

its origins and a plea for its formal recognition

Fredrick R. Brennan <a href="m

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ととと

See with what large letters I am writing to you with my own hand! Galatians 6:11

Quick summary

If this proposal is accepted, the following characters will exist:

- U+170D 🗀 TAGALOG LETTER RA
- U+171F $oldsymbol{\beta}$ TAGALOG LETTER ARCHAIC RA

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Introduction

Baybayin is the local name for what the Unicode Standard calls the Tagalog block of the Basic Multilingual Plane (BMP). Proposed in 1998 by Michael Everson, four scripts were encoded at once: Tagalog, Hanunó'o, Buhid and Tagbanwa.

At the time of encoding, only ancient documents were considered for the Tagalog script. As a result, the Tagalog 'ra' was not encoded.

However, as Hanunó'o and Buhid included a 'ra', and because all four scripts were encoded due to the same proposal, a spot was, in a splendid twist of fate, left open for a 'ra' in Tagalog as well; although it was seemingly never intended for the use the community gave it.

This spot, U+170D, has become a *de facto* standard among *baybayin* writers in the Philippines and the Filipino diaspora. Several modern fonts, including the one that appears on Philippine currency to write the word *Pilipino*, use U+170D as a 'ra'. (See $\S 0.13$) Software, if it can output \leftrightarrows , uses U+170D. (See $\S 0.14$) Documents online, if they include \leftrightarrows , most often have it encoded as U+170D.

This proposal is at once an extensive study on the *baybayin* 'ra' and a plea for the Unicode consortium to recognize the *de facto* standard of the user community, and to legitimize U+170D as 'ra', because some large tech companies, such as Google, patron of the Noto fonts, refuse to encode characters that the Unicode Standard does not recognize, hindering the development of *baybayin* and the community in using its script.

0.1 Linguistic details

The letter 'da', \bowtie , in Old Tagalog was known as *dara*. In his thesis,¹ Joseph G. Lapallargas writes: "Contact with the Spanish and English and the consequent numerous borrowings have brought about some changes in the phonetic and phonemic structure of Tagalog. [...] If formerly there were no prevocalic clusters in Tagalog, now they are of frequent occurrence. If [d] and [r] were submembers of a single phoneme, now the two are separate phonemes." \bowtie , 'ra', is required to write modern Tagalog or Filipino in the Tagalog (*baybayin*)

¹A study of the ancient Philippine syllabary with particular attention to its Tagalog version, Joseph G. Lapallargas, Ateneo de Manila University, 1974, Z 115.5 T2 E76

Introduction

script without introducing ambiguity into the text. This became apparent very early in the revival of the Tagalog script in the Philppines; the first known appearance of the Tagalog 'ra' (Zambales form) appears in print in 1922.

Some contemporary users of the script are okay with the ambiguity introduced by the lack of a \backsim using \backsim for Tagalog words and \backsim for Spanish words. However, in my examination of the evidence, the majority of the contemporary *baybayin* user community prefers to use \backsim , and even if some users find it distasteful and would prefer only to use the original seventeen *baybayin* letters, they are free to do so. After all, I am not trying to prescribe the use of \backsim to anyone, but merely to describe that \backsim is being used frequently and therefore needs a codepoint.

Unicode considerations

0.2 Characters

I propose two characters: one character to cover all the modern variants discussed in this paper, to be encoded at U+170D and named TAGALOG LETTER RA, and another, to be encoded at U+171F, TAGALOG LETTER ARCHAIC RA, to cover the archaic "Zambales" form of the letter.

The Zambales form of the \leftrightarrows , \mathcal{J} , is only found in historical texts and *could* be encoded as U+170D and selected in a font by using the OpenType feature hist, Historical Forms, as I've done in the OpenBaybayin font that I made to typeset this document. In *baybayin* text, \mathcal{J} has exactly the same meaning as \leftrightarrows , and I found no texts where both were in use except the one I'm writing. I received some feedback from the Script Ad Hoc committee that "It is graphically quite different from the RA you propose, though it has the same sound, so it should also be encoded."

Therefore, out of respect to Script Ad Hoc, I also propose the Zambales \mathcal{S} be encoded at U+171F and receive name TAGALOG LETTER ARCHAIC RA. In my discussions with users, it is of utmost importance to them that TAGALOG LETTER RA (\leftrightarrows) be encoded, but many would also welcome TAGALOG LETTER ARCHAIC RA (\mathcal{S}) to be able to transcribe historical texts in which it appears. The situation can be seen as analogous to that of LATIN SMALL LETTER LONG S (f) and LATIN SMALL LETTER S (s). Ultimately the decision is up to the Consortium.

The variants of the marked \simeq form of the letter \simeq are mere stylistic choices with equivalent meaning and can all be encoded in the same letter in the same way that Q, Q, Q, and \mathscr{Q} can all be represented by LATIN CAPITAL LETTER Q, U+0051, with the style chosen being based on font. Indeed, as *baybayin* fonts are primarily made based on handwriting, it is unsurprising that there are so many variants; in the samples I observed, other letters had many variants as well; for example, at times $\mathfrak A$ would have a straight center line instead of the standard squiggly one in the $\mathfrak A$ used in this sentence.

I am aware of the following stylistic variants of the modern ς :

- 1. Generic \subseteq (§0.14.3; §0.8.4)
- 2. Generic, longer stroke \rightleftharpoons (§0.9.1)

```
3. Rizaleo — \simeq (§0.7.2)
```

- 4. Bikol \simeq (§0.7.1)
- 5. Applied to a cursive $\backsimeq \backsimeq (\S0.10.1)$
- 6. Double cursive loop \backsimeq (§0.8.3)

This is not meant to be an exhaustive listing, there are definitely variants beyond those that I have listed; rather it is meant to be a list of the major stylistic variants I've seen in reviewing works written in the *baybayin* script.

Some of these, especially №6, are caused by attempting to write the *baybayin* script in a cursive form on pen and paper, which is not how it was traditionally written.

0.3 A note on *⅓*'s name

I had originally intended to propose that \mathcal{B} recieve the name TAGALOG LETTER ZAMBALES RA; as can be seen in the sources, whenever \mathcal{B} is used, that's the name it's given, see §0.6. However, one of the subject matter experts who was sent this proposal, Mr. Kristian Kabuay, commented that he did not like that name as it puts too much emphasis on Spanish scholarship instead of the indigenous qualities of the Tagalog script. Therefore, as has been done for other scripts, I decided to propose that the name be TAGALOG LETTER ARCHAIC RA instead. This is a more neutral, and still correct, designation; "Zambales" can be in the notes. I prefer to defer to Mr. Kabuay, who has spent much of his life on scholarship and promotion of pre-Hispanic Philippine scripts, and recommend that the Consortium likewise defer.

0.4 Properties

The proposed General Category properties for the proposed characters are:

```
170D; TAGALOG LETTER RA; Lo; O; L;;;; N;;;; 171F; TAGALOG LETTER ARCHAIC RA; Lo; O; L;;;;; N;;;;
```

0.4.1 Character remarks

So end users and font designers better understand this glyph and its use, I propose that TAGALOG LETTER RA receive the following character note in NamesList.txt:

- modern adaptation, not used to write Old Tagalog
- $\rightarrow \mathcal{J}$ U+171F TAGALOG LETTER ARCHAIC RA

I propose that TAGALOG LETTER ARCHAIC RA receive the following character note in NamesList.txt:

- modern adaptation, not used to write Old Tagalog
- historical (19th–20th century) form of TAGALOG LETTER RA
- also known as the "Zambales" ra
- → \(\sqrt{U} + 170D TAGALOG LETTER RA

0.5 Collation

In the original proposal, Everson writes on pages three to four:

UTR#3 states: "The alphabetical order of Tagalog is known from Tagbanwa speakers and is described in folktales. This order is used in the accompanying charts. The two vowel signs are added at the end of the alphabet." The names list in UTR#3, however, is (except for the vowel signs) given in Latin alphabetical order (a, i, u, ba, da, ga, ha, ka, la, ma, na, nga, pa, sa, ta, wa, ya, -i, -u). Daniels & Bright give another ordering, "based on the 16th-century Tagalog sequence" (a, i, u, ha, pa, ka, sa, la, ra, ta, na, ba, ma, ga, da, ya, nga, wa). This proposal gives the characters in the traditional Brahmic order (a, i, u, ka, ga, nga, ta, da, na, pa, ba, ma, ya, ra, la, wa, sa, ha), which is followed in many sources, including Santos 1994 and 1995.

This having been the standard for more than twenty years, I see no reason to change it; this Brahmic Unicode order is used by software such as the JavaScript input method Lexilogos ($\S 0.14.2$) and is the order that Norman de los Santos ($\S 0.13.3$) presents his fonts in. While some writers, such as Lloyd Zapantas ($\S 0.13.4$), use a Spanish-influenced collation,² there is no reason in my opinion to change the standard collation to match.

Therefore, I request for the collation to be as follows, matching Hanunó'o and Buhid:

That is to say, \checkmark comes before \backsim comes before \backsim . Assuming \backsim is encoded, β should come after it, so:

$$rac{1}{2} > rac{1}{2} > rac{1}{2} > rac{1}{2}$$

²That is to say, in order: ゼロエニズスーティのショントロイン (placement of ゼエ3 may vary)

History

0.6 The Zambales 'ra', ⅓

The first form of the *baybayin* 'ra' is the Zambales 'ra'. Its main source is the 1895 book *Estudio de los antiguos alfabetos Filipinos* by Cipriano Marcilla y Martin where it appears on page 23.

23

Núm. 7.

SUfabeto de Zambales por un P. Sigustino manuscrito
de 1601.

14 wy cwy 3

a y y ou

Ba ca da pa ga ha la

T B B C ~ >5

On page 34, its origin is explained thus (emphasis mine):

sa

ra

En la pág 23. y con el núm. 7 damos el alfabeto de Zambales escrito por un Agustino. En el archivo de S. Agustin hemos registrado este precioso documento del que por falta de medios no hemos podido sacar unfacsimile de las firmas que contiene. **Según la portada se escribió el 1601** y se lee en la última página en letra clara y escrita con tinta encarnada «Este arte hallé tirado en el pueblo de Bolinao, quando estuve allí el año de 1780. Fr. Agustin Maria.»

Translated quite literally:

ma

On page 23, in figure №7, we reproduce the Zambales alphabet as written by an Agustinian [monk]. In the archive of San Agustin we've inspected to this precious document, which through lack of means we were unable to make a facsimile of its signatures. According to the cover page, it was written in 1601 by an Agustinian [monk], and on the last page one can read in letters written clearly in red ink: "I found this art in the town of Bolinao when I was there in the year 1780. Signed Fr. Agustin Maria."

In the latter years of the Spanish Empire's presence in the Philippines, interest in restoring *baybayin*, which had been surpressed by the Spanish and now lay only in history books, returned. Indeed, some revolutionary flags contained the *baybayin* letter 'ka', \backsim , which stood for both *kalayaan* (freedom) and *katipunan* (the revolutionaries).³

In 1922, Ignacio Borbon Villamor took an interest in the restoration of the *baybayin* script, but quickly realized that the Tagalog language had changed too much due to Spanish influence, in his book, *La antigua escritura filipina*, he recommends using the Zambales 'ra':

Pero en el alfabeto de Zambales, tomado, según el P. Marcilla, de un manuscrito de 1601, encontramos la letra R así \mathcal{J} , de modo que, para escribir correctamente "América", pondríamos así:

Translated into English:

In the alphabet of Zambales, taken, according to P. Marcilla, from a 1601 manuscript, we find the letter R written as \mathcal{B} , so that, if we wish to correctly write "America", we would write it as $\forall \dot{\mathcal{V}} \dot{\mathcal{B}} = \mathcal{L}$.

The community of *baybayin*/Tagalog script revivalists happily received this advice mid-century—most documents of the era which include 'ra' use the Zambales 'ra'. Many of these publications are hard to come by as they had limited production runs and before the internet were costly to produce, but I was able to find some in the Ateneo de Manila University's Rizal Library:

³Alvarez, S.V., 1992, Recalling the Revolution, Madison: Center for Southeast Asia Studies, University of Wisconsin-Madison, ISBN 1-881261-05-0, p. 105

0.6.1 Mariano Dario Canseco's *Palatitikan kayumanggi* (1966)

This book has sections in the regular Latin Tagalog script, as well as lengthy passages entirely in *baybayin*, proto-memes, a dictionary and essays about *baybayin*.

In the early part of the book, we can see the author refer to his chosen \subseteq as a "Zambales" \subseteq , ⁴ \mathcal{B} , in the section Mga katinig D at R sa ating palatitikan (The consonants D and R in our [native] orthography):



Ang katinig na *Ra* ay hango sa isang matandang kasulatan ng taga Sambales at natuklasan noong 1601.

Translated:

The consonant *Ra* is adapted from an old manuscript from Zambales created in 1601.

⁴He uses the word *Sambales*, which is common, depending on the author, as Tagalog does not normally differentiate [s] and [z], and no native Tagalog words contain [z]. So, after the departure of the Spanish, many authors have chosen to "tagalize" place names; whether or not this is done entirely depends on the author.

History

Regarding the \mathcal{B} itself, it can be seen clearly in the words \mathcal{B} $\dot{\mathcal{B}}$ $\dot{\mathcal{F}}$ —sarili, $\dot{\mathcal{F}}$ $\dot{\mathcal{B}}$ $\dot{\mathcal{F}}$ —araw.

PAKATITIKANG KAYUMANGGI

(ang tunay na sulat ng lahi)

BUNGAD: ANG MATANDANG BAYBAYIN のかに ト マステエト のかの少う TALATINIGANG PILIPINO-INGLES お下まする 37 ト デデア ヴァデの

na may salin sa titik baybayin ? Vy BFT B KKK QYQYT

PANUTUHAN NG PAGSULAT SA F? 5 5 7 2 F7 3 4 E B

SARILING MGA TITIK
VI AT WOO SSI

SULAT SARILI SA BISAYA AT IBANG WIKA BIFF BBF BBF E MOF ET

MAKALUMA AT MAKABAGO V \mathcal{F} \mathcal{V} \mathcal{E} \mathcal{V} \mathcal{F} \mathcal{O} \mathcal{N}

Kurukuro ng dalawang dalubwika sa pagkakasulat ng LAFS 2 2762 5 5082 13 272277 2

History

Below are images of dictionary entries in the book that show \mathcal{S}

barnis	QB TOB	varnis
baro	QA	clothes, dress
basa	QB	wet
basagin	अग्रं श	to break
bata	Q5	child
batak	OSI	pul1
batas	OSB	law
bayaran	ayst	to pay
baybay	QYQY	to spell
baywang	Q56>	waist

In the edition in the archives of the Rizal Library, the following handwritten note can be found which uses β :

5357 2 WY UIT B VIST VVE JB958B. · Hunyo 2,1966

〜魚に31 シャン シェニ ロッチェン シャニ ・ 3000 にい Hunyo 2, 1966 Handog ng may akda sa makatang Amado Hernandez. Hunyo 2, 1966 This is a gift from the author to the poet Amado Hernandez. June 2, 1966

0.6.2 Panitik Silangan, September 1963



分 can be seen in many words in this short-lived newsletter, for example, ☆ は からい は and い ままっ sariling.

0.7.1 The Bikol 'ra', ≿

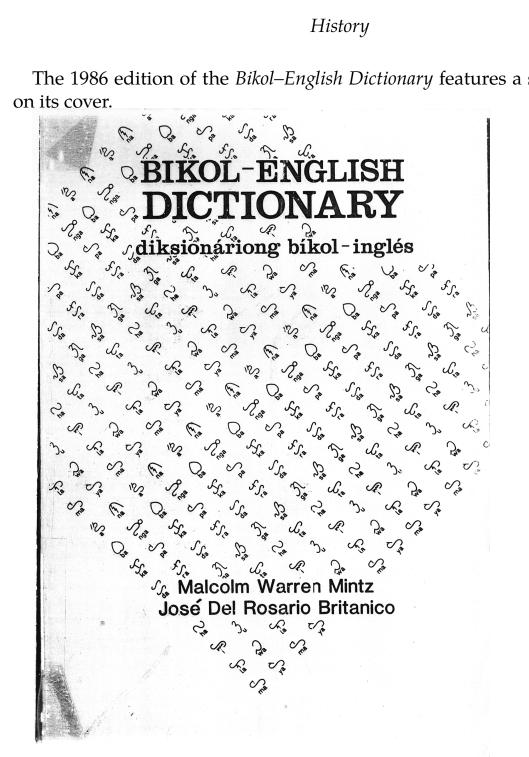
Bikol-English Dictionary, 1986

Besides the Zambales 'ra', there is another 'ra' with a long pedigree, the so-called "Bikol" 'ra'. This form of 'ra' is so similar to the modern form that it could be called a minor variant form; in the same way the tail of the letter Q moves about depending on the style of the writer, the marked form of the \bowtie moves about, finding itself sometimes as \bowtie and other times \backsim , but for completeness I include it anyway.

Despite being called by the word Bikol, which is an area of Luzon, the original chart which shows this form of the *baybayin* 'ra' doesn't mention Bikol at all, (although it should be noted that Camarines is in the Bicol region), and is found in an old Tagalog–English dictionary held by the Madrid National Library. It's marked *Caracteres antiguos con los que escribían estos naturales del Tagalog y Camarines*, "Ancient characters with which these natives of the Tagalogs and Camarines used to write". The version shown below is as reprinted in the 2004 edition of Malcolm Warren Mintz's *Bikol–English Dictionary*.

⁵The full text of the work can be seen at http://bdh.bne.es/bnesearch/detalle/bdh0000044798

on its cover.



Computers and the internet brought the *baybayin* community closer together, making it much easier and cheaper to print *baybayin* materials.

0.7.2 *Rizaleo* 'ra'—⊭

Marius V. Diaz's Aklat Sanayan ng Abakadang Rizaleo, 1994

The first truly modern 'ra' appears in the book *Aklat Sanayan ng Abakadang Rizaleo* (Exercise Book for the Rizal Alphabet) by Marius V. Diaz. This work details a slightly stylized *baybayin* alphabet and shows off several Type 1 computer fonts⁶ made by Diaz to write (his slightly modified version of) *baybayin*.

U ⁿ U _n U	P	Ľ
C, C C	R	K
ピッと	S	V 3

⁶According to the book's text, all the font styles shown in the book were available as Type 1 fonts in 1994, but due to the age of the work, the obsolescence of the format, and the existence of better Unicode fonts, the fonts no longer seem to be distributed online.

All the styles in the book are named after José Rizal, so the \leftrightarrows can be clearly seen in all of them:⁷

CALN	Rizal	ahi
Ċ ST 0	Rizala	ya
ĊSTŪ	MIM	Rizalyanihan
EÜBÜ	Riz	aleo
gğî i	Rizau	lo
5700	Riza	nayan
ድሤቭኝ	ক Riz	inauna
<u> </u>	T Rizt	aal

⁷Except in the words *Rizaulo* and *Rizanayan*, which are misprinted—the beginning \doteq is missing.

Diaz was also a calligrapher, and included this calligraphy in the book. It is almost the same as typical modern *baybayin*, except Diaz marks the vowel 'a' with a line above, which to my knowledge no other *baybayin* does.



The calligraphy, a quote by José Rizal, reads:

♥మా ాయ్డ్ గ్రేహ్మ్ 13 ம் இమ్మే కేయ్ ఇండ్ ఆమ్డ్లాడ్లు 13 மார் అండ్ అమ్డ్లాడ్లు 13 மார் அரி Ang hindi lumingon sa pinanggalingan ay hindi makakarating sa patutunguhan.

He who does not look back to where he came from will never reach his destination.

Further evidence

The modern Baybayin 'ra', \subseteq , is disseminated widely as of this writing in 2019. I will outline multiple lines of evidence for its existence and usage by the contemporary community as an argument for its encoding:

- Printed materials;
- News articles;
- Tattoos;
- Signs;
- Art;
- Fonts;
- Software.

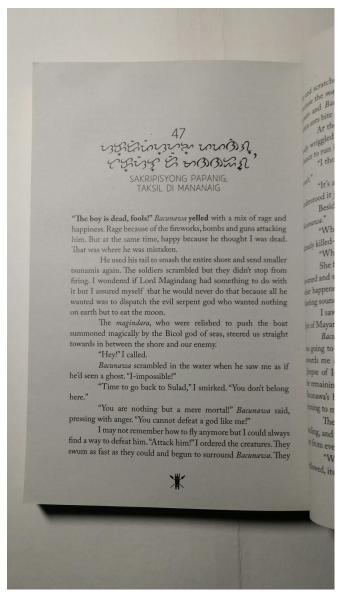
0.8 Printed materials

As the modern 'ra' is contemporary to the internet and the spread of Facebook in the Philippines, there is not as much printed material as may be expected. However, with the gracious help of the community, I was able to find a number of examples which will hopefully satisfy the Consortium.

0.8.1 Jeremiah Cordial's *The Seventh Moon*, 2018

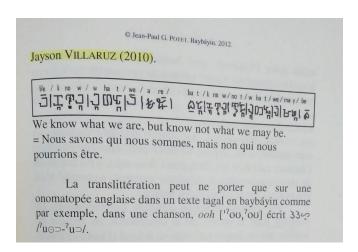
This fantasy novel, which has been given wide distribution in the Philippines by National Bookstore,⁸ has *baybayin* sayings on the heading of every chapter. In many of them, the modern \rightleftharpoons can be clearly seen. For example, chapter No47 has this saying attached:

⁸https://www.nationalbookstore.com/the-seventh-moon-tp, it is available nationwide in the largest Philippine bookseller for ₱250.



0.8.2 Jean-Paul G. Potet's *Baybáyin: L'Alphabet Syllabique des Tagals*, 2012 (French edition)

The modern \subseteq can be found on page 181 in a rather unusual example. It is an English sentence written semi-phonetically in *baybayin*. \subseteq can be seen in the word $\checkmark \stackrel{.}{\hookrightarrow}$, *are*.



0.8.3 *Kalem (Anak Bathala)*, №1, 2013, BHM Publishing, graphic novel

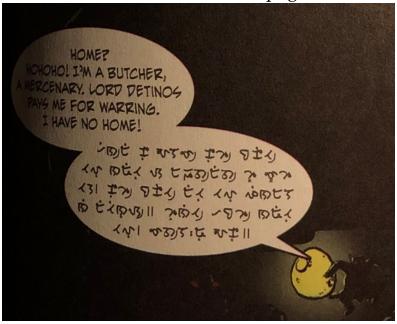
The modern

can be found all throughout this book; notably on the cover to transcribe the name of two of its authors, Bernard Morillo and Edsel Africa.



Transcribed: ゼニョッグ★ シンデエ

On occasion when the characters in the book speak, they also speak in *bay-bayin* which contains the \subseteq . As an example of *baybayin* use, and \subseteq use, among the characters, see this bubble on page 19:



 ₹₩

Tagalog: Hindi ko alam kung bakit tayo narito sa daigdig ng mga tao, kung bakit dito tayo pinadala ni Detinos. Ngunit habang narito tayo, maglalaro ako.

English: I don't know why we're here on this Earth of the humans, or why Detinos brought us here. But as long as we're here, I'll play around.

0.8.4 Kristian Kabuay's *Surat Magazine*, №1, December 2018

The publication of this magazine was funded by a Kickstarter⁹ and was billed as "The first of it's kind in over 50 years."

The magazine is multilingual, however there is a long section written in the Tagalog *baybayin* script which includes our friend, the letter \subseteq , in numerous instances. I will transcribe a line found on page 58 just as an example.

жӊ ҡ ӧӷӣҡҡѠ ॥ ӄѠ ҡ դЍҡ८ҁӷ ҡ ӆӊѠ ѡ ⋍ҥኌ ӆҽႶ ӆҧ ӧӷӌҡ іџ╻ Ѧӧ҇ӷѽ ҡҧҳҽѠ । ӹӊҫ ӷӆ ӆѠ ӷҩѻ ѡѡ ѡҳ҄८ ӆѡ дѕѠ҅ҽӹ ҧ҇ҳҪ≃Ѡ ӆѠ

Transcription: இது இட்டி \mathbb{Z} $\mathbb{Z$

Tagalog: Nang nakita ang magandang pangitain at mabuting kapalaran, ngumiti siya at sinabi sa amin na isang araw at babalik ulit kami sa Biskalan. At sa pagkatapos ...

English: When she saw a beautiful vision and a good fortune, she smiled and said to us that one day we would again return to Biskalan. After that ...

0.8.5 Wikipedia

While perhaps not couted as printed material (despite routinely being printed, ¹⁰ and distributed on CD¹¹; there's even a convenient "book creator" which you

⁹https://www.kickstarter.com/projects/baybayin/surat-1st-magazine-using-an-endangered-script-in-5/posts/2342594—Kabuay rose \$3,136 and wrote of the magazine: The inaugural Surat (to write) Magazine will be mainly written using indigenous writing systems in the Philippines in multiple languages covering topics from culture, art, poetry, food, fashion, travel, etc.

¹⁰https://en.wikipedia.org/wiki/Print_Wikipedia

¹¹https://meta.wikimedia.org/wiki/Wikipedia_on_CD/DVD

can either print at home or have printed professionally 12), the Wikipedia article about *baybayin*, revision 903489992, uses \subseteq in nine places; 13 first:

It is also used in Philippine passports, specifically the latest e-passport edition issued 11 August 2009 onwards. The odd pages of pages 3—43 have "シュエウロ シャウロ シャウロ シャウロ シャウロ ("Ang katuwiran ay nagpapadakila sa isang bayan"/"Righteousness exalts a nation") in reference to Proverbs 14:34.

Then, racktarrow appears four times in Wikipedia's rendition of the Lord's Prayer, in the words $\checkmark \checkmark \lor \dot{\neg} \dot{\neg}$, $\checkmark \dot{\neg}$, $\checkmark \dot{\neg}$, and $\checkmark \checkmark \dot{\neg} \dot{\neg}$, and three times in the *Universal Declaration of Human Rights*, in the words $\checkmark \dot{\neg} \dot{\neg}$, $\checkmark \dot{\neg} \dot{\neg}$, and $\checkmark \dot{\neg} \dot{\neg} \dot{\neg}$.

And the final appearance of \subseteq :

Although it violates the Unicode Standard, U+170D is becoming the de facto standard for representing the character Ra (\leftrightarrows), due to its use as such in commonly available Baybayin fonts.

0.9 News articles

Several large news publications in the Philippines have produced articles which include the letter \backsim .

0.9.1 Reniel Pamplona's *Modernizing Baybayin*, Rappler, 2018



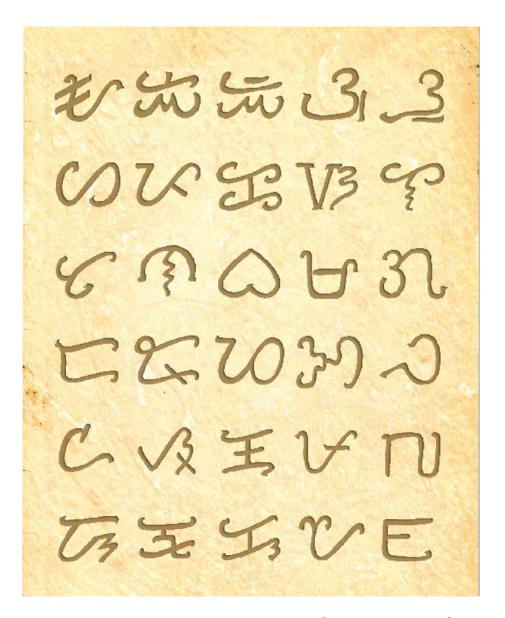
The da and ra are [sic] both being represented with a single Baybayin script. Because of this, the symbol (/) is being suggested to be put below [sic] the Baybayin script 'da', forming an 'x', to create the Baybayin 'ra'.

While the text of the quote is inexact, the image in the article does have the correct modern $baybayin \subseteq$.

¹²https://en.wikipedia.org/wiki/Help:Books#Printed_books_from_PediaPress

¹³According to WikiBlame, \rightleftharpoons has existed in at least one place in the *baybayin* Wikipedia page since 2006.

0.9.2 Jayson R. Mangalus' *Decoding Baybayin*, Manila Bulletin, 2017



The *baybayin* \subseteq can be seen in the 2nd column and 4th row. The chart is a heavily modified *baybayin*, one of Jayson Villaruz's versions of the script,¹⁴ however being in a national newspaper lends more proof to the existence of \subseteq even among those stretching the script far beyond this modest proposal to encode only \subseteq .

The article's text, a quick *baybayin* lesson, refers only to the rules for the traditional 17-character script, known in the community as *B17*, for *baybayin*–17;¹⁵ thus it states "Characters "r" and "d" are interchangeable."

¹⁴Jayson Villaruz's self-styled *Modern Baybayin* is to my knowledge the version of the script with the most glyphs. Having reviewed the evidence, it does not seem to have caught on as universally as the more modest proposal in this paper, just to encode □.

¹⁵Often used to differentiate it from *B18*, or the original 17 *baybayin titik* (letters) plus \backsim . For examples of the community's use of these terms, see here or here.

0.10 Tattoos

Plenty of tattoos including the \subseteq can be easily found on the web; how tragic it is indeed that in order to tell someone in an electronic format the message that was so dear to their heart they had to ink it on their body breaks the Unicode Standard by using the unassigned codepoint U+170D.

Three examples are shown below, others may be seen at the website of the "Ang Muling Paglaganap ng Baybayin script ng Pilipinas" (Reform of the Philippines' baybayin script) at https://baybayinipalaganap.blogspot.com/2015/06/baybayin-script-sa-mga-tattoo.html and across Facebook and Twitter.

0.10.1 Maharlika, ৮∕~ç; т́x, October 2018



0.10.2 *Randy*, 🖙 ඉ 🚎 ự [*sic*], May 2018



0.10.3 *de la Torre*, ☆ℱ ƴ ☆, March 2016

Per https://twitter.com/ariannarenae/status/708102179672825858



0.11 Signs

0.11.1 Sinagbayan protest, June 12 2019

One interesting contemporary use of *baybayin* is in these anti-capitalist protest signs painted by *Sinagbayan*, "*Sining na Naglilingkod sa Bayan*" (Art in Service of the Community). The \subseteq can be seen in the word $Q \subseteq \mathcal{I}$, meaning bureaucrat. 16

Source: https://www.facebook.com/sinagbayan.org

¹⁶The inclusion of this sign should not be interpreted as advertisement, support or allegiance of the author to the mentioned group.



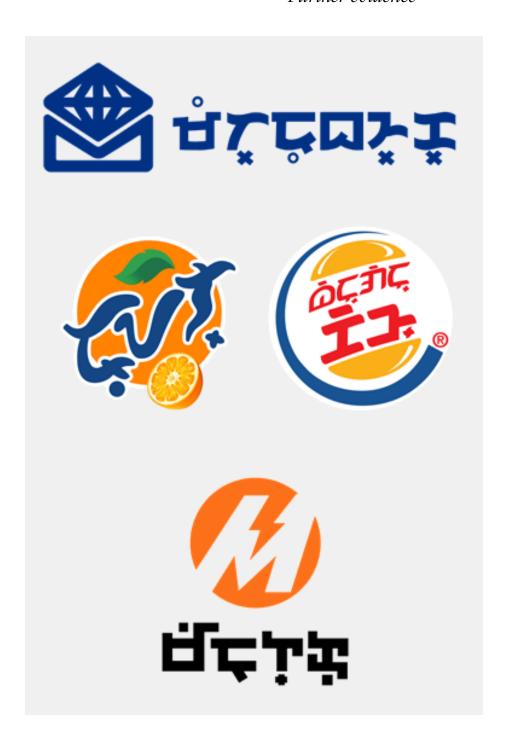
0.12 Art

0.12.1 Lloyd Zapanta, Baybayin logos, 2015-2017

In this art collection, Zapanta asks the question, "What if the Philippines is using its own native alphasyllabary...today?" through corporate branding, resulting in some really quite stunning logos, and plenty of

to go around.

For our purposes, I selected only the logos containing ⊆, the rest may be seen at: https://www.behance.net/lloydzapanta



From top: がぐたのジェ (Metrobank), たいţ (Royal), ロマネテ エッ (Burger King), がには (Meralco)

0.12.2 Mural of Archie Oclos near Whang Od's Village, Kalinga



Per https://baybayinipalaganap.blogspot.com/2019/03/baybayin-sa-sining.html>, the photo above was taken by Mario Alvaro Limos.

0.13 Fonts

Since the encoding of the Tagalog block, but especially after, there have been a multitude of *baybayin* fonts online, with the most popular ones within the community being made, in historical order, by Paul Morrow and Norman de los Santos. All of the most popular fonts put a glyph in U+170D—against the standard, in an unencoded codepoint—usually \leftrightarrows , but in some fonts meant to be "traditional", \leftrightarrows .

Large corporations have also contributed *baybayin* fonts, such as Google's (Monotype's) Noto Sans Tagalog, however due to its missing \subseteq this font is not normally used to create *baybayin* publications in modern Tagalog.

0.13.1 Paul Morrow's Doctrina Christiana

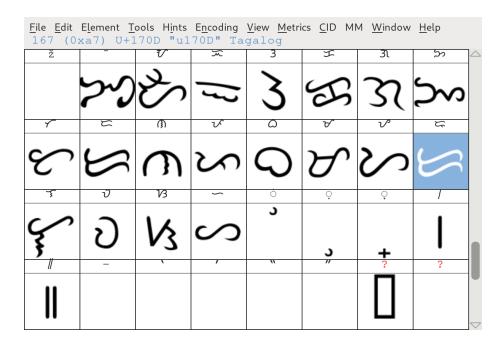
This font is meant to reproduce digitally the style in the first printed¹⁷ baybayin work, the *Doctrina Christiana* of 1593.

Despite—or, perhaps, because of—this pedigree, this font is quite popular for writing *baybayin*; the *baybayin* script which appears on Philippine currency and the Philippine passport uses this font.¹⁸

¹⁷Prior to the Spanish conquest, Philippine scripts were not written on paper, but rather leaves and/or bamboo depending on regional traditions; the Mangyan script in large part is still written the traditional way.

¹⁸Kabuay, Kristian, *The man behind the Baybayin on the new Peso bills*, December 16 2010, "The Baybayin community is quite excited with the new Peso bills just announced. [...] The moment I saw it, I knew it was one of Paul

This font puts a \subseteq at U+170D; the revision of the font shown below is the 2003 revision.

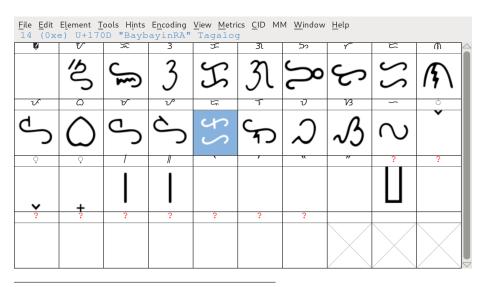


0.13.2 Paul Morrow's Bikol Mintz

This font is meant to reproduce the style on the cover of the *Bikol–English Dictionary*, see §0.7.1.

Although the pre-Hispanic cultures of the people of Bikol and Camarines were similar to those of the Tagalogs of Maynila, they were not the same, and their alphabets also differed. However, as can be seen, almost all of the glyphs are mutually intelligible, and this font is used to write text in the Tagalog language as well as in the Bikol language.

The Bikol 'ra' ($\S 0.7.1$) is placed at U+170D.



Morrow's fonts."

0.13.3 Norman de los Santos' fonts

De los Santos, who also goes by the screen name nordenx, is an internationally recognized expert on the *baybayin* script and author of, by my count, thirty-one different Unicode *baybayin* font styles, mostly created between 2006 and 2011, and all of which include the letter \backsim encoded at U+170D.

His many fonts are summarized in the following table.

No	Font name	∿Å♡ ~≃
1	Baybayin_Ale.ttf	ᡐᢤᠻᠯᢩ᠆ᡃᢗ
2	Baybayin_Alp.ttf	ΛÅ ą Ϋ <i>C</i>
3	Baybayin_Ber.ttf	ふみりった
4	Baybayin_Bloc.ttf	ながひびな
5	Baybayin_Br1.ttf	ひなむーに
6	Baybayin_Clu.ttf	ひゃっぴゃ
7	Baybayin_Div.ttf	ฉ<๋ฮ๋ฐบ
8	Baybayin_Dmo.ttf	かがつーで
9	Baybayin_Doc.ttf	ఇం ధ్రా
10	${ t Baybayin_Gan.ttf}$	ઌઌૢ૽૽૽૽ઽ
11	Baybayin_Jep.ttf	かかかいな
12	Baybayin_Kan.ttf	ひみゆうん
13	Baybayin_Ku1.ttf	અ નું⇔ ં—≒
14	${ t Baybayin_Loc.otf}$	VK°O¢⊊
15	Baybayin_Mdo.ttf	₽₽₽ ∸ ₽
16	${ t Baybayin_Mod.ttf}$	कर्वेज्व अर्थे
17	${ t Baybayin_Mon.ttf}$	ᢞᡠᢆᢩ᠅ᠮ
18	${ t Baybayin_Pnt.ttf}$	∿ÅÇ;≻¤
19	${ t Baybayin_Rnd.ttf}$	そなでや
20	${ t Baybayin_Rng.ttf}$	ひもうごと
21	${ t Baybayin_Sin.ttf}$	ત મૃદ્યું હહ
22	${ t Baybayin_Sul.ttf}$	ѷ∼ํ҅ѽ҅ҿ҉ѵ
23	Baybayin_Tso.ttf	۸Ă ạ Ḥ⊄
24	${\tt baybayin_modern_bolats.ttf}$	៝ ៷៳៓៰្ន្
25	${\tt baybayin_modern_impen.ttf}$	ሌላሷ <i>ቊዾ</i>
26	baybayin_modern_laso.ttf	ᢞᡟᠿᢆ ᢕ ᢏ
27	baybayin_modern_leets.ttf	ಕಿಕ್ಕರ್ಭ
28	baybayin_modern_mckudlit.ttf	.
29	baybayin modern tulsok.ttf	Jojoj
30	baybayin_modern_varsitita.ttf	᠂ᡓᢤᢏᢆᢐᢐ
31	baybayin_modern_varsitito.ttf	ttäne

0.13.4 Lloyd Zapantas' fonts

Lloyd Zapantas offers Unicode fonts on Behance, all of which include \leftrightarrows .

From left to right:

Robotika, Chochin, Sarimanok, Bayani.



0.14 Software

As another line of evidence of the existence of \subseteq and its use by the community, we can look at software that supports it.

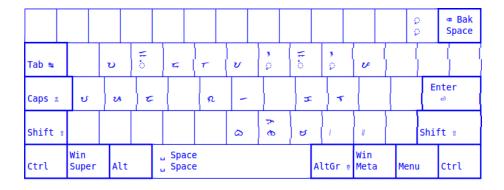
0.14.1 JC John Sese Cuneta's *Paninap Unicode Keyboard Layouts* (2010)

In 2010, JC John Sese Cuneta released *baybayin* keyboard layouts for Windows and Linux through his company, techmagus[™]. According to Cuneta, the release of this project was a joint project of his company and the Ubuntu Local Community for the Philippines.

The keyboard layout is implemented using X.Org's XKB. \subseteq is typed, predictably, by typing R, which XKB calls key <AD04>. A snippet of the code, lines 183 through 188, follows:

```
// D row; QWERTY row, left side
key <ADO1> { [ VoidSymbol, VoidSymbol, VoidSymbol ] }; //
key <ADO2> { [ U170F, VoidSymbol, VoidSymbol, VoidSymbol ] }; // v (Wa)
key <ADO3> { [ U1712, U1701, VoidSymbol, VoidSymbol ] }; // c (E/I)
key <ADO4> { [ U170D, VoidSymbol, VoidSymbol ] }; // c (Ra)
key <ADO5> { [ U1706, VoidSymbol, VoidSymbol ] }; // c (Ta)
```

Despite not being in Unicode, U+170D once again is being used for \subseteq .



0.14.2 Xavier Nègre's Lexilogos

Lexilogos is a JavaScript input method that either runs in most web browsers, either from Nègre's website, Lexilogos.com, or by downloading the related page, in this case baybayin.html.

The *baybayin* snippets in this paper, especially the longer ones, are courtesy of Lexilogos.

While originally (2009) Lexilogos did not support \leftrightarrows , according to the Wayback Machine, ¹⁹ the letter \leftrightarrows was added some time between October 19, 2018 and May 5, 2019.



 $^{^{19} \}texttt{http://web.archive.org/web/20190505073424/https://www.lexilogos.com/keyboard/baybayin.htm}$

0.14.3 Android apps

Craig Miralles's Learn Baybayin

Learn Baybayin is an Android application, which according to Google has been installed over ten thousand times.²⁰

The repetoire the app teaches includes \subseteq .



Team Three Bits' Alamin Baybayin

Alamin Baybayin is another Android application which aims to teach the user *baybayin*. The repetoire the app teaches includes \subseteq .

²⁰https://play.google.com/store/apps/details?id=learn.baybayin



ISO/IEC JTC 1/SC 2/WG 2

PROPOSAL SUMMARY FORM TO ACCOMPANY SUBMISSIONS FOR ADDITIONS TO THE REPERTOIRE OF ISO/IEC 10646.1

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/summaryform.html.

See also http://std.dkuug.dk/JTC1/SC2/WG2/docs/summaryform.html.

A. Administrative

1	Title:	proposal to add TAG/	ALOG LETTER RA as U+170D		
	Requester's name:	 	drick R. Brennan		
	Requester type (Member body/Liaison/li		Individual		
1	Submission date:	idividual contribution).	9 July 2019 (revised 18	July 2019)	
1	Requester's reference (if applicable):		<u> </u>	<u>outy 2010)</u>	
	Choose one of the following:				
	This is a complete proposal:			X	
	(or) More information will be provide	led later:	_		
E	3. Technical – General		-		
1.	Choose one of the following:				
	a. This proposal is for a new script (s	et of characters):			
	Proposed name of script:				
	 b. The proposal is for addition of cha 	racter(s) to an existing		X	
	Name of the existing block:		Tagalog		
2.	Number of characters in proposal:			1	
3.	Proposed category (select one from below				
		ed (small collection)	B.2-Specialized (large colle	ection)	
	C-Major extinctD-Attested ext		E-Minor extinct		
	F-Archaic Hieroglyphic or Ideographic		G-Obscure or questionable usage		
4.	Is a repertoire including character name			Yes Yes	
	a. If YES, are the names in accordant in Annex L of P&P document?		naming guidelines"	Voo	
	b. Are the character shapes attached		olo for roviow?	<u>Yes</u>	
_	Fonts related:	ili a legible lotti sultar	ole for review!	163	
Э.	a. Who will provide the appropriate c	omputerized font to the	Project Editor of 106/16 for publish	ning the standard?	
	a. Who will provide the appropriate c	Fredrick R. Bi		ing the standard:	
	b. Identify the party granting a license	e for use of the font by	the editors (include address, e-ma	il, ftp-site, etc.):	
	Fredrick R. Breni	nan, <u>copypaste@kitten</u> :	<u>s.ph, font name is OpenBaybayin</u>		
6.	References:				
	 a. Are references (to other character 			X	
	b. Are published examples of use (su	ich as samples from ne		ources)	
	of proposed characters attached?		Yes		
7.	Special encoding issues:		. (:6 1: 11)	. ,	
	Does the proposal address other asp presentation, sorting, searching, inde				
	presentation, sorting, searching, inde	collation is discus		n)? <u>Yes</u>	
8	3. Additional Information:	Condition is discus	Sed III go.+		
1 -	Submitters are invited to provide any add	itional information abou	it Proportios of the proposed Char	actor(s) or Script that	
E	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				
ir	nformation. See the Unicode standard a	t <u>http://www.unicode.o</u>	rg_ for such information on other so	cripts. Also see	
	Inicode Character Database (http://www.nformation needed for consideration by t				
	mormation needed for consideration by t	ne onicode rechnical (Johnnikee for inclusion in the Unit	oue 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

O. I Commedia - Odominedion		
1. Has this proposal for addition of cha	aracter(s) been submitted before?	No
If YES explain		
2. Has contact been made to member	s of the user community (for example: National Body,	
user groups of the script or char	acters, other experts, etc.)?	Yes
If YES, with whom?	Norman de los Santos (subject matter expert), Kristian Kabuay (su	
	expert, University of the Philippines), "baybayin" Facebook	
If YES, available relevant		equest)
	for the proposed characters (for example:	
size, demographics, information	technology use, or publishing use) is included?	Yes
Reference:	See introductory section	
4. The context of use for the proposed	d characters (type of use; common or rare)	Common
Reference:	<i>N/A</i>	
5. Are the proposed characters in curr	rent use by the user community?	Yes
If YES, where? Reference:	See §0.7 and §§0.9-0.13	
6. After giving due considerations to the	ne principles in the P&P document must the proposed characters be	e entirely
in the BMP?		Yes
If YES, is a rationale pr	rovided?	Yes
If YES, reference:	The spot requested is already in de facto use, see §0	0.12
	kept together in a contiguous range (rather than being scattered)?	Yes
	s be considered a presentation form of an existing	No
character or character sequence	— –	
	r its inclusion provided?	
If YES, reference:		
	s be encoded using a composed character sequence of either	Ma
existing characters or other prop	-	<u>No</u>
	r its inclusion provided?	
If YES, reference:		
	r(s) be considered to be similar (in appearance or function)	No
to, or could be confused with, a		
	r its inclusion provided?	
If YES, reference:		
	combining characters and/or use of composite sequences?	Yes
If YES, is a rationale for such us		Yes
If YES, reference:	Just like the other codepoints in the block, U+1712, U+1713 a can combine with my proposed character	and U+1714
Is a list of composite sequences	and their corresponding glyph images (graphic symbols) provided?	Yes_
If YES, reference:	"Quick summary" section	
12. Does the proposal contain charac	ters with any special properties such as	
control function or similar semar	ntics?	No
If YES, describe in deta	ail (include attachment if necessary)	
13. Does the proposal contain any Ide		
	sponding unified ideographic characters identified?	
If YES, reference:		