

Proposal to include the letter ‘Old Polish O’ in ISO/IEC 10646 and The Unicode Standard January 12, 2021

Daniel Bunčić

1 Introduction

Old Polish, written from the 12th to the early 16th century, had a nasal vowel /ã/, which manuscripts represented by a special letter, which is also used in modern transcriptions, e.g. in scholarly text editions. This letter in its most representative form looks more or less like an *o* with vertical lines attached at the top and at the bottom (ø), although other forms also occur.

In Middle Polish, the Old Polish nasal vowel split into two nasal vowels: /ɔ̃/, which is spelled *ą* (U+0105 LATIN SMALL LETTER A WITH OGONEK), and /ɛ̃/, which is spelled *ę* (U+0119 LATIN SMALL LETTER E WITH OGONEK). Accordingly, the Old Polish letter ø sometimes corresponds to the one and sometimes to the other modern vowel letter, e.g. Old Polish *bødø* ‘they will be’ > Modern Polish *będq*. Consequently, it would be inappropriate to represent ø as either *ą* or *ę*.

2 Suitability for inclusion

The ‘Old Polish O’ is clearly a character according to the definition in the Glossary. It is functionally distinct from all other characters used in Old Polish and also from the two Modern Polish nasal vowel characters *ą* (U+0105 LATIN SMALL LETTER A WITH OGONEK) and *ę* (U+0119 LATIN SMALL LETTER E WITH OGONEK). So far, this character is neither in the Pipeline nor in the Archive of Nonapproval Notices.

3 Evidence of use

3.1 Use in medieval manuscripts

The Old Polish nasal vowel letter occurs in a great number of Old Polish manuscripts. For example, in the [Holy Cross Sermons](#) (*Kazania świętokrzyskie*) from around 1300, it is written as an *o* with a straight line from the top of the letter through its bottom, see fig. 1. (In most facsimiles, the instances of the letter are emphasized by increased contrast.) This shape looks similar to some forms of Greek phi (φ; the third instance in fig. 1 shows the intended shape more clearly than the other two instances). However, in the [Sankt Florian Psalter](#) (*Psalterz floriański*) from around 1400, which is written in a beautiful textualis hand, the Old Polish nasal vowel letter always appears as an *o* with thin lines at the top and bottom, which do not extend into the interior of the *o*, see fig. 2. The same shape is also found in [Queen Sophia’s Bible](#) (*Biblia królowej Sofii*) from the middle of the 15th century, see fig. 3, where the lines are so thin that they are sometimes hardly visible, as well as, in a less calligraphic hand, in a 1407 manuscript of the famous hymn *Bogurodzica*, see fig. 4. In another, even more cursive, manuscript from the beginning of the 15th century, the [Gniezno Sermons](#) (*Kazania gnieźnieńskie*), see fig. 5, there sometimes seem to be two separate lines, which do not cross the *o* (as in the instances in the top right corner and in the bottom left corner of fig. 5), but sometimes they seem to be combined into one line, crossing the *o*, which in these cases resembles the Scandinavian letter ø, especially because in this cursive script all ‘vertical’ lines are considerably slanted to the right.

All these shapes are clearly allographs of a single grapheme, i.e. variant glyphs of the same character.

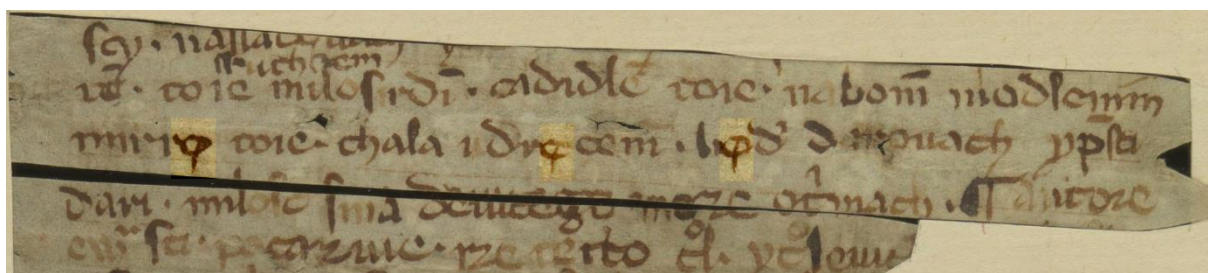


Fig. 1. Holy Cross Sermons (fol. 4r)

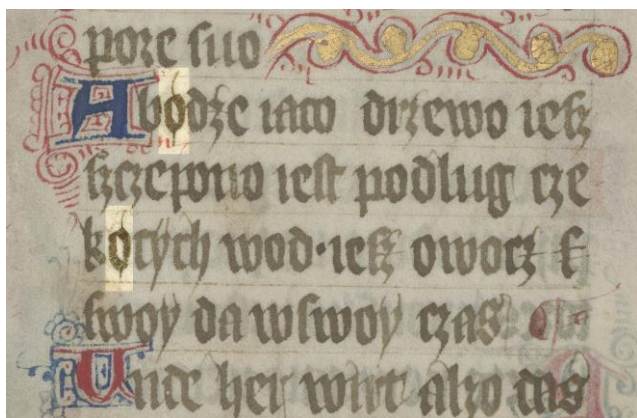


Fig. 2. Sankt Florian Psalter (fol. 3r)



Fig. 3. Queen Sophia's Bible (fol. 24v; from Bernacki 1930)

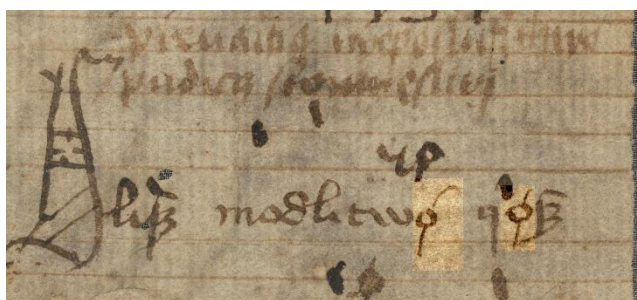


Fig. 4. Bogurodzica of 1407

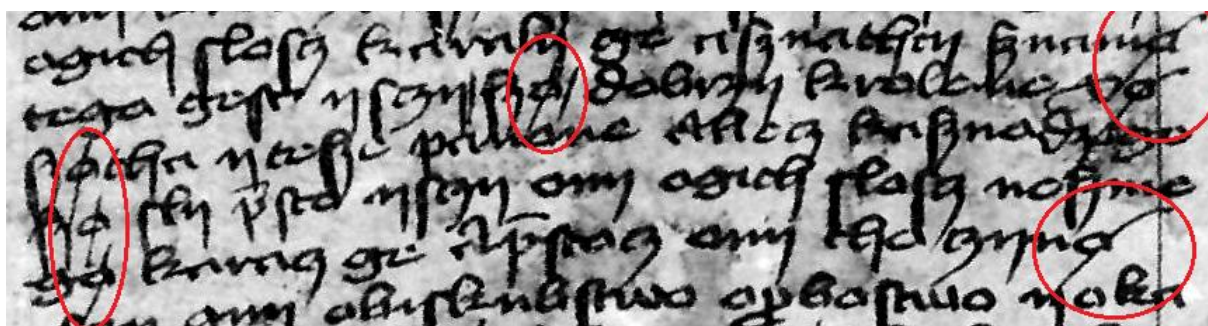


Fig. 5. The Gniezno Sermons (Siatkowska 1991: 278)

3.2 Use in modern scholarly texts

In the normative work *Principles of editing Old Polish texts* (*Zasady wydawania tekstów staropolskich*, Górski et al. 1955: 28), an *o* with two vertical lines attached at the top and bottom (ø) was chosen and recommended as the “normalized” form of the Old Polish nasal vowel letter:

“We convey the different forms of the slashed *o* (ø ø ø ø ø) in the normalized form ø.”
 (“Różne postaci *o* przekreślonego (ø ø ø ø ø) sprowadzamy do znormalizowanej postaci ø.”)

This “normalized” form (in its non-italic form) can be seen in fig. 6 and 7 from the same book. In line with this recommendation, whenever modern editors have had access to a type foundry and have thus been able to have a special sort cast for the purpose, this has been the preferred shape, as fig. 8 (from 1965) and 9 (from 1984) show, although the previous practice of designing glyphs that more or less faithfully reproduce the specific shapes of the letter in the manuscripts can still be seen in older books, cf. fig. 10 (from 1950, but itself a reprint from 1930). Even before 1955, however, the most frequent form of the letter in scholarly editions was ø, as in fig. 11 (from 1883). The faithful representation of the variants of ø used in a specific manuscript can still be a legitimate aim, of course, but variant glyphs of the same character should be handled by fonts (e.g. by OpenType features), not by Unicode.

dyablu geft byla gego mocz othgø-
tha allecz geft ona themutho fvathu
byla dzana¹ Apʳzeʳstoczʳzø difza¹ ffythey
fvøcy angely themutho fkrolefftve
nebeskem vefzelø affzythkiim kref-

Fig. 6. Model for a scholarly edition (Górski et al. 1955: 114) of the Gniezno Sermons (a different excerpt from the one in fig. 5)

Slifz modlitwø yøʳz

Fig. 7. Model for a scholarly edition (Górski et al. 1955: 144) of the *Bogurodzica* (cf. fig. 4)

as bødø paʳzcz ywaʳze ſy-
ny. yuczyeʳzyl geft ge ochot-
nye yczycho knym mowyl
²² Jbidlyl geft Josef wegip-
czye ſewʳzitkø czelyadzyø

Fig. 8. Scholarly edition (Urbańczyk & Kyas 1965: 89) of Queen Sophia's Bible (cf. fig. 3)

(...) (k. dr) ſey · naʳʳla<douach y
.....>[teᵐ · toie {ʳkuthkem} mi-
łofirdim · cadidleᵐ toie · naboʳnim modlenim |
mirrø toie · chala udrøcenim · bødø darouach
ypʳeʳfti | dari · miloʳe ʳina deuicego moze otri-

Fig. 9. Scholarly anthology (Wydra & Rzepka 1984: 32); here: the Holy Cross Sermons (cf. fig. 1)

mødresc faly suøtego

Fig. 10. Scholarly anthology (Vrtel-Wierczyński 1950: 12); here: the Holy Cross Sermons (a different excerpt from the one in fig. 1; scan by Janusz S. Bień)

2. Ale w zacone boszem
bødze mislicz we dne y w nocy
3. A bødze iaco drzewo,
czekøcych wod, iesz owocz swø

Fig. 11. Scholarly edition (Nehring 1883: 2) of the Sankt Florian Psalter (cf. fig. 2)

3.3 Makeshift solutions due to technical constraints

As Bień (2020: 2) points out, the norm introduced by Górski et al. (1955) advances a shape of the character that (so far) cannot be represented in Unicode and is consequently not supported by modern computer fonts. Therefore, since about the 1980s, when typesetting in scholarly publishing started to be increasingly done by the authors themselves rather than professional typesetters, such technical problems have led to a variety of makeshift solutions even in very respectable publications. Thus, fig. 12 (from 1999) shows an alternative shape of the character with a long vertical line through the *o* (ϕ), which was probably chosen for technical reasons, just like the integral symbol instead of long *l*. Similarly, fig. 13 (from the typewriter era, 1991) shows an *o* with manually added slashes; fig. 14 and 15 (from 1993) exhibit the Greek letter phi (ϕ) and the Scandinavian letter ϕ , respectively; and in fig. 16 from a current Wikipedia article the Unicode character U+03D5 GREEK PHI SYMBOL (ϕ) is used. This variety of characters employed for the same function shows all the more clearly that a unique Unicode character for the Old Polish nasal vowel is desperately needed.

Ab ϕ dze iaco drzewo ie|z | |zচেপো
ie|t podlug cze-|k ϕ ych wod · ie|z owocz
| | | | |woy da w|woy czas|

Fig. 12. University textbook (Gehrmann et al. 1999: 27f.); here: the Sankt Florian Psalter (cf. fig. 2)

sznam ϕ tego gest, ysczy | sz ϕ | dobrzy
noue Allecz kasznodzege sz ϕ sly p̄sto ys
meg ϕ karacz ge Ap̄stocz¹ony tho czyn ϕ is
two¹³ y okaply¹⁴ pochebug ϕ ¹⁵ Ap̄stocz¹sv

Fig. 13. Manually slashed *o* in a scholarly anthology (Siatkowska 1991: 275); here: the Gniezno Sermons (cf. fig. 5)

Phonem	Graphem	Beispiele
/ɛ/	⟨ ϕ ⟩	ſ ϕ narodil (= się naro- dził),
/e/	⟨ ϕ ⟩	meſkaj ϕ ch (= mieszkając),

/ɛ/	⟨ ϕ ⟩	b ϕ dze (= będzie),
/e/	⟨ ϕ ⟩	m ϕ sz (= mąż),

Fig. 14 (left) and fig. 15 (right). Both phi and ϕ in one and the same linguistic text (Mazur 1993: 158, 160)

tho {cz ϕ to} ſlychake gdiſczyz ϕ kthoremu |
krolevy albo x ϕ z ϕ czu ſzin narodzy tedicz | v ϕ cz
poffzythkemv krolefftw poſly beſz ϕ |

Fig. 16. Phi symbol in the article “Kazania gnieźnieńskie” in the Polish Wikipedia (another excerpt not in fig. 5; the article was created in 2005, but the text excerpt was only added to the article in 2018 by user Witia)

4 Proposed characters and their properties

I therefore propose to encode a new Latin small letter ϕ together with its upper-case counterpart Φ in the block “Latin Extended-D”. I also suggest to add annotations about the Polish name of the letter and its glyph variation:

Letters for Old Polish

A7C0 Φ LATIN CAPITAL LETTER OLD POLISH O

A7C1 ϕ LATIN SMALL LETTER OLD POLISH O

= horned *o*

• some manuscripts have alternate glyphs

→ 00F8 ϕ latin small letter o with stroke

→ 03C6 ϕ greek small letter phi

→ 03D5 ϕ greek phi symbol

The alternative **name** “horned o” refers the letter’s Polish name *o rogata* ‘horned o’ commonly used among specialists (e.g. Bień 2020: 2). Consequently, it would also be possible to adopt LATIN CAPITAL/SMALL LETTER HORNED O or LATIN CAPITAL/SMALL LETTER OLD POLISH HORNED O as the official name, which would distinguish it more clearly from ordinary *o*, which is of course also used in Old Polish. In this case, however, it should be made clear by an annotation that this is distinct from 01A1 LATIN SMALL LETTER O WITH HORN (σ).

Since there are no words beginning with a nasal vowel in Old Polish, the **capital letter** does not seem necessary at first glance. However, it should be included for systematic reasons because in general Old Polish does have capital letters, as do the modern scholarly editions (cf. Górski et al. 1955: 28). The inclusion of the capital letter enables various styles of capitalization (including all-caps and having a capital Ō as the second letter of the first word of a paragraph starting with an ornamental initial) and makes it possible to start a sentence about the letter with this letter itself (as in the next-to-last paragraph of section 5 below). Moreover, capital Ą and ĕ have been included in Unicode for Modern Polish (as U+0104 and U+0118, respectively), although nasal vowels do not occur word-initially there either.

The characters ought to be added to a block of the Latin script in the **Basic Multilingual Plane** (BMP), so that editions of and scholarly papers about Old Polish texts, which otherwise exclusively use letters from the BMP, do not have to draw this single, very frequent character from a different plane.

As to **presentation**, since the shape ō with two vertical lines attached is the preferred form both in the scholarly editions (fig. 6, 7, 8, 9, and 11, cf. Górski et al. 1955: 28) and in the most calligraphic Old Polish manuscripts (fig. 2 and 3), this seems to be the most representative shape. However, fonts might also include other shapes, especially if they are designed to match a certain type of manuscript (cf. especially fig. 1, 5, and 10).

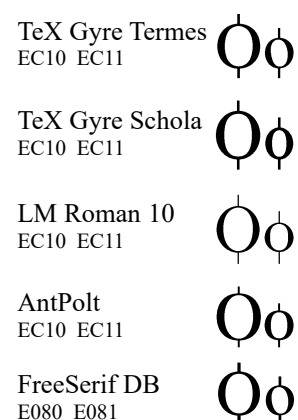
The **character properties** should be the same as for other Latin letters, with the two characters case-folding to each other:

```
A7C0;LATIN CAPITAL LETTER OLD POLISH O;Lu;0;L;;;;N;LATIN CAPITAL LETTER OLD POLISH O;;;A7C1;
A7C1;LATIN SMALL LETTER OLD POLISH O;Ll;0;L;;;;N;LATIN SMALL LETTER OLD POLISH O;;A7C0;;A7C0
```

In **collation**, ō ought to be sorted after ą (U+0105 LATIN SMALL LETTER A WITH OGONEK), so that e.g. in dictionaries words spelled with the unique Old Polish nasal vowel will be found where words with the first of the two modern Polish nasal vowel letters would be. [Depending on the concrete word, modern users might expect to find it under either ą or ĕ, but of course in collation we have to decide for one of the alternatives. The choice of ą is based not only on the fact that it happens to be first in the alphabet but also on the fact that on the basis of ō Stanisław Zaborowski in 1514 developed the shape ą, which (via ą in blackletter prints) ultimately resulted in ą, whereas the shape of ĕ (U+0119 LATIN SMALL LETTER E WITH OGONEK) was directly taken over from the Latin *e caudata* (cf. Bunčić 2012: 229, 235–236).]

If the proposal is approved, I will provide a **font** containing the two glyphs. Fonts already containing them include the [TeX Gyre](#) collection, the [Latin Modern](#) family, [Antykwa Półtawskiego](#), and a font I adapted to my own needs (“FreeSerif DB”; see some examples from serif typefaces on the right). Peter S. Baker [announced on 21 Dec 2020](#) that the next version of [JuniusX](#) would contain the letter as well.

When and if the character is an official part of the Unicode Standard, I will also integrate it into a [keyboard layout](#) for Windows that simplifies **input** of characters needed for writing older forms of Polish (and on which the key combination AltGr + Q is currently reserved for this important missing character).



5 Similar characters

A number of characters bear some resemblance to forms of the proposed characters:

00D8	Ø	LATIN CAPITAL LETTER O WITH STROKE
00F8	ø	LATIN SMALL LETTER O WITH STROKE
0278	ϕ	LATIN SMALL LETTER PHI
03C6	φ	GREEK SMALL LETTER PHI
03D5	ϕ	GREEK PHI SYMBOL
233D	⊘	APL FUNCTIONAL SYMBOL CIRCLE STILE
23C0	⊘	DENTISTRY SYMBOL LIGHT VERTICAL WITH CIRCLE
29B6	⓪	CIRCLED VERTICAL BAR
2C65	ǿ	LATIN SMALL LETTER A WITH STROKE

Another theoretical alternative would be a combination of *o* with U+20D2 COMBINING VERTICAL LONG LINE OVERLAY to form ϕ . However, U+20D2 is in the Unicode block “Combining diacritical marks *for symbols*”, so that font designers often do not provide for these combining marks to combine properly with *letters*. Moreover, the most representative glyph ϕ of the proposed character (cf. Górski et al. 1955: 28) cannot be formed with existing combining marks, nor would it be efficient to introduce a mark “combining short vertical strokes at top and bottom”, for which font designers would have to make sure that the lines merge with the outlines of the *o* when combined with it. (The existing diacritics U+030D COMBINING VERTICAL LINE ABOVE and U+0329 COMBINING VERTICAL LINE BELOW do *not* touch the letter by design: \dot{o} , ϕ).

While, as pointed out above, ϕ was the inspiration for the creation of the letter that turned out as \mathfrak{a} in the 16th century, it cannot be treated as a variant of \mathfrak{a} or of \mathfrak{a} , because both \mathfrak{a} and its forerunner \mathfrak{a} signify the Polish back nasal vowel / ɔ̃ / in *opposition to* the front nasal / ẽ /, which is represented as \mathfrak{e} . \mathfrak{O} , by contrast, signifies the Old Polish *intermediate* nasal / ã /, which was the precursor of both Modern Polish nasal vowels. This is why it is linguistically important to distinguish ϕ as a ‘neutral’ nasal vowel letter from the modern letters \mathfrak{a} and \mathfrak{e} and why scholarly editions have avoided using \mathfrak{a} (or \mathfrak{e}) to represent ϕ .

Although some of the characters above have already been used as makeshift solutions to represent the proposed character (see fig. 12–16), all these characters have a different semantics than ϕ , and none of these Unicode characters ought to be represented by the glyph ϕ in any font. That is, if the use of, say, \mathfrak{o} for the Polish nasal vowel were encouraged because its shape has been considered more or less acceptable by some scholars (see fig. 13 and 15), font designers might want to improve the visual representation of Old Polish by giving U+00F8 LATIN SMALL LETTER O WITH STROKE the shape ϕ sanctioned by Górski et al. (1955: 28), which would result in unacceptable forms like Danish København or Faroese Føroyar. Put differently, \mathfrak{o} happens to be one of the variant glyphs of ϕ , but it is only one of the variants, and none of the other variants of ϕ , including the most representative one, is a variant of U+00F8 LATIN SMALL LETTER O WITH STROKE. Thus, ϕ and \mathfrak{o} are two independent characters represented by two different sets of glyphs that happen to overlap in one place. Only by distinguishing the Old Polish nasal vowel *functionally* from \mathfrak{o} and other similar-looking characters can its variety of glyph shapes, both in the original manuscripts and in modern scholarly literature, be adequately represented in Unicode.

6 Sponsor

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**ISO/IEC JTC 1/SC 2/WG 2
PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS
FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646¹**

Please fill all the sections A, B and C below.

Please read Principles and Procedures Document (P & P) from <http://std.dkuug.dk/JTC1/SC2/WG2/docs/principles.html> for guidelines and details before filling this form.

Please ensure you are using the latest Form from <http://std.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html>.

See also <http://std.dkuug.dk/JTC1/SC2/WG2/docs/roadmaps.html> for latest Roadmaps.

A. Administrative

1. Title:	<i>Proposal to include the Old Polish nasal vowel letter</i>		
2. Requester's name:	<i>Daniel Bunčić</i>		
3. Requester type (Member body/Liaison/Individual contribution):	<i>individual contribution</i>		
4. Submission date:	<i>12 January 2021</i>		
5. Requester's reference (if applicable):			
6. Choose one of the following:			
This is a complete proposal:	<i>yes</i>		
(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:	<i>yes</i>		
Name of the existing block:	<i>Latin Extended-D</i>		
2. Number of characters in proposal:	<i>2</i>		
3. Proposed category (select one from below - see section 2.2 of P&P document):			
A-Contemporary	<input type="checkbox"/>	B.1-Specialized (small collection)	<input type="checkbox"/>
B.2-Specialized (large collection)	<input type="checkbox"/>	C-Major extinct	<input checked="" type="checkbox"/>
D-Attested extinct	<input type="checkbox"/>	E-Minor extinct	<input type="checkbox"/>
F-Archaic Hieroglyphic or Ideographic	<input type="checkbox"/>	G-Obscure or questionable usage symbols	<input type="checkbox"/>
4. Is a repertoire including character names provided?	<i>yes</i>		
a. If YES, are the names in accordance with the "character naming guidelines" in Annex L of P&P document?	<i>yes</i>		
b. Are the character shapes attached in a legible form suitable for review?	<i>yes</i>		
5. Fonts related:			
a. Who will provide the appropriate computerized font to the Project Editor of 10646 for publishing the standard?	<i>Daniel Bunčić</i>		
b. Identify the party granting a license for use of the font by the editors (include address, e-mail, ftp-site, etc.):	<i>Daniel Bunčić, daniel.buncic@uni-koeln.de</i>		
6. References:			
a. Are references (to other character sets, dictionaries, descriptive texts etc.) provided?	<i>yes</i>		
b. Are published examples of use (such as samples from newspapers, magazines, or other sources) of proposed characters attached?	<i>yes</i>		
7. 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)?	<i>yes</i>		
	<i>presentation, sorting</i>		

8. 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 Unicode Character Database (<http://www.unicode.org/reports/tr44/>) and associated Unicode Technical Reports for information needed for consideration by the Unicode Technical Committee for inclusion in the Unicode Standard.

¹ Form number: N4502-F (Original 1994-10-14; Revised 1995-01, 1995-04, 1996-04, 1996-08, 1999-03, 2001-05, 2001-09, 2003-11, 2005-01, 2005-09, 2005-10, 2007-03, 2008-05, 2009-11, 2011-03, 2012-01)

C. Technical - Justification

1. Has this proposal for addition of character(s) been submitted before?	<i>no</i>
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.)?	<i>yes</i>
If YES, with whom?	
Commission on the Computer-Supported Processing of Mediaeval Slavonic Manuscripts and Early Printed Books (Achim Rabus, Sebastian Kempgen), Medieval Unicode Font Initiative (Tarrin Jon Wills, Janusz Bień)	
If YES, available relevant documents:	
(see Proposal)	
3. Information on the user community for the proposed characters (for example: size, demographics, information technology use, or publishing use) is included?	<i>scholars of Old Polish</i>
Reference:	
<i>e.g. Górski et al. (1955) (see Proposal)</i>	
4. The context of use for the proposed characters (type of use; common or rare)	<i>common</i>
Reference:	
<i>(in the context of Old Polish texts; see Proposal)</i>	
5. Are the proposed characters in current use by the user community?	<i>yes</i>
If YES, where? Reference:	
<i>(among scholars of Old Polish; see Proposal)</i>	
6. After giving due considerations to the principles in the P&P document must the proposed characters be entirely in the BMP?	<i>yes</i>
If YES, is a rationale provided?	
<i>yes</i>	
If YES, reference:	
<i>(see Proposal, section 4)</i>	
7. Should the proposed characters be kept together in a contiguous range (rather than being scattered)?	<i>yes</i>
8. Can any of the proposed characters be considered a presentation form of an existing character or character sequence?	<i>no</i>
If YES, is a rationale for its inclusion provided?	
If YES, reference:	
9. Can any of the proposed characters be encoded using a composed character sequence of either existing characters or other proposed characters?	<i>no</i>
If YES, is a rationale for its inclusion provided?	
If YES, reference:	
10. Can any of the proposed character(s) be considered to be similar (in appearance or function) to, or could be confused with, an existing character?	<i>no/yes</i>
If YES, is a rationale for its inclusion provided?	
If YES, reference:	
<i>(see Proposal, section 5)</i>	
11. Does the proposal include use of combining characters and/or use of composite sequences?	<i>no</i>
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?	
If YES, reference:	
12. Does the proposal contain characters with any special properties such as control function or similar semantics?	<i>no</i>
If YES, describe in detail (include attachment if necessary)	
13. Does the proposal contain any Ideographic compatibility characters?	<i>no</i>
If YES, are the equivalent corresponding unified ideographic characters identified?	
If YES, reference:	