L2/26-116

ISO/IEC JTC1/SC2/WG2 Nxxxx
LUCP L-2612

Universal Multiple-Octet Coded Character Set
International Organization for Standardization
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Διεθνής Οργανισμός Τυποποίησης
Международная организация по стандартизации

Work group reply to Alpha Feedback on Cossic characters by D. M. Jacquerye (31. 3. 2026)

Source: Uwe Mayer, Siegmund Probst, David Rabouin, Elisabeth Rinner, Andreas Stötzner, Achim Trunk, Charlotte Wahl
Re: Unicode 18 Alpha review stage
Related: **N5333R2** (L-2533)
Date: April 7, 2026
Requester's reference: LUCP L-2612

1. Introduction

The Cossic characters proposed belong to the large complex of historic Latin abbreviation characters, which show a great variety of shape details, descendant forms and derivations, and various use cases as well as different local practices in different eras. While it is generally right to review the Cossic characters in that wider context, it should be taken into account that the complexity of the matter can include the possibility of misdirection if one focuses on selected aspects instead of envisioning the whole picture.

The great majority of Latin abbreviation characters, which the author refers to, are directly tied to certain syllable or word expressions in Latin *language* texts. A smaller group of such characters has been developed over time into logograms for monetarian and weight measurement expressions, such as for *libra, schilling* or *florin*. In an analogue way another group of – originally word-abbreviating notations – evolved into *mathematical* symbols which became a firm part of the specific mathematical notations of their times. One such symbol is ∫ for *integral* (derived by Leibniz from *ſ[umma]*), and the Cossic characters also belong to that category. Therefore it is not sufficient to treat them just like any other Latin abbreviations. Their specific role in math notation is rather essential for their understanding.

The author leaves this important aspect aside and does not discuss the relation of 'normal' Latin abbreviation characters and math characters. Instead, he seems to prefer to measure the Cossic characters against his own view of similar language-related abbreviations and to reinterpret them accordingly.

2. Critique

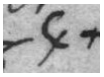
On page 1 the author uses the chapter numbering “1.” – “1.a.” twice. The first chapter 1./1.a. is of no relevance for the discussion since it just lists well-known general remarks about abbreviation strokes.

The second 1./1.a. discusses the LATIN SMALL LETTER C WITH SMALL SLASH. The author correctly observes that the oblique stroke in the historic samples are of different size and therefore questions the chosen term “SMALL”. The given reference to better scan material for the source *Beeckmann 1628* helps to better understand the idea behind this character. The author concludes with the recommendation to give the representative glyph “a longer slash”.

- A conflict eventually arising by the similarity of a ‘long-slash-c’ with the existing character LATIN SMALL LETTER C WITH STROKE (023C) is not discussed at all.
- A closer observation of the historic sources reveals that, although the slash being a little longer or shorter here and there, there is one crucial graphical difference to U+023C in which the stroke crosses the base glyph in its lower as well its upper part; but LATIN SMALL LETTER C WITH SMALL SLASH *always* has a slash crossing *only* the lower part. We have checked and secured this feature for the Cossic character.

While the suggested alteration of the lenght of the stroke would be acceptable, we don’t see the urgent need to neither modify the current representative glyph nor the character name.

An updated review of relevant historic samples from known manuscripts:



Leibniz 1676

MS Leiden 17th c.

Descartes 1643

Beeckmann 1628

In comparison to these, for a representative typographic glyph there are these possibilities:

(1) c — base glyph c

(2) ȼ — currently proposed glyph, close to the Leibniz sample, typographically sound

(3) ȼ — longer slash, according to D.M.J., typographically tricky

(4) ȼ — long slash, requiring deformation of base glyph, typographically tricky

1.b.: It is possible to discuss the relation of more various stroke modes for the letter *c* and to see a certain kinship or maybe succession between them. However, this whole paragraph is not relevant for neither LATIN SMALL LETTER C WITH SMALL SLASH (nor LATIN SMALL LETTER C WITH RIGHT LOOP) because, as we have testified, these two are distinct symbols occurring in *that* form *only* in the math context of Cossic notation. The idea of reinterpreting and mixing them up with somewhat similar characters in Latin language notation is misleading.

2.: The author interprets the character LATIN SMALL LETTER C WITH DESCENDENDING LOOP (name has been clarified after edition of N5333R2) as a variant developed out of C CEDILLA and requests the “descending loop” being renamed in that sense.

- We consider such a name change not desirable because, while the perspective of the cedilla relation may be right, the shape of the “descending loop” is much more prominent in the Cossic character which became a specific symbol on its own.
- The interpretation of the crossing part as “cedilla has an abbreviative stroke“ is questionable.

Additional remark:

- We received (on April 3) the suggestion to change the name into LATIN SMALL LETTER C WITH LOOPED CEDILLA. We would not object to this change but think that it is neither necessary nor desirable. By all we know about the character it seems *likely* (but not secured) that the loopy part was developed out of or with reference to the french *cedilla*. This relation does not inevitably make us regard the large loopy element *still being a cedilla*. Moreover, since the cedilla is a diacritical element with a *phonetic* function, whereas the loop element of the Cossic character is an abbreviation element with a *logographic* function, we tend to favour to reflect this distinction by not using the term "cedilla" here. The proposed name LATIN SMALL LETTER C WITH DESCENDENDING LOOP is just descriptive and as such bears not any further interpretation about 'what it could mean or not', therefore we would prefer to retain the name LATIN SMALL LETTER C WITH DESCENDENDING LOOP, which has been thoughtfully chosen after long discussions.

3.: The reference to LATIN SMALL LETTER IS (A76D) is not helpful here. This "letter" has been given a wrong definition in the standard, on grounds of a rather weak testification base (see N3027, 2006; p. 32). It is actually not a *letter* but one of the typical abbreviation marks which get attached to various preceding letters and stand for different things. In the text shown in N3027 it stands for "-is"; D. M. Jacquerye shows the same element on p. 2, fig. 1.5 where it represents something different.

- By shape, use context and semantic content the character LATIN SMALL LETTER C WITH RIGHT LOOP is definitely distinct from all historic occurrences of abbreviations which may get represented by using A76D.
- We reject the suggested annotation and regard it confusing and misleading.
- We advise a revision of A76C/A76D at a later point (its discussion is not within the scope of this paper).

4.: LATIN SMALL LETTER D ROTUNDA WITH CROSSING LOOP. Again, the author tries to reinterpret the character and mixes it up with several other shapes or characters which also relate to the base letter of lowercase *d* in its rounded form.

- The author does not actually discuss the rather intrinsic annotations to this character in the proposal, which point to the differences with other, similar looking characters.
- The explanations given under 4.a. are misleading and irrelevant.
- We back the author's suggestion given under 4.b., to add an annotation to A779/A77A, that the "insular d" is also to be called "d rotunda", in coherence to e.g. A75B etc^{a} – "r rotunda". This form of *d* is historically not confined to the region of the British isles.
- The conclusions and suggestions under 4.c. have little or nothing to do with the Cossic character LATIN SMALL LETTER D ROTUNDA WITH CROSSING LOOP. The suggested name "Latin small letter insular dum with top loop" is completely wrong. If the term "…crossing loop" is regarded being not specific enough, we propose a name change to LATIN SMALL LETTER D ROTUNDA WITH CROSSING LOOP **DESCENDING**.

5.: The character LATIN SMALL LETTER R ROTUNDA WITH LOOP is reinterpreted in a wrong direction here.

- This character shares with A75B and A75D only the base character "r rotunda".
- To name it "…letter rum rotunda with loop" is wrong because the cossic character's meaning "res" or "radix" has *nothing* to do with the abbreviation for the syllable *–rum*.

- The fact that LATIN SMALL LETTER R ROTUNDA WITH LOOP is somewhat of a further scribal development out of the *round r with a crossing stroke* (= A75D) does not make the semantic difference of the Cossic symbol and its role as a part of the Cossic set less relevant.

6.: As in the paragraphs above, the author mixes one specific Cossic character up with other characters whith which it shares the same base glyph with, *long s* here. Again, he misses the point of considering *this* symbol being a specific part of a specific mathematical notation. This is particular unfortunate in this case since it is well known that there are many different descendant characters, abbreviations or symbols which developed over time out of the letter ſ, making that whole topic rather complex and, to times, tricky.

- The author states that "the letter is identified as a strict long s-s ligature when there are examples of other forms" and counts this as "rather problematic". By this he makes one big logical mistake which pulverises all what follows in that paragraph.
- "The letter is identified as a strict long s-s ligature" – right.
- "There are examples of other forms" – also right.
- The two aforementioned facts are in no way contradictory to each other.
- The proposal for LATIN SMALL LIGATURE LONG S WITH DESCENDER S deals with the "strict long s-s ligature" only and this does not constitute any preassumptions about other forms.
- The proposal N5333R2 contains extensive annotations which clarify the most important aspects with regard to other encoded ſ-based characters.
- The proposal takes into account that historic usage of this character for the expression "ſursolidum" is sometimes inconsequent and other, similar looking sorts have been utilized for various reasons. This *unpleasant view* is a historic fact and a specific feature of the long-s-complex. However, it has been explained and demonstrated that the encoding of LATIN SMALL LIGATURE LONG S WITH DESCENDER S is nonetheless justifiable and its mirroring in the Math alphanumeric section has been decided due to the modern mathematical convention to use Italics in formula expressions.
- Some of the long-s-derivates showcased by the author are also evident in historic monetary and measurement notation (e.g. for *ſchilling*). The author does not discuss this aspect.
- The proposal explains necessary distinctions for this character, but does not claim to give an exhaustive in-depth survey of all existing ſ-based characters through the centuries. We encourage the author to present a proposal about such characters which he thinks deserve encoding.
- This character is *not* "a glyphic variant of MIDDLE SCOTS S".

7.: The character LATIN SMALL LETTER LONG S WITH TOP LOOP is the one with the smallest source base, in fact we were able to testify it from the source *Wallis 1675* only.

- The fact that this is a rare character (by current knowledge) does not disqualify it for encoding *per se*.
- The shown specimen is from a printer's shop, therefore it is likely that this sort has been used and will be found in other printed works.
- The critique under 7.a. is based on insufficient observation of the historic source and a wrong interpretation.
- The following paragraph 7.b. is irrelevant here but may be a worthwhile topic for a specific encoding proposal by the author.

- We think it is not necessary to skip this character from the proposal at this stage. We suggest to keep the set complete as presented in N5333R2.

8.: *see under 6*.

9.: The *kurrent* form of the MATHEMATICAL SCRIPT SMALL Z (VS to 1D4CF) has been defined as a mathematical alphanumeric character, as written in the proposal, after careful consideration by all contributing experts.

- The author is encouraged to present a proposal on “script z with right loop”, which is a different matter.

3. Summary

With exception of one point, the suggestion given under 4.b., to add an annotation to A779/A77A; we refuse to follow most of the author’s reasoning and conclusions, because

- The testified relevance of the Cossic set for the specific historic mathematical usage scenario is not honored;
- The important distinction between the general Latin (language-) notation and other, more specific fields like math, is not reflected upon;
- The general Latin abbreviations field’s inherent complexity is well-known among scholars. The author claims that he presents new / extended knowledge about the characters in question, but in fact he mostly uses other, similar looking symbols as a vehicle for arbitrary reinterpretations of the Cossic characters.

4. Conclusion

The proposal upon the Cossic characters has been submitted for the first time in September 2024 (L2/24-244), underwent several discussion rounds with the participation of SEWG and UTC experts and has been evaluated as an important project for supporting editorial work upon historic mathematics. It has been revised and re-edited four times until the version N5333R2 (L-2533) from November 25, 2025.
We would have welcomed the author’s participation in the course of the discussions. After these discussions led to a lot of additional knowledge and insights, we find most of the reasoning in his feedback not convincing.
We know that the author has been aware of this project for a longer time. We regard the timing of this contribution, to submit it on the very last day of the Alpha review period, not helpful.

We ask the UTC to keep the Cossic characters in line for UCS 18.

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