existing
       character or character sequence? They are similar to EastAsian compatibility brackets.
           If YES, is a rationale for its inclusion provided? Yes
           If YES, reference: see below

9. Can any of the proposed characters be encoded using a composed character sequence of either
       existing characters or other proposed characters? Not ideally
           If YES, is a rationale for its inclusion provided? Yes
           If YES, reference: see below

10. Can any of the proposed character(s) be considered to be similar (in appearance or function)
        to an existing character? Yes
            If YES, is a rationale for its inclusion provided? Yes
            If YES, reference: see below

11. Does the proposal include use of combining characters and/or use of composite sequences? No
            If YES, is a rationale for such use provided? _____
            If YES, reference: _____
            Is a list of composite sequences and their corresponding glyph images (graphic symbols)
            provided? No
            If YES, reference: _____

12. Does the proposal contain characters with any special properties such as
        control function or similar semantics? No
            If YES, describe in detail (include attachment if necessary) _____

13. Does the proposal contain any Ideographic compatibility character(s)? No

List of Proposed Characters

The proposed characters and suggested names and locations are:

U+23D5   ⏕   TOP PARENTHESIS
U+23D6   ⏖   BOTTOM PARENTHESIS
U+23D7   ⏗   TOP CURLY BRACKET
U+23D8   ⏘   BOTTOM CURLY BRACKET
U+23D9   ⏙   TOP TORTOISE SHELL BRACKET

Background

This set of mathematical horizontal brackets is requested for use by mathematical text display and editing programs. The set consists of a pair of mathematical horizontal parentheses, a pair of mathematical horizontal curly brackets, and a top mathematical horizontal tortoise shell bracket. Mathematical horizontal square brackets already exist in Unicode, namely U+23B4 TOP SQUARE BRACKET and U+23B5 BOTTOM SQUARE BRACKET.

The proposed brackets are used by mathematical display programs such as TeX. For example, the "underbrace" and "overbrace" are shown in the second example on p. 176 of *The TeXbook*, by D. E. Knuth, Addison Wesley (1986) as

$$\overbrace{x+\cdots+x}^{k\ \text{times}}$$

$$\underbrace{x+y+z}_{>0}.$$

and appear in the font tables for MathType's MT Extra font (see MathType User Manual, Design Science, Inc, Long Beach, CA 90803 (2001)).

TeX and MathType both support the parentheses and curly-bracket pairs. MathType also supports the top tortoise shell bracket, but no bottom bracket. All five characters can be extended an arbitrary amount and both TeX and MathType fonts have the appropriate pieces to create such extended characters.

Alternatives Investigated

Corresponding CJK Compatibility Forms U+FE35 through U+FE39 exist. But these characters are not considered to be mathematical and have quite different rendering requirements.

Specifically, these compatibility forms are intended for compatibility with character sets that have character codes for the vertical glyph variants of punctuation characters. As such these characters are intended to be used in a vertical writing environment where ideographic characters remain upright, but non-ideographic characters (letters, digits) are rotated sideways. When the mathematical brackets are used, all other letters, symbols and digits remain upright as illustrated in the overbrace example above.

The CJK Compatibility Forms have the EAW property of W (wide). They are typically implemented in one half of an EM square, with the other half empty. Layout algorithms using these characters will depend on predicting the empty half cell based on the character code and reduce intercharacter spacing accordingly in some circumstances.

For example the parentheses in the vertical text in the figure to the right have very different rendering from the under/overbrace examples above from the TeXbook.

独立法務官（弁護士）と面会

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