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- [1] This report marks the publication on DVD-ROM of a collection of thirty-three electronic facsimiles of Syriac manuscripts from the Vatican Library. Further details, including how to order the DVD-ROM are available at the project's website (<http://cpart.byu.edu/Vatican>).<sup>1</sup>

## **BACKGROUND**

- [2] This project is focused on the Syriac manuscripts of the Biblioteca Apostolica Vaticana, a collection that extends to over 850 manuscripts, including the collection of 181 formerly at the Borgia Museum.<sup>2</sup> The collection began to grow significantly in the early 18<sup>th</sup> century. Pope Clement XI encouraged a number of successful missions to Egypt and elsewhere in the Middle East to acquire manuscripts. Through the efforts of Elias Assemani, his cousin J. S. Assemani, and Gabriel Eva, some of the most significant of all surviving Syriac manuscripts were acquired in this period.
- [3] In 1999 Mar Bawai Soro, a bishop of the Assyrian Church of the East, began discussions with the Vatican Library to make their Syriac collections more accessible both to scholars as well as to the communities who produced these texts. Mar Bawai approached Brigham Young University to be a partner in the project, a proposal that was eagerly received. The idea of a pilot project was formulated by the parties and a contract between BYU and the Vatican Library was signed in early 2000. The manuscript photography was undertaken in two phases, one in June 2000 and another in April 2002.

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<sup>1</sup> An interim report for this project was published in "The Digitizing of Selected Syriac MSS in the Vatican Apostolic Library," *Hugoye: Journal of Syriac Studies* vol. 3, no. 3 (2000). The project began under the direction of Dr. E. Jan Wilson.

<sup>2</sup> For further bibliography on the Vatican Library's Syriac collection see, A. Desreumaux and F. Briquel-Chantonnet, *Répertoire des Bibliothèques et des Catalogues de Manuscrits Syriaques* (Paris: Editions du Centre national de la recherche scientifique, 1991).

## REPORT

- [4] The project was formulated with the kind assistance of academics working in the field of Syriac studies and was carried out with direction from a small advisory group (Professor Sidney Griffith, Professor Samir Khalil and Mar Bawai Soro (Assyrian Church of the East)). Dr. Sebastian Brock made an initial assessment of the collection, which resulted in a list of especially significant manuscripts (Appendix 1 below). From this list, Mar Bawai Soro selected 28 for a pilot project, which was later supplemented by 5 additional manuscripts.
- [5] The project proposal was originally modeled on BYU's Dead Sea Scrolls database. This database gives precedence to a searchable transcription of the scrolls and includes both the images and corresponding translations in the final product. Plans were therefore made to transcribe the manuscripts, and two teams were put in place, one for manuscripts written in the East Syriac script and one for manuscripts written in the Estrangelo and Serto scripts. This proved to be a not altogether appropriate model and a new approach was formulated as will be discussed below.
- [6] The photography was undertaken in two stages. In both stages we were able to set up a controlled studio environment, including camera stands, full lighting sets and back-up systems. The first stage of photography (June 2000) was undertaken using a Kodak MegaPlus camera with an array of 2x3k, producing 6 megapixel images. These grey-scale images were stored immediately after capture on Mitsui Gold CDs. The archival copies are in TIFF format and are approximately 6 megabytes each. A second set of these CDs was made on returning to BYU. In the second stage of photography (April 2002) we used a Canon EOS 1D, which captured full color 4 megapixel images. These images were also archived in uncompressed TIFF format, with each image being approximately 25 megabytes in size.
- [7] In the two stages of photography we captured a total of 14,700 images, which occupy 196 CD-ROMS, with a total archival data size of 117,600 megabytes. One manuscript alone, Vatican Syriac 117, required 50 CD-ROMS to produce the archival copy.
- [8] Further to the conventional photography we also undertook a series of tests using Multi-Spectral Imaging on Vatican Syriac 110, 114, 117, 147, 252, and 586. Thus far these tests have produced no beneficial results, though further analysis of the data is underway.

- [9] All digital photographs require processing. Furthermore, the uncompressed images were prohibitively large to view easily, so some compression was necessary. We opted for JPEG compression at a rate of 50%. We considered this to be optimal, since it produced a significantly smaller image with very little degradation of image quality. An initial stage of processing was necessary prior to compressing the images. In most cases the manuscripts were captured in a double page opening. We therefore cropped all of the images down to a single page and ran each image through a series of adjustments in Adobe Photoshop; a process that was successfully automated. The images were then brought into the Adobe PDF format for presentation. Further image manipulation is possible, though we did not consider the necessary expenditure of time to be prudent. Scholars who wish to undertake more sophisticated manipulation of particular manuscripts can request copies of the uncompressed images.
- [10] After a number of meetings with digital projects specialists at the BYU library, it was determined that the Adobe PDF format would be the best format to deliver the images. Though initial plans had pointed towards the use of BYU's own WordCruncher program as the best finished format, it quickly became clear that such an approach was impractical. A number of other image-only solutions were considered, but each of these proved less desirable than Adobe PDF.
- [11] The advantages of the PDF format are numerous. In particular, because Adobe PDF was designed to view continuous documents and books, it reproduces an environment that is familiar to readers. One can navigate easily between pages, magnify the images, and arrange the screen in such a way that the images may be viewed simultaneously with other programs. It is also becoming a standard document format in both a business and academic context, with many libraries delivering documents in this format. Also, the Adobe Reader is freely available and constantly being improved by the developer.
- [12] In order to make a number of PDF files available on the same DVD, we designed and developed a simple interface which runs immediately on inserting the disc. This interface includes an overview of the project and a table of contents. The table of contents contains links to thirty-three PDF files. Each of these files contains an electronic facsimile of a single Vatican manuscript. The

PDF files are identified by the manuscript number and a brief description. When the file opens, the first thing shown is an index to the manuscripts prepared on the basis of the existing catalogs. To these basic entries we have added references to editions and standard reference works that have been published subsequent to the original catalog entry. Each entry in the index also serves as a hyperlink. Clicking on an entry immediately takes one to the place in the manuscript to which that index entry refers. Also, for ease of reference we have included the original catalog entry immediately after our index.

## **GENERAL ASSESSMENT OF THE PROJECT**

- [13] This project has been undertaken over a four year period. During that time the objectives of the project have shifted and settled. The initial project description was modeled on our successful Dead Sea Scrolls project and focused on the utility of searchable transcribed texts. The Dead Sea Scrolls database contains about 1300 images, many of which contain only fragmentary texts. This project involves a corpus ten times that size. In addition to the difference in size and concomitant feasibility of such a project, there was the question of desirability and optimal presentation. It soon became clear from consultation with other scholars that the most needed result from this project was a usable set of images from the manuscripts. In other words, scholars wanted electronic facsimiles. There is of course a great desire for a database of searchable texts, but such a project needs to be organized along the lines of a discrete corpus of a single author, and based on critical editions rather than on an eclectic collection of manuscripts. We have therefore reconfigured the project to actively meet the needs of the field, and intend to re-purpose the extensive transcription work that we have undertaken.

- [14] Not only have our objectives been clarified, but we have also seen the technological landscape entirely shift. When we began this project, we used specialist industrial grey-scale digital cameras. In the intervening years, this equipment has been thoroughly superceded. The second stage of photography used the best available professional color digital SLR. This camera has also been superceded several times over. Though technology will of course continue to improve, we think we have now reached the stage where the available technology will produce images of an optimal

quality. It is also clear that we will only want to take color images in future projects and that it may be desirable for some of the manuscripts to be re-imaged in color. Nevertheless, with respect to the necessary technology this is a highly propitious time to continue this important project.

## APPENDIX 1

### Significant Syriac Manuscripts in the Vatican Library

Prepared by Sebastian Brock

Items in *italic* are included in Volume 1.

#### Biblical manuscripts

1. Vat. Syr. 1: Pentateuch, 928/9 A.D.
2. Vat. Syr. 12: Gospels, 548
3. Vat. Syr. 13: Gospels, 736
4. Vat. Syr. 14: Gospels, 956
5. Vat. Syr. 16: New Testament, 13<sup>th</sup> Cent.
6. Vat. Syr. 18: John, Harklean, + Gospel lectionary, 1481
7. Vat. Syr. 19: Christian Palestinian Aramaic Gospel lectionary, 1030
8. Vat. Syr. 20: Melkite Gospel lectionary, 1215
9. Vat. Syr. 21: Melkite Lectionary for Acts and Epistles, 1162
10. Vat. Syr. 22: Lectionary for Epistles (written in India), 1301
11. Vat. Syr. 23: Syriac-Arabic Lectionary for Epistles, 12<sup>th</sup> century
12. Vat. Syr. 24: OT lectionary, 13<sup>th</sup> century
13. Vat. Syr. 152: OT, Masora, 979/80
14. Vat. Syr. 266: NT, 7<sup>th</sup> cent.
15. Vat. Syr. 267: Harklean Gospels, 8<sup>th</sup> cent.
16. Vat. Syr. 268: Harklean Gospels, 859
17. Vat. Syr. 273: Gospels, 7<sup>th</sup> cent.
18. Vat. Syr. 274: Gospels, 10<sup>th</sup> cent.
19. Vat. Syr. 275: Acts, Epistles, 1192
20. Vat. Syr. 278: Melkite lectionary, 9<sup>th</sup> cent.
21. Vat. Syr. 279: Melkite Gospel lectionary, 1141
22. Vat. Syr. 470: NT, 12<sup>th</sup> cent.
23. Vat. Syr. 471: NT, 1224
24. Vat. Syr. 510: NT, 11<sup>th</sup> cent.
25. Vat. Syr. 525: Gospel lectionary, 7<sup>th</sup> cent.

26. Vat. Syr. 532: Acts, Epistles, 13<sup>th</sup> cent.
27. Vat. Syr. 556: Gospel lectionary, 13<sup>th</sup> cent.
28. Vat. Syr. 559: Gospel lectionary, 1220 with illuminations
29. Vat. Syr. 622: Gospels written in gold letters, 1298
30. Barbarini or. 2: Pentaglot psalter, 14<sup>th</sup> cent.
31. Barbarini or. 3: Gospel lectionary, 13<sup>th</sup> cent.
32. Borgia Syr. 14f-k: Gospel lectionary, 1254, with illuminations
33. Borgia Syr. 169: Gospel lectionary, 16<sup>th</sup> cent. With illuminations
34. Borgia Syr. 117: Masora NT, 1014

### Literary Texts

\* indicates manuscript contains unpublished material.

35. *Vat. Syr. 37: \*Lives of Saints*
36. *Vat. Syr. 93: \*John of Apamea, 9<sup>th</sup> cent.*
37. *Vat. Syr. 100: \*John of Dara, 19<sup>th</sup> cent.*
38. *Vat. Syr. 103: (\*)Catena Severi*
39. *Vat. Syr. 104: Athanasius, 564 (\*Timothy Alex.)*
40. *Vat. Syr. 105: Gregory of Nazianzus, Iambics, 7<sup>th</sup> cent.*
41. *Vat. Syr. 106: \*Gregory of Nyssa, 8<sup>th</sup> cent.*
42. *Vat. Syr. 107: \*John Chrysostom, hom. on John, 8<sup>th</sup> cent.*
43. *Vat. Syr. 108: Peter of Callinicum, 8<sup>th</sup> cent.*
44. *Vat. Syr. 109: \*Abba Isaiah etc. 692*
45. *Vat. Syr. 110: Ephrem, Comm. Genesis, 523*
46. *Vat. Syr. 111: Ephrem, Hymns on Church etc. 522*
47. *Vat. Syr. 112: Ephrem, Hymns on Paradise, 551*
48. *Vat. Syr. 113: Ephrem, Hymns on Faith, 552*
49. *Vat. Syr. 114: \*Jacob of Serugh, verse homilies, 523*
50. *Vat. Syr. 115: \*Jacob of Serugh, verse homilies, 7<sup>th</sup> cent.*
51. *Vat. Syr. 116: (\*)Jacob of Serugh, verse homilies, 857*
52. *Vat. Syr. 117: \*Jacob of Serugh, verse homilies, 12<sup>th</sup>/13<sup>th</sup> cent.*
53. *Vat. Syr. 118: \*Jacob of Serugh, verse homilies, pre-12<sup>th</sup> cent.*
54. *Vat. Syr. 119: \*Isaac of Antioch, verse homilies, 1210*
55. *Vat. Syr. 120: \*Isaac of Antioch, verse homilies, 6<sup>th</sup> cent.*
56. *Vat. Syr. 121: \*Mark the Hermit*
57. *Vat. Syr. 122: \*Mark the Hermit, Basil, 769*
58. *Vat. Syr. 123: \*Gregory of Cyprus etc. 8<sup>th</sup> cent.*
59. *Vat. Syr. 124: Isaac of Nineveh, 14<sup>th</sup> cent.*
60. *Vat. Syr. 125: Isaac of Nineveh*
61. *Vat. Syr. 126: Paradise of the Fathers, 1223*
62. *Vat. Syr. 127: Canons of Councils*

63. *Vat. Syr. 135: \*Philoxenos etc. 7<sup>th</sup>/8<sup>th</sup> cent.*
64. *Vat. Syr. 136: (\*)Philoxenos 6<sup>th</sup> cent.*
65. *Vat. Syr. 137: Philoxenos, 564*
66. *Vat. Syr. 138: Philoxenos, 581*
67. *Vat. Syr. 139: Severus, Philalethes etc, 8<sup>th</sup> cent.*
68. *Vat. Syr. 140: Severus, against Julian, 528*
69. *Vat. Syr. 141: Severus, Cathedral homilies (tr. Jacob of Edessa)*
70. *Vat. Syr. 142: \*Severus, Cathedral homilies (tr. Paul), 576*
71. *Vat. Syr. 143: \*Severus, Cathedral homilies (tr. Paul), 563*
72. *Vat. Syr. 144: John, Arbiter etc.*
73. *Vat. Syr. 145: Elias, \*Socrates Eccl. Hist., Zecharias Rhetor Eccl. Hist. 9<sup>th</sup>/10<sup>th</sup> cent.*
74. *Vat. Syr. 146: (\*)John Maro, Liber Fidei, 1392*
75. *Vat. Syr. 147: \*Moshe bar Kepha etc. 1234*
76. *Vat. Syr. 148: Ps. George of Arbela, Liturgical commentary, 1267*
77. *Vat. Syr. 151: (\*)Timothy II, On Sacraments, 1613*
78. *Vat. Syr. 152: \*Jacob of Edessa, on biblical names, 980*
79. *Vat. Syr. 154: \*George, Com. Matthew, 10<sup>th</sup> cent.*
80. *Vat. Syr. 157: Isho'yabb III, Letters, 10<sup>th</sup> cent.*
81. *Vat. Syr. 160: Life of Symeon the Stylite, \*Acts of Persian martyrs, 474, 10<sup>th</sup> cent.*
82. *Vat. Syr. 161: \*Acts of Persian martyrs*
83. *Vat. Syr. 162: Ps. Dionysius of Telmahre, Chronicle, 932*
84. *Vat. Syr. 163: Chronicle of Edessa*
85. *Vat. Syr. 165: Thomas of Marga, Monastic history, 1663*
86. *Vat. Syr. 189: \*John of Dalyatha, 11<sup>th</sup> cent.*
87. *Vat. Syr. 191: \*Ibn Sina, Syriac tr.*
88. *Vat. Syr. 192: \*Medical*
89. *Vat. Syr. 194: \*Grammatical works, 1246*
90. *Vat. Syr. 251: \*Jacob of Serugh, homilies, 7<sup>th</sup> cent.*
91. *Vat. Syr. 252: Jacob of Serugh, homilies*
92. *Vat. Syr. 253: \*Homiliary, 8<sup>th</sup> cent.*
93. *Vat. Syr. 254: \*Ps. Dionysius the Areopagite, pre-932*
94. *Vat. Syr. 255: Severus, pre-932*
95. *Vat. Syr. 256: \*Severus, Cathedral homilies, 6<sup>th</sup> cent.*
96. *Vat. Syr. 283: \*Comm. Matthew and John, 860*
97. *Vat. Syr. 284: \*Comm. Epistles, 9<sup>th</sup> cent.*
98. *Vat. Syr. 367: Isaac of Nineveh, 8<sup>th</sup> cent.*
99. *Vat. Syr. 368: \*Homiliary, 8<sup>th</sup> cent.*

100. Vat. Syr. 369: \*Homiliary, 7<sup>th</sup> cent.
101. Vat. Syr. 464: Ephrem, Isaac, Jacob of Serugh, 1234
102. Vat. Syr. 467: \*Life of Hoseph Busnaya, 1186
103. Vat. Syr. 506: \*Athanasius Abu Ghalib, 1927 (from an old MS)
104. Vat. Syr. 509: \*Monastic texts, 1928 (from an old MS)
105. Vat. Syr. 560: Canon law, 8<sup>th</sup> cent.
106. Vat. Syr. 581: \*John of Dara, 1917 (from an old MS)
107. Vat. Syr. 586: *\*Questions and answers on Aristotle, Categories, 13<sup>th</sup> cent.*
108. Vat. Syr. 623: \*Melkite Monastic texts, 886
109. Vat. Syr. 627: \*Fragment of Homiliary, 9<sup>th</sup>/10<sup>th</sup> cent.
110. Vat. Syr. 628: \*Fragment (1f) of Life of Abraham Qidunaya, 7<sup>th</sup> cent.
111. Vat. Syr. 629: \*Gregory of Cyprus, 12<sup>th</sup> cent.

### **Liturgical texts**

112. Vat. Syr. 42: *East Syriac Euchologion, 1202*
113. Vat. Syr. 51: West Syriac Pontifical of Michael the Patriarch, 12<sup>th</sup> cent.
114. Vat. Syr. 53: Melkite Euchologion
115. Vat. Syr. 59: *West Syriac funeral services, 1266*
116. Vat. Syr. 60: West Syriac funeral services, 13<sup>th</sup> cent.
117. Vat. Syr. 61: East Syriac funeral services, 13<sup>th</sup> cent.
118. Vat. Syr. 68: *West Syriac Beth Gazza, 1465*
119. Vat. Syr. 78-82: Melkite Menaia, 12<sup>th</sup>/13<sup>th</sup> cent.
120. Vat. Syr. 83: *East Syriac Hudra, 1537/9*
121. Vat. Syr. 92: Funeral services, 823
122. Vat. Syr. 95: Seblatha, 13<sup>th</sup> cent.
123. Vat. Syr. 539: Husoye, 10<sup>th</sup>/11<sup>th</sup> cent.
124. *Borgia Syr. 13: Melkite Euchologion, 12<sup>th</sup> cent.*
125. *Borgia Syr. 60: East Syriac Beth Gazza*
126. Borgia Syr. 133 II: Seblatha, 13<sup>th</sup> cent.
127. Borgia Syr. 159: West Syriac anaphoras, 1295
128. Vat. Syr. 527: Canticles, 6<sup>th</sup> cent. (2 folios)