DOC TYPE:	Expert contribution
TITLE:	**Proposal to Encode Syriac in ISO/IEC 10646**
SOURCE:	Paul Nelson, George Anton Kiraz, Sargon Hasso
PROJECT:	
STATUS:	Proposal
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A. Administrative

1. Title	Proposal to encode Syriac in ISO/IEC 10646.
2. Requester's name	Paul Nelson, George Anton Kiraz, and Sargon Hasso.
3. Requester type	Expert request.
4. Submission date	1998-03-06
5. Requester's reference	
6a. Completion	This is a complete proposal.
6b. More information to be provided?	Only as required for clarification.

B. Technical -- General	
1a. New script? Name?	Yes. Syriac.
1b. Addition of characters to existing block? Name?	No.
2. Number of characters	75.
3. Proposed category	A.
4. Proposed level of implementation and rationale	Level 3, because of combining marks used.
5a. Character names included in proposal?	Yes.
5b. Character names in accordance with guidelines?	Yes.
5c. Character shapes reviewable?	Yes.
6a. Who will provide computerized font?	George Anton Kiraz (Syriac Computing Institute) and Paul Nelson.
6b. Font currently available?	George Anton Kiraz and Paul Nelson.
6c. Font format?	TrueType.
7a. Are references (to other character sets, dictionaries, descriptive texts, etc.) provided?	Yes.
7b. Are published examples (such as samples from newspapers, magazines, or other sources) of use of proposed characters attached?	Yes.
8. Does the proposal address other aspects of character data processing?	Yes. It covers Syriac bidirectional behavior and gives normative rules required for rendering the language.

C. Technical -- Justification

1. Contact with the user community?	Yes. George Anton Kiraz and Sargon Hasso.
2. Information on the user community?	Native, scholarly and ecclesiastical community.
3a. The context of use for the proposed characters?	Used to write Syriac and other Aramaic languages.
3b. Reference	
4a. Proposed characters in current use?	Yes.
4b. Where?	Native speakers in Middle East and Southeast India, and scholars and churchmen worldwide.
5a. Characters should be encoded entirely in BMP?	Yes.
5b. Rationale	It is an active language used in several parts of the world. Allocation in the BMP is in accordance with the Roadmap.
6. Should characters be kept in a continuous range?	Yes.
7a. Can the characters be considered a presentation form of an existing character or character sequence?	No. Syriac is a unique alphabetic writing system.
7b. Where?	
7c. Reference	
8a. Can any of the characters be considered to be similar (in appearance or function) to an existing character?	No.
8b. Where?	
8c. Reference	

9a. Combining characters or use of composite sequences included?	Yes. Where possible, existing Combining Diacritics have been used in place of creating a new character. However, additional combining diacritic marks unique to Syriac are included.
9b. List of composite sequences and their corresponding glyph images provided?	Yes. Ligatures and their forms, both manditory and optional, are provided.
10. Characters with any special properties such as control function, etc. included?	Yes. The SYRIAC ABBREVIATION MARK is used to indicate the beginning of an abbreviation line. See explanation provided with proposal.

D. SC2/WG2 Administrative

To be completed by SC2/WG2

1. Relevant SC 2/WG 2 document numbers:	
2. Status (list of meeting number and corresponding action or disposition)	
3. Additional contact to user communities, liaison organizations etc.	
4. Assigned category and assigned priority/time frame	
Other Comments	

Proposal for Syriac Block

This is a proposed assignment for Syriac characters created by merging a previous proposal worked on by Sargon Hasso, Rick McGowan, and Michael Everson with a proposal created by George Anton Kiraz and Paul Nelson. The proposal of characters to use has been derived from characters currently used in writing the Syriac language and characters commonly found in a broad range of manuscripts used for study. The desire is to be able to not only provide a standard method for writing current Syriac, but also a common means for the electronic storage of manuscript data.

The Unicode Consortium published an Exploratory Proposal for Syriac in 1992. That proposal was incomplete and stated that "the vowel signs at least must be added to complete the Syriac proposal." Since 1995, Sargon Hasso has spent many hours trying to validate which diacritic marks are required. We would like to put forward this proposal in order to complete the process of adding Syriac to ISO/IEC 10646. We believe that the Exploratory Proposal in UTR-#3 can be enhanced in the following areas:

1. Vowel, overstrike, and punctuation marks need to be added to allow for the proper writing of languages which employ the Syriac type styles.

2. Additional characters need to be added to allow for the writing of non-Syriac languages that employ Syriac type styles, e.g. Christian Palestinian Aramaic (also known as Palestinian Syriac), Garshuni (Arabic written in Syriac type styles) and various modern Neo-Aramaic dialects.

3. Joining rules. Letters need to be classified into joining classes (e.g., which letters connect to their neighboring letters and in which manner). Special joining rules for the *Alaph* need to be indicated.

4. Ligature rules need to be added to show how Syriac should handle the combining of letters into ligatures.

5. Abbreviation rules need to be stated to show how the Syriac abbreviation is implemented.

The Exploratory Proposal also questioned whether Mandaean should be included in the Syriac block. We believe that Mandaean should have its own block since its shaping mechanism differs from that of Syriac. The Mandaean letters (we shall use Syriac names here) *Dalath*, *He*, *Waw*, *Sadhe*, *Rish* and *Taw* connect to the following letter within the same word, while their counterparts in Syriac do not; vice versa, the Mandaean letters *Yudh* and *Shin* do not connect to the following letter, while their Syriac counterparts do (Daniels 1996, p. 511). Therefore, Mandaean does not fall within the scope of this proposal. (Michael Everson is in contact with some Mandaeans in Australia and is preparing a proposal for that script with them.)

Brief History of the Syriac Language

The Syriac language belongs to the Aramaic family of languages. The earliest datable Syriac writing is in the form of inscriptions from Birecik, dating A.D. 6 (Maricq 1962, Pirenne 1963). Three legal documents from the third century (dated 28 Dec 240, 1 Sept 242 and 243,

respectively) were discovered in the Euphrates valley (Brock 1991, Drijvers 1972). The earliest literary Syriac manuscript is dated November A.D. 411 (Hatch, 1946) with an unbroken tradition of writing till the modern time.

Today, Syriac is the active liturgical language of many communities in the Middle East (Syrian Orthodox, Assyrian, Maronite, Syrian Catholic and Chaldaean) and Southeast India (Syro-Malabar and Syro-Malankara). It is also (in various dialectical forms written using the Syriac type styles) the native language of a million or two (although no reliable statistics can be found). Syriac is widely used among its natives in their native lands, as well as the diaspora in Europe, the Americas and Australia. Additionally, Syriac is the subject of study for many Western scholars who publish texts in the Syriac type styles, e.g., the monumental *ca.* 230-volume *Scriptores Syri* of the CSCO series. Healey (1990) notes, "Books, magazines and newspapers are still produced in the Syriac type styles." Recently, Syriac Web pages have started to emerge, albeit in a graphical form due to the lack of a standard.

Syriac Languages

Syriac is divided into two dialects. West Syriac is used by the Syrian Orthodox, Maronites and Syrian Catholics. East Syriac is used by the Assyrians (i.e., Ancient Church of the East) and Chaldaeans. The two dialects are very similar (almost no difference) in grammar and vocabulary. They differ, however, in phonology (i.e., pronunciation) which has no impact on this work. However, each of the two dialects has its own script, each script with its own idiosyncrasies.

There are a number of other languages and dialects that employ the Syriac type styles in the modern time in one form or another. These are:

1. **Literary Syriac.** The primary usage of Syriac type styles.

2. **Neo-Aramaic dialects.** "Modern Aramaic languages," Hobermann notes "have been written with the Syriac, Hebrew, Cyrillic, and Roman scripts, but only the Syriac type styles has gained widespread use." (Hobermann, 1996, p. 504). To this category of languages belong a number of Eastern Modern Aramaic dialects known as **Swadaya** (also called 'vernacular Syriac', 'modern Syriac', 'modern Assyrian' etc., spoken mostly by the Assyrians and Chaldaeans of Iraq, Turkey and Iran), and the Central Aramaic dialect of **Turoyo** (spoken mostly by the Syrian Orthodox of the Tur Abdin region in Southeast Turkey). These formerly "spoken" dialects have become literary in the past hundred years or so (see Murre-van den Berg, 1994). They employ the Syriac type styles in addition to overstrike marks to indicate sounds not found in, but similar to, Syriac ones (Maclean 1971).

3. **Garshuni**, i.e., Arabic written in the Syriac type styles. This mode of writing is currently used for writing Arabic liturgical texts amongst the Syriac-speaking Christians. A large corpus of manuscripts ranging from the 8th century till the modern day exists in Garshuni (Mingana 1933). Garshuni employs two additional letters and the Arabic set of vowels and overstrike marks.

4. **Christian Palestinian Aramaic** (known also as Palestinian Syriac) employs the Syriac type styles with one additional letter, the reversed *Pe* (Schulthess, 1979). This

dialect is no longer spoken, but there has been recent scholarly interest in publishing its texts, e.g. (Müller-Kessler and Sokoloff, 1996 and 1997).

5. **Other languages.** The Syriac type styles were used at various historical periods for writing Armenian and some Persian dialects. Syriac-speakers employed them for writing Arabic, Ottoman Turkish, and Malayalam. Manuscripts written in this manner survive and are the subject of study by Western scholars. Syriac-speaking peoples wrote Ottoman Turkish in the Syriac type styles as late as the beginning of this century (e.g., *Al-Intibah* newspaper published in New York by immigrants in the 1900s-1920s). They continue to write Arabic in this manner (see under Garshuni above).

Syriac type styles

Syriac texts employs three scripts.

1. **Estrangela script.** Estrangela (a word derived from Greek *strongulos* meaning 'rounded') is the oldest script. Ancient manuscripts use this writing style exclusively. Estrangela has seen a revival in the twentieth century (it has seen an earlier revival in the 10th century whence it has been defunct for a hundred years, as we are told by the historian Bar Ebroyo, Hatch (1946), p. 26). Estrangela is used today in West and East Syriac texts for writing headers, titles and subtitles. It is also used in cards, engravings, etc. Most importantly, this script is the current standard in writing Syriac texts amongst Western scholarship, almost exclusively.

2. **Serto or West Syriac type styles** (also misnamed "Jacobite"). This script is the most cursive of all. It emerged around the 8th century (Healey 1990) and is used today in West Syriac texts, as well as Turoyo (Central Neo-Aramaic) and Garshuni.

3. **East Syriac type styles** (also misnamed "Nestorian"). Its early features appear as early as the sixth century; it developed into its own script by the 12th or 13th centuries (Healey 1990). It is used today for writing East Syriac texts, as well as Swadaya (Eastern Neo-Aramaic). It is also used today in West Syriac texts for headers, titles and subtitles alongside the Estrangela script.

4. **Christian Palestinian Aramaic**. Manuscripts of this dialect employ a script that is akin to Estrangela. Indeed, it can be considered a sub-category of Estrangela.

Note. The nickname terms "Jacobite" and "Nestorian" were originally used opprobriously by opposing theological schools. They are considered offensive labels by the Syrian Orthodox Church and the Assyrian Church of the East, respectively, and indeed they have dubious historical bases (see Brock 1995). It is highly recommended that these terms be avoided in naming scripts, fonts and other products.

This proposal provides for usage of the scripts mentioned above. Additionally, it provides for letters and diacritics used in Neo-Aramaic languages, Christian Palestinian Aramaic, and Garshuni languages.

The Syriac Language

Like most Semitic languages, Syriac is written from right to left. The Syriac type styles is

cursive, is read from right-to-left, and has shaping rules that are very similar to Arabic. Presentation forms are not included in this proposal.

Unicode Bidirectional Algorithm. Syriac can be implemented using the rules of the Unicode Bidirectional Algorithm as they apply to Arabic and Hebrew.

Convention. In what follows, we use East Syriac for naming the letters of the alphabet.

As for the diacritical points, we have chosen a descriptive naming, e.g., SYRIAC DOT ABOVE, since their names and semantics change through the course of history and sometimes vary between West and East Syriac (for a study, see Segal, 1953). The following examples demonstrate this point:

1. The first example shows how two different diacritics give the same meaning across the two dialects (they may also have other usage as well). The feminine form of the past third singular verb (e.g., *ᶜebdat* 'she said') is indicated in West Syriac by *one* dot *to the left* of the *t*, while in East Syriac this is indicated by *two* dots *under* it (Noldeke, 1904, p. 7). The two forms are illustrated below .

2. The second example shows how the same diacritic gives different meanings. When letters are used to designate numbers, a circumflex under the letter *Alaph* represents the numerical value 10,000,000 according to Oddo (1897), but 100,000 according to Costaz (1955); Payne Smith's monumental lexicon assigns the value 10,000,000 to an *Alaph* with two dots under it!

3. A diacritic mark is usually used for a number of purposes. For example, the sublinear line can be used to: 1) indicate that the letter under which it lies is not to be pronounced, 2) disambiguate between the passive imperative verb from the passive past since they are homographs, and 3) to indicate that the letter under which it lies is to be pronounced with a *shewa* (Al-Kfarnissy, 1962, p. 11).

In cases when the function of the mark is unambiguous through history and between the two dialects, its name is given in East Syriac, e.g., SEYAME, RUKKAKHA, etc.

Syriac Control Character - The SYRIAC ABBREVIATION MARK. The SYRIAC ABBREVIATION MARK (SAM) is a user-selectable zero-width formatting code which has no impact on the shaping process of Syriac characters. The use of the SAM specifies the beginning point of a SYRIAC ABBREVIATION.

The SYRIAC ABBREVIATION is a line drawn horizontally above one or more characters, which may or may not have diacritics. It is always located at the end of a word or group of characters that is followed by a character other than a Syriac letter or diacritic mark. Ideally, the SYRIAC ABBREVIATION has a dot at each end and the center, as seen in the examples shown in this proposal. However, while not preferable, it has become acceptable for computers to render the SYRIAC ABBREVIATION as a line without the dots. The line is acceptable for the presentation of Syriac in plain text, while the presence of dots is recommended in liturgical texts.

There are two uses for the SYRIAC ABBREVIATION: for letter numbers, and contractions (Robinson 1962). The SYRIAC ABBREVIATION is generally placed extending from above the final character of the word toward the front until the first tall character is reached. A common exception to this rule is found with letter numbers that are preceded by a preposition character as seen in the second line below.

This exception makes it impossible to place the SAM at the end of a word and relegate the task of drawing the correct SYRIAC ABBREVIATION to the system rendering the text.

To resolve this issue we propose that a SAM be placed before the character where the abbreviation begins. The SYRIAC ABBREVIATION begins over the character following the SAM and continues until the first character that is not a Syriac letter, diacritic mark, or SYRIAC ELONGATION. Use of the SAM is demonstrated in the following example.
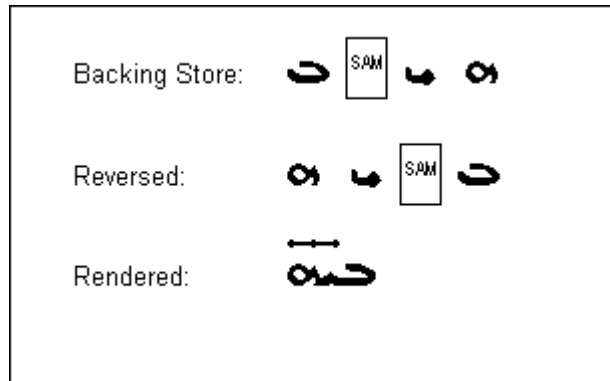
This implementation has the following benefits:

1. It fits with the Unicode Bidirectional Algorithm and Unicode operation.

2. Plain text can be rendered correctly because ambiguity is removed via the SAM.

NOTE: Modern East Syriac texts employ a punctuation mark for contractions of this sort.

Combining Characters. Only one combining character is shown in the proposal--the Syriac Letter YudhHe. This combination is used as a unique character in the same manner as an ae ligature. A number of combining diacritics unique to Syriac are included when not found at other places in the Unicode Standard.

Diacritic Marks/Vowels. "The reader of the average Syriac manuscript or book," Segal notes, "is confronted with a bewildering profusion of points. They are large, of medium size and small, arranged singly or in twos and threes, placed above the word, below it, or upon the line." (Segal, 1953, p. 1). Segal dedicated an entire monograph for describing the various usages of the diacritic point.

The most challenging aspect of this proposal was to decide which marks are to be included in the UCS. We believe that a pragmatic solution is the minimal set of diacritic marks which cannot be derived from other marks are included. The tables give for each diacritic mark the languages in which it is used, as well (in most cases) a scanned example for illustrative purposes.

The function of the diacritic marks varies: they indicate vowels (like Arabic and Hebrew), mark grammatical attributes (e.g., verb vs. noun, interjection), or guide the reader in the pronunciation/reading of the given text.

There are two vocalization systems. The first, attributed to Jacob of Edessa (633-708), utilizes letters derived from Greek which are placed above (or below) the characters they modify. The second is the more ancient dotted system which employs dots in various shapes and locations to indicate vowels. East Syriac texts exclusively employ the dotted system, while West Syriac texts (especially later ones and in modern times) employ a mixture of the two systems (Noldeke, 1904, p. 8).

Diacritic marks are non-spacing and are normally centered above or below the character. Exceptions to this are:

1. The SYRIAC QUSHSHAYA and SYRIAC RUKKAKHA (see tables below) are

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only used with the letters *Beth*, *Gamal* (in its Syriac and Garshuni forms), *Dalath*, *Kaph*, *Pe* and *Taw*.

- The QUSHSHAYA indicates the letter is pronounced hard and unaspirated.

- The RUKKAKHA indicates the letter is pronounced soft and aspirated.
  When the RUKKAKHA is used in conjunction with the *Dalath*, it is printed slightly to the right of the *Dalath's* dot below.

2. The SYRIAC SEYAME. In Modern Syriac usage, when a word contains a *Rish* and a SEYAME, the dot of the *Rish* and the SEYAME are substituted with a *Rish* with two dots above it.

3. The SYRIAC FEMININE DOT is usually used to the left of a final *Taw*.

Additional information about individual characters used for diacritics can be found in Appendix C.

Punctuation. Most punctuation marks used with Syriac are currently found in the Latin-1 and Arabic blocks. Punctuation marks not found in the UCS are added to this proposal.

Digits. Modern usage of the Syriac employs Latin digits (i.e. Arabic numerals), as does Hebrew. The shaping of numbers is in the same manner as Hebrew.

Minimum Rendering Requirements. Rendering requirements for Syriac are the same as those for Arabic. The remainder of this section specifies a minimum set of rules that provide legible Syriac joining and ligature substitution behavior.

Joining Classes. Each Syriac character is represented by up to four possible contextual glyph forms. The form used is determined by the its joining class and the joining class of the letter on each side. These classes are identical to those outlined for Arabic.

Joining Rules. Rules for joining Syriac are slightly different than Arabic due to the manner in which the letter *Alaph* behaves. The following table defines the joining rules. Please note that *preceding* and *following* are used to describe the logical order. For visual ordering, *preceding* and *following* can be replaced with *right* and *left*.

NOTE: Additional shaping rules have been added for the Alaph to allow for a unified algorithm for the three Syriac type styles.

Glyph Type	Description
X_n	The nominal glyph form as it appears in the code chart. This character has a word-breaking or non-joining character preceding, and either a word-breaking character following, or does not cause a right-join.
X_r	Right-joining.
X_l	Left-joining.
X_m	Dual-joining.
X_{Aj}	Final joining (*Alaph* only).
X_{Anj}	Final non-joining **except** following *Dalath* and *Rish* (*Alaph* only).
X_{Anjx}	Final non-joining following *Dalath* and *Rish* (*Alaph* only).

R1 - Transparent characters do not affect the joining behavior or base (spacing) characters. [example in Serto script]

R2 - A character that has a join-causing character preceding and is not followed by a join-causing character will take the form of X_r. [example in Serto script]

R3 - A character that has a join-causing character following and is not preceded by a join-causing character will take the form of X_l. [example in Serto script]

R4 - A character that has a join-causing character preceding and following will take the form of X_m. [example in Serto script]
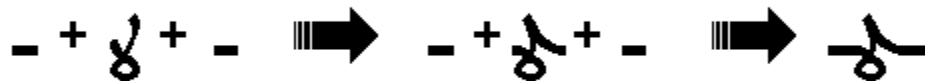
R5 - An *Alaph* that has a joining character preceding and a word-breaking character following will take the form of X_{Aj}. [example in Serto script]
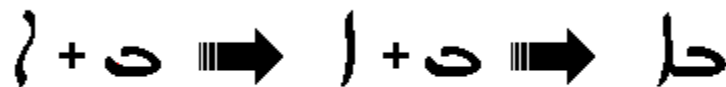
R6 - An *Alaph* that has a non-joining character preceding, except for a *Dalath* or *Rish*, and a word-breaking character following will take the form of X_{Anj}. [example in Serto script]
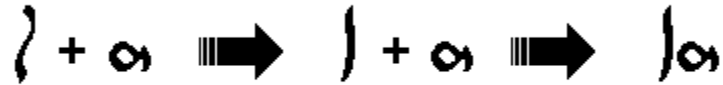
R7 - An *Alaph* that has a *Dalath* or *Rish* preceding and a word-breaking character following will take the form of X_{Anjx}. [example in East Syriac type styles]
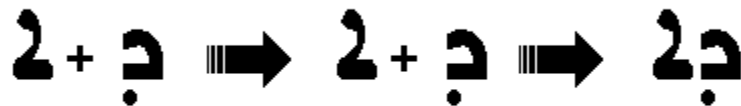
Syriac Character Joining Types. The tables following provide listings of how each character is shaped in the appropriate joining type. Syriac characters not shown are non-joining, except in the case of the SYRIAC ELONGATION that functions in the exact manner of the ARABIC TATWEEL.

Alaph

Script Style	X_n	X_r	X_{Aj}	X_{Anj}	X_{Anjx}
Estrangela	ܐ	ܐ	ܐ	ܐ	ܐ
Serto (West Syriac)	ܐ	ܐ	ܐ	ܐ	ܐ
East Syriac	ܐ	ܐ	ܐ	ܐ	ܐ

Dual-Joining Syriac Characters [the following characters are Serto script]

Character	X_n	X_r	X_m	X_l
BETH	ج	ج	ج	ج
GAMAL	ح	ح	ح	ح
GAMAL GARSHUNI	خ	خ	خ	خ
HETH	س	س	س	س

TETH	ش	ﺵ	ﺸ	ﺷ
TETH GARSHUNI	ص	ﺺ	ﺼ	ﺻ
YUDH	ض	ﺾ	ﻀ	ﺿ
KAPH	ظ	ﻆ	ﻈ	ﻇ
LAMADH	ع	ﻊ	ﻌ	ﻋ
MIM	غ	ﻎ	ﻐ	ﻏ
NUN	ف	ﻒ	ﻔ	ﻓ
SEMKATH	ق	ﻖ	ﻘ	ﻗ
SEMKATH FINAL	ك	ﻚ	ﻜ	ﻛ
E	ل	ﻞ	ﻠ	ﻟ
PE	م	ﻢ	ﻤ	ﻣ

PE REVERSED	ن	ن	نـ	ـن
QAPH	ه	ـه	ـهـ	ـه
SHIN	ي	ـي	ـيـ	ـي
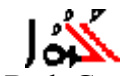
Right-Joining Syriac Characters [the following characters are Serto script]

Character	X$_n$	X$_r$
DALATH	د	ـد
DOTLESS DALATH RISH	د	ـد
HE	ذ	ـذ
WAW	ر	ـر
ZAIN	ز	ـز
YUDH HE	ؤ	ـؤ

SEMKATH OLD	ك	كـ
SADHE	ة	ـة
RISH	و	و
TAW	ى	ى

Ligature Classes. Ligatures are valid in Syriac depending upon the script form which is used. The table below identifies the popular valid ligatures for each script type. When valid, these ligatures are obligatory unless denoted with an asterisk(*).

Characters	Estrangela	Serto (West Syriac)	East Syriac	Example
ALAPH LAMADH	N/A	Dual-joining	N/A	Beth Gazo
GAMAL LAMADH	N/A	Dual-joining*	N/A	Armalah
GAMAL E	N/A	Dual-joining*	N/A	Armalah
HE YUDH	N/A	N/A	Right-joining*	Qdom
YUDH TAW	N/A	Right-joining*	N/A	Armalah*
KAPH LAMADH	N/A	Dual-joining*	N/A	Shḥimo
KAPH TAW	N/A	Right-joining*	N/A	Armalah
LAMADH SPACE ALAPH	N/A	Right-joining*	N/A	Nomocanon
LAMADH ALAPH	Right-joining*	Right-joining	Right-joining*	BFBS
LAMADH LAMADH	N/A	Dual-joining*	N/A	

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				Sh<u>h</u>imo
NUN ALAPH	N/A	Right-joining*	N/A	ابا Sh<u>h</u>imo
SEMKATH TETH	N/A	Dual-joining*	N/A	ܟܠܐܡܕܗܝ Qurobo
SADHE NUN	Right-joining*	Right-joining*	Right-joining*	ܘܦܝ Mush<u>h</u>otho
RISH SEYAME	Right-joining	Right-joining	Right-joining	ܩܪܒ ܩܝܬܐܠ BFBS
TAW ALAPH	Right-joining*	N/A	Right-joining*	ܗܥܚܕܦܣܬ Qdom
TAW YUDH	N/A	N/A	Right-joining*	

Ligature Rules. The following rules describe the formation of ligatures.

R1 - Transparent characters do not affect the ligating behavior or base (spacing) characters. For example:
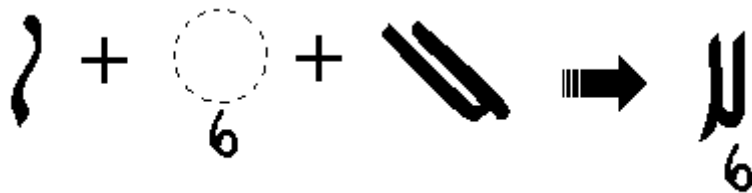
Syriac

Previous Block: Arabic

Next Block: Devanagari

Range: U+0700 to U+074F

A block of characters designated for right-to-left scripts is currently reserved in the area above Arabic. We propose using part of this area for a Syriac block. The Syriac block we propose would be 0700-074F.
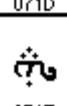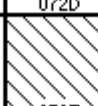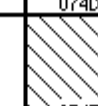
These charts contain only proposed assignments and should not be considered valid until such time as the Unicode Consortium formally accepts them.

George Anton Kiraz and Paul Nelson created the fonts used in these charts.

Code chart

The code chart characters are Estrangela script.

	070	071	072	073	074
0	❖ 0700	✗ 0710	⅃ 0720	🜙 0730	🜚 0740
1	· 0701	🜛 0711	ꓤ 0721	🜜 0731	🜝 0741
2	· 0702	⊐ 0712	╱ 0722	🜞 0732	🜟 0742
3	⋮ 0703	↘ 0713	∞ 0723	🜠 0733	🜡 0743
4	⋮ 0704	↗ 0714	∞ 0724	🜢 0734	🜣 0744
5	·· 0705	⅃ 0715	φ 0725	🜤 0735	🜥 0745
6	⋰ 0706	ꓶ 0716	⅃ 0726	🜦 0736	🜧 0746
7	⋰ 0707	ന 0717	ച 0727	🜨 0737	🜩 0747
8	⋱ 0708	ဝ 0718	ല 0728	🜪 0738	🜫 0748
9	⋱ 0709	╲ 0719	⩩ 0729	🜬 0739	🜭 0749
A	⋯ 070A	ಬ 071A	ꓷ 072A	🜮 073A	🜯 074A
B	⊤ 070B	↙ 071B	ⅈ 072B	🜰 073B	🜱 074B
C	╲ 070C	↙ 071C	▼ 072C	🜲 073C	🜳 074C
D	✚ 070D	· 071D	⅄ 072D	🜴 073D	🜵 074D
E	▨ 070E	🜶 071E	▨ 072E	🜷 073E	▨ 074E
F	SAM 070F	ᔑ 071F	▨ 072F	🜸 073F	▨ 074F

22

Name chart
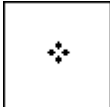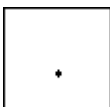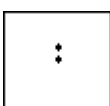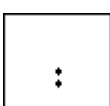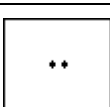
Glyphs which are particular to languages other than Syriac are marked with the names of the respective languages in square brackets, [ ], in the 'Name' field. We use the following abbreviations:

0.   CPA = Christian Palestinian Aramaic (Palestinian Syriac)

1.   Ga = Garshuni (Arabic written in Syriac)

2.   Sw = Swadaya (Eastern Neo-Aramaic)

3.   Tu = Turoyo (Central Neo-Aramaic)
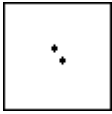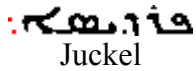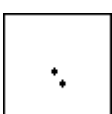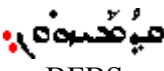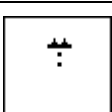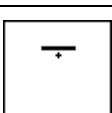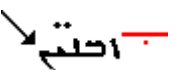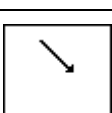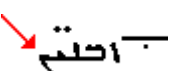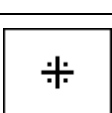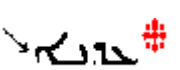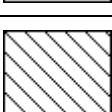
The last column gives examples (except for letters) scanned from recent publications. References in this column are to the publications listed in Appendix B.

Additional information about individual characters used in this block can be found in Appendix C.
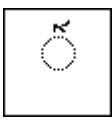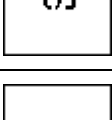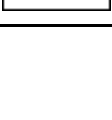
The name chart characters are Estrangela script.

Glyph	Unicode	Name	Example
❖	U+0700	SYRIAC END OF PARAGRAPH	Juckel
⸳	U+0701	SYRIAC SUPRALINEAR PERIOD	BFBS
⸳	U+0702	SYRIAC SUBLINEAR PERIOD	BFBS
⁝	U+0703	SYRIAC SUPRALINEAR COLON	Segal
⁝	U+0704	SYRIAC SUBLINEAR COLON	Segal
⸵	U+0705	SYRIAC HORIZONTAL COLON	BFBS
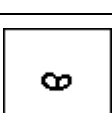
∴	U+0706	SYRIAC COLON SKEWED LEFT	Juckel
∴	U+0707	SYRIAC COLON SKEWED RIGHT	BFBS
∴	U+0708	SYRIAC SUPRALINEAR COLON SKEWED LEFT	BFBS
∴	U+0709	SYRIAC SUBLINEAR COLON SKEWED LEFT	BFBS
⁝	U+070A	SYRIAC CONTRACTION	Gannana
÷	U+070B	SYRIAC HARKLEAN OBELUS	CESG
↘	U+070C	SYRIAC HARKLEAN METOBELOS	CESG
✢	U+070D	SYRIAC HARKLEAN ASTERISCUS	CESG
	U+071E	(This position shall not be used)	
SAM	U+070F	SYRIAC ABBREVIATION MARK	
ⱶ	U+0710	SYRIAC LETTER ALAPH	
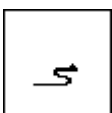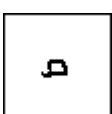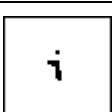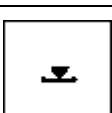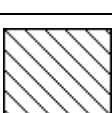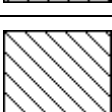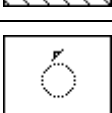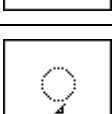
ܑ	U+0711	SYRIAC LETTER SUPERSCRIPT ALAPH
ܒ	U+0712	SYRIAC LETTER BETH
ܓ	U+0713	SYRIAC LETTER GAMAL
ܔ	U+0714	SYRIAC LETTER GAMAL GARSHUNI [Ga Tu]
ܕ	U+0715	SYRIAC LETTER DALATH
ܖ	U+0716	SYRIAC LETTER DOTLESS DALATH RISH
ܗ	U+0717	SYRIAC LETTER HE
ܘ	U+0718	SYRIAC LETTER WAW
ܙ	U+0719	SYRIAC LETTER ZAIN
ܚ	U+071A	SYRIAC LETTER HETH
ܛ	U+071B	SYRIAC LETTER TETH
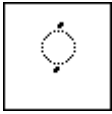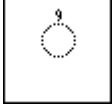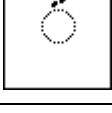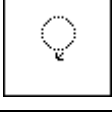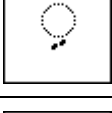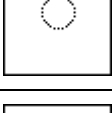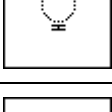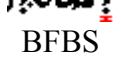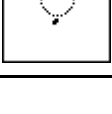
	U+071C SYRIAC LETTER TETH GARSHUNI [Ga]	
	U+071D SYRIAC LETTER YUDH	
	U+071E SYRIAC LETTER YUDH HE	
	U+071F SYRIAC LETTER KAPH	
	U+0720 SYRIAC LETTER LAMADH	
	U+0721 SYRIAC LETTER MIM	
	U+0722 SYRIAC LETTER NUN	
	U+0723 SYRIAC LETTER SEMKATH	
	U+0724 SYRIAC LETTER SEMKATH OLD	
	U+0725 SYRIAC LETTER SEMKATH FINAL	
	U+0726 SYRIAC LETTER E	
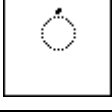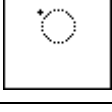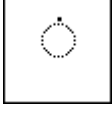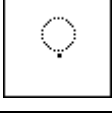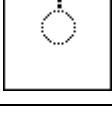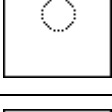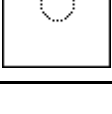
ـڡ	U+0727	SYRIAC LETTER PE	
ـع	U+0728	SYRIAC LETTER REVERSED PE [CPA]	
ـܨ	U+0729	SYRIAC LETTER SADHE	
ـܩ	U+072A	SYRIAC LETTER QAPH	
ܪ	U+072B	SYRIAC LETTER RISH	
ـܫ	U+072C	SYRIAC LETTER SHIN	
ܬ	U+072D	SYRIAC LETTER TAW	
	U+072E	(This position shall not be used)	
	U+072F	(This position shall not be used)	
◌̇	U+0730	SYRIAC PTHAHA ABOVE	ܐܡܚܢܐ̇ BFBS
◌	U+0731	SYRIAC PTHAHA BELOW	ܐܡܚܢܐ BFBS
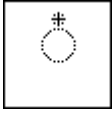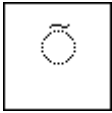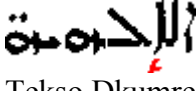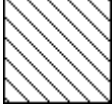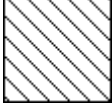
◌̇	U+0732 SYRIAC PTHAHA DOTTED	Hexaemeron
◌̇	U+0733 SYRIAC ZQAPHA ABOVE	Hexaemeron
◌̣	U+0734 SYRIAC ZQAPHA BELOW	BFBS
◌̈	U+0735 SYRIAC ZQAPHA DOTTED	Hexaemeron
◌̇	U+0736 SYRIAC RBASA ABOVE	BFBS
◌̣	U+0737 SYRIAC RBASA BELOW	BFBS
◌̈	U+0738 SYRIAC DOTTED ZLAMA HORIZONTAL	Bedjan
◌̣	U+0739 SYRIAC DOTTED ZLAMA ANGULAR	Bedjan
◌̃	U+073A SYRIAC HBASA ABOVE	BFBS
◌̣	U+073B SYRIAC HBASA BELOW	BFBS
◌̣	U+073C SYRIAC HBASA/ESASA DOTTED	Bedjan

◌	U+073D SYRIAC ESASA ABOVE	BFBS
◌	U+073E SYRIAC ESASA BELOW	BFBS
◌	U+073F SYRIAC RWAHA	Bedjan
◌	U+0740 SYRIAC FEMININE DOT	Beth Gazo
◌	U+0741 SYRIAC QUSHSHAYA	BFBS
◌	U+0742 SYRIAC RUKKAKHA	BFBS
◌	U+0743 SYRIAC TWO VERTICAL DOTS ABOVE	Segal
◌	U+0744 SYRIAC TWO VERTICAL DOTS BELOW	Segal
◌	U+0745 SYRIAC THREE DOTS ABOVE [Tu]	Mhadyono
◌	U+0746 SYRIAC THREE DOTS BELOW [Tu]	Mhadyono
◌	U+0747 SYRIAC OBLIQUE LINE ABOVE	Bedjan

◌̦	U+0748	SYRIAC OBLIQUE LINE BELOW	Costaz
◌̰	U+0749	SYRIAC MUSIC	Anaphora
◌̾	U+074A	SYRIAC BARREKH	Anaphora
◌̄	U+074B	SYRIAC MADDAH ABOVE [Ga]	Tekso Dkumre
◌̓	U+074C	SYRIAC HAMZA ABOVE [Ga]	Tekso Dkumre
◌̦	U+074D	SYRIAC HAMZA BELOW [Ga]	Tekso Dkumre
▨	U+074E	(This position shall not be used)	
▨	U+074F	(This position shall not be used)	

NOTE: SYRIAC LETTER YUDH HE is particular to the Estrangela and East Syriac type styles. SYRIAC LETTER SUPERSCRIPT ALAPH is particular to the East Syriac type styles only.

The following Syriac symbol should be added to the Miscellaneous Symbols block for conformity to the Unicode Standard.

Additional information about individual characters used in this block can be found in Appendix C.
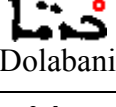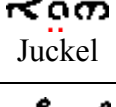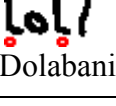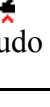
✛	U+????	SYRIAC CROSS	Anaphora

Other Syriac diacritic characters that have an existing form equivalent.

Combining Diacritics

With recent changes to the Unicode Specification, it is possible to use characters from the Combining Diacritic block to reduce the number of characters required for the Syriac range proposed above.

Syriac uses the following characters from the Combining Diacritics block. Additional information about individual characters used in this block can be found in Appendix C.
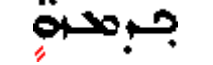
◌̃	U+0303	COMBINING TILDE	SYRIAC TILDE ABOVE [Sw]	
◌̄	U+0304	COMBINING MACRON	SYRIAC LINE ABOVE	Shḥimo
◌̇	U+0307	COMBINING DOT ABOVE	SYRIAC DOT ABOVE	Bedjan
◌̈	U+0308	COMBINING DIAERESIS	SYRIAC SEYAME	BFBS
◌̊	U+030A	COMBINING RING ABOVE	SYRIAC QUSHSHAYA CIRCLE	Dolabani
◌̠	U+0320	COMBINING MINUS SIGN BELOW	SYRIAC LINE BELOW	BFBS
◌̣	U+0323	COMBINING DOT BELOW	SYRIAC DOT BELOW	Bedjan
◌̤	U+0324	COMBINING DIAERESIS BELOW	SYRIAC TWO DOTS BELOW	Juckel
◌̥	U+0325	COMBINING RING BELOW	SYRIAC RUKKAKHA CIRCLE	Dolabani
◌̭	U+032D	COMBINING CIRCUMFLEX ACCENT BELOW	SYRIAC CIRCUMFLEX BELOW	Oudo

◌̮	U+032E	COMBINING BREVE BELOW	SYRIAC ARC BELOW [Sw]	ܢܟܓܒܗ Bedjan
◌̰	U+0330	COMBINING TILDE BELOW	SYRIAC TILDE BELOW [Sw]	ܠܝܘܕܝ Voice
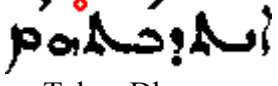
Arabic

Syriac uses the following characters found in the Arabic block. The punctuation marks, *tatweel* and the *shaddah* are used as core parts of writing the language. The rest are used in Garshuni.

Additional information about individual characters used in this block can be found in Appendix C.

،	U+060C	ARABIC COMMA	SYRIAC COMMA	ܚܘܙܚܡܐ، Barsoum
؛	U+061B	ARABIC SEMICOLON	SYRIAC SEMICOLON	ܣܚܡܐ؛ Barsoum
؟	U+061F	ARABIC QUESTION MARK	SYRIAC QUESTION MARK	ܗܠܒܐܝ؟ Gannana
ء	U+0621	ARABIC HAMZA	ARABIC HAMZA [Ga]	ܠܠܡܚܠܗء Tekso Dkumre
ـ	U+0640	ARABIC TATWEEL	SYRIAC ELONGATION	ܠܚܓـــܘܙ Tekso Dkumre
◌ً	U+064B	ARABIC FATHATAN	ARABIC FATHATAN [Ga]	ܡܣܠܗܐ◌ً Tekso Dkumre
◌ٌ	U+064C	ARABIC DAMMATAN	ARABIC DAMMATAN [Ga]	ܓܒܡܕܗ◌ٌ Tekso Dkumre
◌ٍ	U+064D	ARABIC KASRATAN	ARABIC KASRATAN [Ga]	ܓܒܡܕܗ◌ٍ Tekso Dkumre
◌َ	U+064E	ARABIC FATHA	ARABIC FATHA [Ga]	ܐܠܐܘܚܠܗܘܡ◌َ

			Tekso Dkumre
◌ُ	U+064F ARABIC DAMMA	ARABIC DAMMA [Ga]	اسلإهكدهؤم Tekso Dkumre
◌ِ	U+0650 ARABIC KASRA	ARABIC KASRA [Ga]	القؤؤهكدا Tekso Dkumre
◌ّ	U+0651 ARABIC SHADDA	ARABIC SHADDA [Ga Tu]	القؤؤهكدا Tekso Dkumre
◌ْ	U+0652 ARABIC SUKUN	ARABIC SUKUN [Ga]	اسلإهكدهؤم Tekso Dkumre
◌ٰ	U+0670 ARABIC LETTER SUPERSCRIPT ALEF	ARABIC LETTER SUPERSCRIPT ALEF [Ga]	الله Tekso Dkumre

Other characters, digits and punctuation, from the Basic Latin and Latin-1 Supplement blocks are also used.

Acknowledgments

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Comments or Discussion

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Appendix A: Text Samples

A listing of the publications used for illustrations is given in Appendix B.

Estrangela.

Figure A-1: Estrangela script as used by Western scholars (Juckel).

West Syriac.

Figure A-2: West Syriac text using the Estrangela and East Syriac type styles for headings and subheadings (Beth Gazo).

Figure A-3: West Syriac type styles used for writing Christian Palestinian Aramaic (note the reversed *Pe*) (Schulthess).

ܘܦܩܠܒ̈ܝܘܣ (ܘܣܩܠܝܘܣ *pass.* BC, ܘܣܚܠܘܣ,
ܘܚܠܝܘܣ *pass.* C; ܘܝܠܥܝܘܣ; etc. ܘܠܚܘܦ Joh.
1 45 Ev. 137 C, ܘܠܝܩܘܣ v. 44 ib. B);
vocat. ܘܣܠܝܐܝ, ܘܣܝܠܦܐ (ܘܣܠܚܐ, etc. C). N.
pr. Philippus, *pass.* N. T.
ܘܝܠܝܥܘܣ N. pr. Philippi urbs Phil. 1 1
(Pe^š. id.).
*ܘܠܥܝܘܣ. Pl. emph. ܘܝܠܥܝܘܣ Phil.
1 1 (in praescripto). 4 15; ܘܣܥܝܘܣ (sic
leg.) Lect. 1 12 2. [ܘܠܥܝܘܣܐ Phil. 4 23
in subscripto. Incertum). — Philippensis,
ll. cc.

Figure A-4: West Syriac type styles used for writing Syriac and its Arabic translation in Garshuni side-by-side (Tekso Dkumre).

Figure A-5: West Syriac type styles employing a mixture of the two vocalization systems (Hexaemeron).

Figure A-6: West Syriac type styles used for writing Turoyo (Central Neo-Aramaic) (Turoyo New Testament).

East Syriac.

Figure A-7: East Syriac type styles employing Estrangela for headings (Qdom).
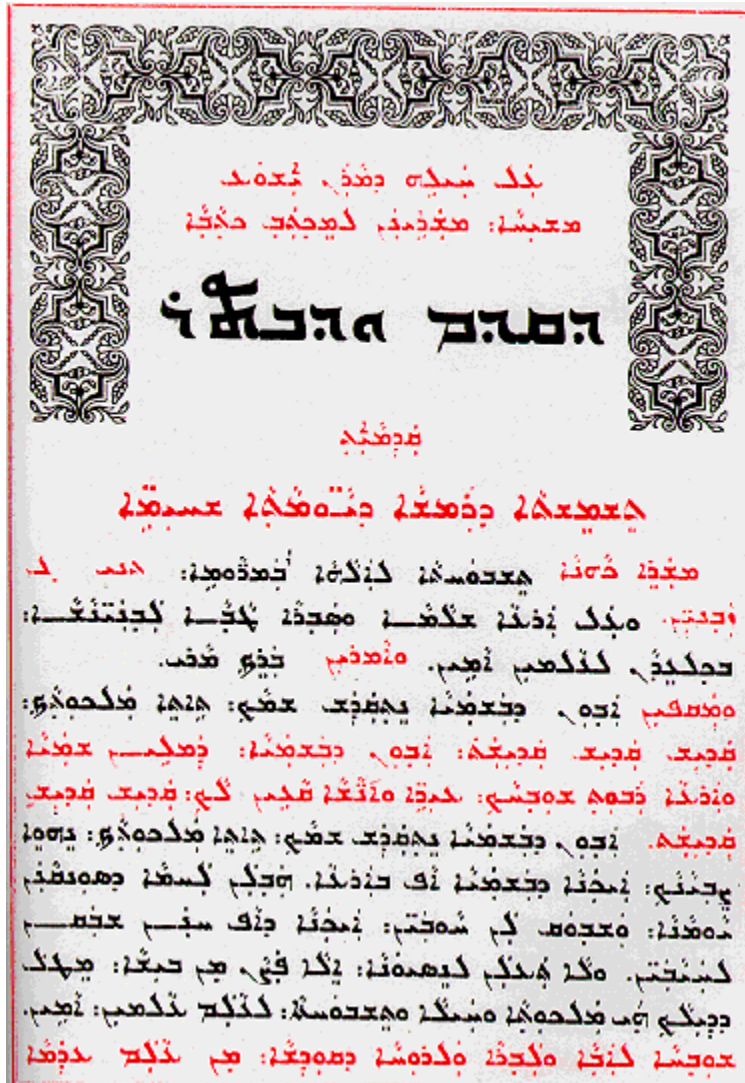
Figure A-8: East Syriac type styles used for publishing a West Syriac text (Bedjan).

Figure A-9: East Syriac type styles used for writing Swadaya (Eastern Neo-Aramaic) (Voice).

Appendix B: Publications Used in Examples

Anaphora - *Anaphoras. The Book of the Divine Liturgies According to the Rite of the Syrian Orthodox Church of Antioch*, translated by Murad Barsom (Lodi, NJ, 1991).

Armalah - Aramalah, I. *kitaab al-Usul al-Ibtida'iyya fi al-Lughah al-Suryaaniyyah* [Syriac grammar] (Beirut, 1922).

Barsoum - Barsoum A. *makthbonutho d*ᶜ*al athro d-ṯur* ᶜ*abdin* [History of Tur Abdin] (Lebanon, 1964).

Bedjan - Bedjan, P. *homiliae Selectae Mar-Jacobi Sarugensis* (Lipziae, 1915).

Beth Gazo - *kthobo d-beth gazo d-ne*ᶜ*motho* [music book for the Syrian Orthodox Church] (Holland: Bar Hebraeus Verlag, 1995).

BFBS - British and Foreign Bible Society, *The New Testament in Syriac* (London, 1950).

CESG - Kiraz, G. *Comparative Edition of the Syriac Gospels. Aligning the Sinaiticus, Curetonianus, Peshitta and Harklean Versions*, vols. 1-4 (Brill, 1996).

Dolabani - Dolabani, Y. *kthobo d-shethesto* [Syriac grammar] (Holland: Bar Hebraeus Verlag, 1982).

Gannana - *Gannana, a Newsletter of St. Mary's Parish, Assyrian Church of the East*, vol. 4, nos 3 & 4 (Los Angeles, 1989).

Hexaemeron - Iacobi Edessei, *Hexaemeron, seu in opus creationis libri septem* (Holland: Bar Hebraeus Verlag, 1985).

Juckel - Juckel, Andreas, *Der Ktaba d-Durrasha des Elija von Anbar*, CESO 559 (Lovanii: Peeters, 1996).

Mhadyono - Kyrillus Jacob and Asmar El-Khoury, *mhadyono, leksiqon suryoyo waswodoyo* [Syriac-Turoyo Dictionary] (Sweden: Syriac Association, 1985).

Mushḥotho - *mushḥotho dmor Gregorious yuḥanon bar* ᶜ*ebroyo* [poetry book by Bar Hebraeus] (Jerusalem: St. Mark's Press, 1928).

Nomocanon - *Nomocanon of Bar-Hebraeus* (Holland: Bar Hebraeus Verlag, 1986).

Oddo - See References under Oudo.

Qdom - *kthabo da-qdam wad-bathar* [liturgy book for the Assyrian Church of the East] (Baghdad: Church of the East Press, 1983)

Qurobo - *tekso d-qurobo alohoyo* [liturgy book of the Syrian Orthodox Church] (Holland, 1988).

Schulthess - See References.

Shḥimo - *kthobo da-ṣlawotho d-shabtho shḥimto* (Jerusalem: St. Mark's Press, 1946).

Segal - See References.

Tekso Dkumre - *kthobo d-ṯekse kumroye* [Syrian Catholic liturgy book] (Lebanon, 1952).

Turoyo New Testament - *The Four Gospels in Modern Syriac: Turoyo* (American Bible Society,

1995).

Voice - *Voice from the East,* newsletter of the Assyrian Church of the East.

Appendix C: Usage of Characters

Characters from the Syriac Block

- U+0700 - U+0709. These are unique **punctuation marks**. Their usage ranges from punctuating texts to guiding the reading of biblical texts in terms of accents, tone, etc. (Segal, 1953).

- U+070A. Placed at the end of an incomplete word, this symbol is a **contraction mark**, mostly used in East Syriac.

- U+070B - U+070D. These are **Harklean marks** used in the Harklean translation of the New Testament, both in ancient manuscripts and in printed editions of these texts (Kiraz, 1996). *Obelus* and *asteriscus* mark the beginning of a phrase, word or morpheme that has a marginal note, while *metobelos* marks the end of such section.

- U+070F. An **abbreviation mark** control character. See above under Syriac Control Character.

- U+0710 - U+U072D. These are the **alphabet letters**. Letters with "GARSHUNI" in their names are used in Garshuni documents; The reveresed *Pe* is used in Christian Palestinian Aramaic. Some letters may require further explanation:

- U+0711. This superscript *Alaph* is used in East Syriac texts to indicate an etymological *Alaph*. In West Syriac, this letter maps into a nil.

- U+0716. Prior to the development of pointing, early Syriac texts did not distinguish between a *Dalath* and a *Rish* (distinguished in later periods with a dot below the former and a dot above the latter). Printed editions of such texts also employ this character. From the 4th century onward, the two letters are distinguished with dots.

- U+071E. This combination of *Yudh* and *He* with the given dots is used in the same manner as Latin . It is mostly used in East Syriac texts .

- U+0724. Unlike other letters, the joining mechanism of *Semkath* varies through the course of history. Until the first quarter of the 7th century, *Semkath* is right-joining. Between the last quarter of the 7th century till the last quarter of the 11th century, the right-joining form appears alongside a dual-joining form. From the second quarter of the 12th century, one only finds a dual-joining *Semkath* (Hatch, 1946, p. 34). In this proposal, *"Old" Semkath* refers to the right-joining form.

- U+0725. This form of *Semkath* has a tail and occurs interchangeably with the regular *Semkath*.

- U+0730 - U+073F. This is the set of **vowel marks**. As shown in the above examples, the "Greek" vowels may be used above or below letters. As West Syriac texts employ a mixture of the "Greek" and dotted systems,

both versions ("Greek" and dotted) are accounted for here. Note that a dotted *Hbasa* is a dot under *Yudh*, while a dotted *Esasa* is a dot under *Waw*; therefore, we have collapsed them into one point, i.e., SYRIAC HBASA/ESASA DOTTED. The dots in the dotted vowels differ typographically from the SYRIAC DOT ABOVE, QUSHSHAYA and RUKKAKHA points; therefore, they are all accounted for in the proposal.

- U+0740. This **feminine marker** is used with the *Taw* feminine suffix (see example under Convention above). East Syriac fonts should render this as two dots below the letter. (Note. U+0324 from the Combining Diacritics block should be retained as well since it has other usage in both dialects.)

- U+0741 - U+0742. Used with the letters *Beth*, *Gamal*, *Dalath*, *Kaph*, *Pe* and *Taw*, QUSHSHAYA indicates that the letter is to be pronounced as a plosive (IPA [b], [g], [d], [k], [p], [t], respectively), while RUKKAKHA indicates the aspirated (spirantized) version (IPA, [v], [γ - Gamma], [δ - Delta], [x], [f], [θ - Theta], respectively). Note that these dots differ typographically and semantically from the dots of SYRIAC HBASA/ESASA DOTTED, SYRIAC DOT ABOVE, and SYRIAC DOT BELOW as the above examples indicate.

- U+0743 - U+0744. These are **accent marks** used in ancient manuscripts (Segal, 1953).

- U+0745 - U+0746. These marks are used in Turoyo to indicate letters not found in Syriac.

- U+0747 - U+0748. These oblique lines have various usage, the most popular being the indication of a silent letter. One other usage of OBLIQUE LINE BELOW is to indicate numbers multiplied by a certain constant (Costaz, 1955).

- U+0749. This is a **music mark** which also has other applications. For example, it is used in the Syrian Orthodox Anaphora book to mark the breaking of the Eucharist bread (Anaphora, 1991).

- U+074A. This diacritic cross is used in liturgical texts of all the Syriac-speaking churches, East and West.

- U+074B - U+074D. These allow for the Arabic *Madda* and *Hamza* to be used in Garshuni.

Character of the Miscellaneous Symbols Block The SYRIAC CROSS symbol is used in liturgical texts of all Syriac-speaking churches. It is also used by bishops, catholicai and patriarchs of these churches in their signatures.

Characters from the Combining Diacritics Block

- U+0303 and U+0330. These are used in Swadaya to indicate letters not found in Syriac.

- U+0304 and U+0320. These are used for various purposes ranging from phonological, grammatical and orthographic markers.

- U+0307 and U+0323. These points are used for various purposes, grammatical, phonological and otherwise. They differ typographically and semantically from the *Qushshaya* and *Rukkakha* points, as well as the dotted vowel points.

- U+0308. This is the **plural marker**. It is also used in Garshuni for the Arabic *Teh Marbuta*.

- U+030A and U+0325. These are two other forms for the indication of *Qushshaya* and *Rukkakha*. They are used interchangeably with SYRIAC QUSHSHAYA and SYRIAC RUKKAKHA, especially in West Syriac grammar books.

- U+0324. This diacritic mark is found in ancient manuscripts. It has a grammatical and phonological function (Segal, 1953).

- U+032D. This is one of the *digit markers* (Costaz, 1955).

- U+032E. This is a mark used in late and modern East Syriac texts, as well as Swadaya, to indicate a fricative *Pe*.

Character of the Arabic Block

- U+060C, U+061B and U+061F. These **modern punctuation marks** are used as core parts of the language system in writing Modern Literary Syriac, Turoyo, Swadaya and Garshuni.

- U+0640. This **elongation character** is part of the main core of the language and is used in the same manner as the Arabic *Tatweel*.

- U+064B U+0652 and U+0670. These are used in Garshuni to indicate the corresponding Arabic vowels and diacritics. The *Shadda* (U+0651) is also used in the core part of literary Syriac on top of a *Waw* in the word 'O'.