Above: HMML’s latest projects expand the definition of what constitutes a manuscript. Here, at a HMML-sponsored project in Kerala in southern India, church records written on dried palm leaves are digitized for preservation and study.

On the cover: Supporters of cultural preservation make it possible for HMML to conduct its manuscript preservation work. Image of Pentecost, from a liturgical Gospel lectionary. MS. CFMM 37/2 fol. 5v. Manuscript on vellum, ca. 13th century. 41 x 30 x 10.5 cm. Copyright©: Syriac Orthodox Diocese of Mardin, Turkey.

Hill Museum & Manuscript Library

In the Benedictine tradition of reverence for human thought and creativity, the Hill Museum & Manuscript Library (HMML) preserves manuscripts, printed books and art at Saint John’s University and undertakes photographic projects in regions throughout the world.

HMML is the home of the world’s largest collection of manuscript images and of The Saint John’s Bible, a handwritten, illuminated Bible in modern English.

Hill Museum & Manuscript Library
Saint John’s University
PO Box 7300
Collegeville, MN 56321-7300
320.363.3514 (phone)
320.363.3222 (fax)
www hmml.org

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Fr. Columba Stewart, OSB, executive director and contributing writer
Wayne Torborg & Erin Lonergan, editors
Wayne Torborg, imaging
Sandra Herzog, graphic designer
Spectrum Printing, printer

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Dear Friends,

Almost fifty years ago, Fr. Oliver Kapsner, OSB, working in Austria, shot his first microfilm image of a manuscript, beginning a project that would eventually become the Hill Museum & Manuscript Library. Millions of photographs later, the Hill Museum & Manuscript Library has become a treasure house of human knowledge and culture. Fr. Oliver’s vision was compelling to the first American supporters of HMML’s work, who had seen the destruction of two European wars and feared a nuclear conflict that could destroy all traces of the European civilization to which most Americans owe their cultural origins. Gifts and grants from individual donors and from regional and national foundations kept HMML’s work going in those early years of intense microfilming efforts in Europe and Ethiopia. Cultural preservation interests a small but passionately committed section of modern society; finding these people, telling them about HMML’s mission, and inviting their support is necessarily a major part of my work as HMML’s Executive Director.

Since moving into digital media in the 1990s with the online manuscript catalog (later called OLIVER in honor of our founder) and then the switch to digital imaging in 2003, HMML has been able to capture the imagination of new audiences intrigued by our recent emphasis on the Eastern Christian cultures of the Mediterranean world, the Horn of Africa, and south India. Less obviously we have continued to build up our collections of European manuscript images from Malta, Ukraine, Romania, Hungary, and Rome. With the new wave of digitization projects undertaken by European libraries for their own manuscripts, HMML’s services have become less needed in Europe than they were fifty years ago when the region was much poorer and less technologically sophisticated than it is today. The Cold War had been HMML’s original inspiration, but its end in the 1990s coincided with a new awareness of the fragility of ancient Christian cultures in regions where political pressures or globalization pose great risk to manuscripts and the communities that care for them.

Continued on page 3

Above: Fr. Columba Stewart, OSB enters a church in the Kerala region of southwestern India along with colleagues Dr. Susan Thomas and Mr. Geejo George. HMML is conducting several photographic initiatives to preserve the manuscripts of India’s Saint Thomas Christian heritage.
HMML's work in the Middle East began during the 2003 war in Iraq, as a poignant counterpoint to the violence that would eventually force half of Iraq’s Christians to leave their ancestral homeland. As in Europe in the 1960s, the obvious need for such work meant that HMML soon had more projects than it could fund from existing resources. Finding new supporters became imperative so that the rapid pace of digitization made possible through easy communication with field sites via email and other electronic tools could be sustained. Once manuscripts were photographed, they still had to be cataloged by experts to identify the texts they contained, for only then could researchers know what we had. Over the early years of the new millennium, HMML managed to piece together generous gifts and grants to keep the cameras operating around the world. In 2010 a grant of $343,000 from the Andrew W. Mellon Foundation made possible a sustained effort to catalog the thousands of manuscripts digitized from 2003-2009.

Meanwhile, global events were dramatically affecting HMML’s work. The increasingly unstable political situation in the Middle East meant that there was greater need than ever for HMML’s services. At the same time, the international economic crisis had its effect on HMML’s endowment and on the capacity of both individual and institutional donors to support our work. How could we maintain the level of activity in the field so obviously necessitated by current conditions, while moving ahead with the crucial but less glamorous work of cataloging manuscripts and making their contents available to the world?

And so we met Arcadia. In the summer of 2010, I spent a week at Saint Catherine’s Monastery at the foot of Mount Sinai. There I had a joyful reunion with Fr. Justin, the monastery’s librarian. I had met him at HMML in the late 1990s when he came to learn about our microfilming work, and had maintained contact with him during the intervening years. During my time at Sinai, he told me about Arcadia and their support for digital analysis of palimpsests at the monastery (palimpsests are manuscripts that have been erased and then overwritten with a new text). When I got home I did some research, made an initial contact with Arcadia’s Program Director, and together we developed a proposal for a major grant that would see HMML’s preservation work through our Golden Anniversary in 2015 and allow us to focus our fundraising efforts on long-term sustainability and the fostering of intellectual creativity around our collections.

A major factor in Arcadia’s decision to support HMML was their recognition of the sheer scale of our undertaking with Eastern Christian manuscripts. When they learned that we already had a digital archive of manuscripts in Syriac, Christian Arabic, Armenian, and Ge’ez (Classical Ethiopic) larger than all of the major European and North American libraries combined, they realized the magnitude of what HMML was offering to the global community of scholars and all of those committed to safeguarding cultural patrimony.

The result has been the single largest grant in HMML’s history, and the first from a foundation located outside of the United States. Arcadia has committed to a $3,000,000 project over five years, ensuring that the projects abroad will keep going and that we have the confidence to scout out new opportunities for HMML’s work. Their gift supports expanded work on cataloging manuscripts from current and future projects,
complementing the Mellon Foundation’s support for cataloging the previous ones. Arcadia gives us a precious five-year window at a crucial time, during which we can advance our central mission of photographic manuscript preservation while being able to devote more energy to the longer-term needs of HMML.

So where will HMML be in five years? We will have completed our work in Lebanon, Syria, Turkey, and India. We will still be working in Iraq, Ethiopia, Jerusalem, and perhaps Egypt and Iran as well. We will have developed a new initiative in the Caucasus nations of Armenia and Georgia. The various important archives of Malta will continue to be comprehensively digitized to build up the resources of our Malta Study Center. There will probably be some new, unexpected project that we cannot even predict. Thousands of manuscripts will have been cataloged and made available through OLIVER and Vivarium, HMML’s image database. Funding will have been secured to bring scholars from around the world to HMML for conferences and for long-term research fellowships. Global media will recognize that HMML has become a center for historical research that can illuminate present-day events. The uniquely comprehensive nature of HMML’s collections—manuscripts from both west and east, ranging from pre-Christian papyri to 20th century manuscripts from Ethiopia and the Middle East—will be a magnet for scholars from around the world. A renovated HMML space will provide a comfortable, quiet, and technologically-advanced work environment for both staff and visiting scholars. The number of students from Saint John’s University and the College of Saint Benedict visiting HMML for a class or for special projects will continue to increase. The vision of HMML’s founder will have been fulfilled: a place where the contents of manuscripts are safe, where scholars are welcomed and provided all they need for their work, and where anyone interested in what human beings have considered to be worth writing down can learn more about the cultures that produced the world in which we live. There is a place in this vision of HMML’s future for all of you.

Sincerely yours,

Columba Stewart, OSB
Executive Director

The Mediterranean island nation of Malta became a focus of HMML’s manuscript preservation in 1973. This vintage photo shows Dr. Julian G. Plante (HMML’s first executive director), Rev. Canon John Azzopardi and Dr. Richard Barnett in the Archives of the Cathedral Museum, Mdina, Malta, in 1981.

Work continues in Malta using digital photography. Here, Theresa Vann and Charles Farrugia, Director of the National Archives of Malta, review progress at the Malta Study Center’s digitization studio at the Banca Giuratale, Mdina.
Travel to the Holy Land
With HMML Executive Director, Fr. Columba Stewart, OSB
May 4-22, 2012
WITH TRAVEL OPTIONS AVAILABLE
Participants will arrange their own travel to starting destination.
Options 1&2 or 2&3 can be combined.
Option 1: Jerusalem/West Bank/Galilee: depart from USA May 3, tour May 4-11 (depart for USA evening of May 11/early morning May 12).
Option 2: Jordan: tour begins by land from Jerusalem on May 11, ends May 15 in Jerusalem, with departure for USA evening of May 15/early morning May 16 (additional days in Jerusalem can be arranged at own expense). If combining Options 2&3, depart USA May 9, arrive Tel Aviv May 10, overnight in Jerusalem for Jordan tour beginning May 11.
Option 3: Jerusalem/West Bank/Galilee: depart from USA May 14, tour May 15-22 (depart for USA evening of May 22/early morning May 23).

May 4/F or 15/T
Day 1: Arrive Tel Aviv, transfer to Jerusalem, where we will be staying in a newly-renovated hotel in East Jerusalem. Dinner at the hotel with overnight in Jerusalem.

May 5/Sa or 16/W
Day 2: Full day in Jerusalem’s Old City, with its sacred sites holy to Judaism, Christianity, and Islam. Visit the Church of the Holy Sepulchre, which preserves the places where Jesus died and was buried (Mass will be celebrated here); the Via Dolorosa; the Armenian Quarter, where HMML has digitized the manuscripts of Saint Mark’s Syriac Orthodox Monastery; the byways and markets of the Old City. Overnight in Jerusalem.

May 6/Mo or 17/F
Day 3: Full day in Jerusalem, visiting the Temple Mount (Haram esh-Sharif) and the tunnel excavations along its western side; Mount of Olives (Mass); the Holocaust memorial and museum at Yad Vashem in West Jerusalem; Ein Karem, birthplace of John the Baptist. Overnight in Jerusalem.

May 7/Mo or 18/F
Day 4: Day trip to the West Bank, including Bethlehem, birthplace of Jesus; the massive fortress of the Herodion; the Shepherds’ Field where the announcement of Jesus’ birth was made (Mass); other sites as time allows. Overnight in Jerusalem.

May 8/T or 19/Sa
Day 5: Visit to the Dead Sea and Jericho, beginning with the unique natural fortress at Masada; ancient Jericho, one of the oldest inhabited sites in the world; Qumran, famous for the discovery of the Dead Sea Scrolls; Saint George’s monastery at Wadi Qelt. Overnight in Jerusalem.

May 9/W or 20/Su
Day 6: Drive up the Jordan Valley and visit the sites around the Sea of Galilee: Mount of the Beatitudes, Peter’s house and the ancient synagogue at Caphernaum, Tabgha, site of the miracle of the Loaves and Fishes, with Mass at the Benedictine monastery at Tabgha. Overnight in Tabgha Pilgerhaus.

May 10/Th or 21/M
Day 7: Drive to the Jezreel Valley and Mount Tabor, site of the Transfiguration of Jesus; continue to Nazareth, Jesus’ hometown; return to Jerusalem. Overnight in Jerusalem.

May 11/Fr or 22/T
Day 8: For those continuing with Option 2, a morning departure for Jordan; for those concluding Option 1 or 3, a free day in Jerusalem before an evening departure (all flights for USA either direct or connecting through Europe depart in the late evening/early morning).
Option 2: Jordan
(If combining Options 2&3, depart USA May 9/W, arrive in Tel Aviv May 10/Th, overnight Jerusalem before beginning tour on May 11.)

May 11/Fr
Day 1: Depart Jerusalem for Jordan, driving first to Jerash, a well-preserved ancient city of the Decapolis, and continuing to Jordan's capital Amman, the ancient city of Philadelphia, with a well-preserved Roman forum and theater. Overnight in Amman.

May 12/Sa
Day 2: Drive south, stopping at Madaba to see the famous Byzantine-era mosaic map of the Christian world; Mount Nebo, where Moses viewed the Promised Land (on a clear day Jerusalem is visible); Wadi Mujib, Jordan’s most dramatic natural feature; the Crusader castle of Karak; arrive in Petra. Overnight in Petra.

May 13/Su
Day 3: Full day in Petra, the Nabatean city carved into beautifully-colored sandstone and one of the wonders of the ancient world; Sunday Mass either at the site or hotel. Overnight in Petra.

May 14/M
Day 4: Visit sites along the eastern shore of the Dead Sea and the recently-excavated site of the baptism of Jesus at Bethany-beyond–the Jordan; return to Jerusalem to continue with Option 3 or depart for USA late evening/early morning (additional days in Jerusalem can be arranged at own expense).

Price: Subject to change

<table>
<thead>
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<th>Options 1 or 3</th>
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Includes:
- All meals; entrance fees; porterage at hotels; guide tips; Jordanian visa for those beginning Option 2 from Jerusalem. Israeli visas are issued free at Tel Aviv airport
- Accommodation in a double room with private bath
- All transfers and tours by private deluxe air-conditioned motor coach
- Licensed Palestinian Christian tour guide in Israel and the West Bank
- Liturgies at major holy sites
- Opportunity to meet representatives of local Christian communities

Not included:
- Airfare from USA to Tel Aviv, NB: flights to USA (or Europe to connect for USA) depart in the late evening/early morning; thus one should book return flights for: late evening May 11/early morning May 12 (if doing Option 1 only) OR late evening May 15/early morning May 16 (if doing Option 1 & 2) OR late evening May 22/early morning May 23 (if doing Option 2 & 3 or Option 3)
- Alcoholic drinks
- Trip cancelation or other insurance

The weather in May will be warm during the day with strong sunshine. Evenings will be cool. Transport and accommodation will be very comfortable and air-conditioned. This trip will feature a lot of walking, often over uneven surfaces.

Payment information:
- December 15, 2011, RSVP to Linda Orzechowski (Early reservations are encouraged as trip size is capped at 22 participants)
- January 15, 2012, 50% of trip cost is due at HMML as deposit
- April 1, 2012, balance of trip cost is due at HMML

No refunds are possible after April 15, 2012.

HMML accepts all major credit cards. Checks should be made out to the Hill Museum & Manuscript Library.

Questions about the trip:
Please contact Linda Orzechowski
Email: lorzechowski@csbsju.edu
Phone: 320-363-3514
Fax: 320-363-3222

* Millennium Club members annually contribute $1,000 or more to HMML. Legacy Society members have included HMML in their estate plans. For more information, contact Erin Lonergan, 320-363-2095, elonergan@csbsju.edu
Where We’re Working
Monastery of Saint Mark, Jerusalem
by Adam C. McCollum

This manuscript mostly consists of theological works by Quriaqos (d. 817), Patriarch of Antioch. It has beautiful script (Esṭrangēla, except in the colophon, which is Serṭo) and is in very good shape, especially considering its age: it was completed in 806 AD, on Oct. 3, a Tuesday, as the colophon specifies. The scribe copied it at the Monastery of the Column (Esṭonā) near Kallinikos, where Quriaqos himself had been a monk. This manuscript is especially valuable for the works of Quriaqos since it was copied during his lifetime. MS SMMJ 129, pp 30-31. Manuscript on parchment, 9th century.

HMML’s first project in Jerusalem, the work at Saint Mark’s Monastery, began in January 2011, when Fr. Columba Stewart and digital collections director Wayne Torborg traveled there to set up the equipment and train a photographer in the methods of image capture. Copies of digital photographic files for about half of the manuscripts have already been sent to HMML.

So far as is known, Saint Mark’s Monastery first belonged to the Coptic Church and was associated with Mary, but it eventually acquired the name “House of Mark.” In 1471 or 1472 the Syriac Orthodox community purchased the monastery from the Copts and in the late 15th century it became the seat of the Syriac Orthodox bishop of Jerusalem. The monastery has been renovated.
several times, and these renovations are documented in its several inscriptions in Syriac, Arabic, and Garshuni (Arabic written using Syriac letters).

The manuscript collection, which now consists of around 300 manuscripts in Syriac and Garshuni, was probably established in the 16th or 17th century, some manuscripts having been brought there from other collections in Jerusalem, such as the Monastery of Mary Magdalene. In addition, some manuscripts from Dayr Al-Za‘farān (in modern-day Turkey) were moved to Saint Mark’s after World War I. Some time later Patriarch Aphram I Barsoum had some of Saint Mark’s manuscripts transferred to the Syriac Orthodox Patriarchate, first in Hims (Homs) and then Damascus. The collection attracted the attention of western scholars in the early twentieth century; three German scholars whose articles and books are still appreciated by researchers in the fields of Syriac and Arabic Christianity cataloged part of the collection for the initial three volumes of the journal *Oriens Christianus*.

More recently, a team from Brigham Young University microfilmed thirty-one manuscripts from this collection in 1987–88, and—an early HMML connection to Saint Mark’s Monastery—William Macomber, who worked for HMML in the 1970s and 80s and is especially known for his work cataloging Ethiopian manuscripts at the beginning of the EMML project, drew up a preliminary catalog in 1990 for these microfilmed manuscripts at BYU. The advance of technology, accompanied as usual by the concomitant reduction in cost of that technology, has made it more feasible to preserve manuscripts like those at Saint Mark’s in color and at a high resolution, hence HMML’s work in the Middle East from 2003 to the present. HMML is proud to have partnered with Saint Mark’s to preserve their manuscripts and make them more accessible.

This manuscript contains the Epistles of Paul in the seventh century translation known as the Ḥarqlean, which was a revision of the standard translation (Pešītā) made along lines closer to the Greek text (note the Greek words written in the margin of this manuscript). The manuscript is not dated, but was probably copied in the eighth or ninth century. *MS SMMJ 37bis, fol. 17r. Manuscript on parchment, 8th–9th century.*
In May, a group of fifteen HMML Millennium Club and Legacy Society members met in Trabzon, Turkey to begin a two-week adventure through northeastern Turkey and the Republic of Georgia. Highlights of the trip included an afternoon in Ani, Turkey, the capital of the Kingdom of Armenia in the 10th and 11th centuries and one of the most important centers of Armenian culture in the Middle Ages. In the Artvin province of Turkey, the group was able to visit the remarkably well-preserved 9th and 10th century Georgian churches with beautiful frescoes.

After crossing the border into Georgia, the group enjoyed a drive along the Black Sea to Batumi,
HMML Hosts Summer Minnesota Manuscript Research Library Seminar

The Hill Museum & Manuscript Library hosted the Minnesota Manuscript Research Library Seminar (MMRL) June 6–11, 2011. This is the ninth consecutive year that HMML and the University of Minnesota have co-sponsored the MMRL Seminar which provides graduate students and advanced undergraduates with an intensive introduction to manuscript research.

There were five participants this year: Courtney Matthews, Nico Parmley, and Aaron Beek from the University of Minnesota, and Rachel Sowell and Isabelle Bateson-Brown from Ohio State University. HMML staff members conduct the week-long seminar which consists of lectures and hands-on workshops pertaining to the basics of manuscript research.

Plans are already underway for the next MMRL, which will take place June 3–8, 2012. If you are interested in participating, please contact: Dr. Theresa Vann, tvann@csbsju.edu.

Dr. Theresa Vann Presents at University of Leeds

Dr. Theresa Vann represented HMML at the International Medieval Congress, University of Leeds, in Leeds, England, July 11–14, 2011. The University of Leeds holds an annual International Medieval Congress similar in size and scope to the International Medieval Congress in Kalamazoo and attended by scholars from Europe and the United States. This year’s conference had as its theme “Poverty and Wealth.”

Vann presented the paper “Remembering warriors and crusaders: the role of Leonor of England and her daughters in commemorating the battle of Las Navas de Tolosa (1212).” Her paper discussed the role of the Maurists in the preservation and transmission of medieval charters. The Maurists were French Benedictines who, like HMML, traveled around Europe copying medieval texts before they were lost. The difference, however, is that the Maurists worked in the 17th and 18th century, and their tools were pen and ink, not photography. Their work is essential because many of the documents have since been lost or scattered. Vann questioned, however, how we can determine the accuracy of their work because we lack the originals.
In July, HMML hosted Fr. Jacob Thekaparampil, founder and director of the Saint Ephrem Ecumenical Research Institute (SEERI) in Kottayam, Kerala State, India. Established in 1985, SEERI is an international ecumenical center for Syriac studies that offers courses in Syriac language and initiation into the liturgical and spiritual traditions of the Churches of Syriac origin in Kerala (Southwest India). It offers courses in both East Syriac and West Syriac heritage.

Fr. Jacob has been instrumental in helping HMML develop relationships with important libraries. The founder of his church, Mar Ivanios of the Syro-Malankara Catholic Church, visited Saint John’s in the late 1940s and was inspired by the experience to establish Mar Ivanios College in Trivandrum, Kerala, now India’s largest Catholic institute of higher learning.
HMML Staff Participate in International Medieval Congress in Kalamazoo

In May, three HMML staff members attended the International Medieval Congress at Western Michigan University in Kalamazoo. Known affectionately as “the Zoo,” Kalamazoo is a highly celebrated annual conference for thousands of national and international medievalists. Professional organizations such as the Medieval Association for the Midwest (MAM), the Texas Medieval Association (TEMA), the American Academy of Research Historians of Medieval Spain (ARRHMS), De re militari, and the Medieval Academy’s Committee on Centers and Regional Associations (CARA) also attend.


HMML’s Work Featured at Syriac Symposium

On June 26-29, HMML Executive Director Columba Stewart, OSB, and cataloger Adam McCollum took part in the Sixth North American Syriac Symposium at Duke University in Durham, NC. This conference devoted specifically to the study of Syriac language, literature, history, and culture has taken place every four years at various cities in North America since 1991. Prof. Lucas Van Rompay of Duke University, ably assisted by a team of his current and former Duke graduate students, is to be congratulated for a very well-attended, informative, and enjoyable conference, this one being especially notable for the large number of participants. The schedule of paper presentations was very dense, but conference attendees fortunately still found some time for both more and less formal conversations with colleagues at meals and in the evenings.

Fr. Columba and Dr. McCollum, in addition to each presenting papers from their own research, gave a joint talk in a plenary session on HMML’s current preservation and cataloging work and on recent manuscript discoveries in HMML’s collections of interest for Syriac studies. A notable number of the symposium’s attendees expressed both appreciation and interest in HMML’s mission and current activities. Some younger scholars expressed their intention to apply for a Heckman scholarship and visit HMML in the near future for work on Syriac manuscripts. Fr. Columba and Dr. McCollum both plan to attend the next international counterpart of this symposium, in Malta in July, 2012.
On September 15, 2011, Saint John’s Abbey and University announced the historic completion of *The Saint John’s Bible*, the only handwritten and illuminated Bible commissioned by a Benedictine Monastery since the advent of the printing press more than 500 years ago. The seventh and final volume, *Letters and Revelation*, was completed in May, 2011.

*Letters and Revelation* includes 96 pages and contains more than 30 illuminations and special text treatments. *Revelation* is the only book in *The Saint John’s Bible* written and illuminated solely by Donald Jackson. Select illuminations in *Letters and Revelation* include And Every Tongue Should Confess (Philippians 2:5-11), which paints “Lord” in gold in 14 different languages: Armenian, Chinese, Coptic, Greek, English, French, Ge’ez (Ethopic), German, Italian, Japanese, Korean, Portuguese, Russian and Vietnamese; *Letter to the Seven Churches with the Heavenly Choir* (Revelation 2:1-5:14), representing crosses from different religious traditions with the words “Holy, Holy, Holy” written in Greek, Ge’ez, Latin and Spanish; and *The Four Horsemen of the Apocalypse* (Revelation 6:1-8), depicting symbols of power, greed and exploitation.

*The Saint John’s Bible* is a fifteen-year collaboration of scripture scholars and theologians at Saint John’s Abbey and University in Collegeville, Minnesota with a team of artists and calligraphers at the Scriptorium in Wales under the direction of Donald Jackson, one of the world’s foremost calligraphers and Senior Scribe to Her Majesty Queen Elizabeth’s Crown Office at the House of Lords. Written and drawn entirely by hand using quills and paints hand-ground from precious minerals and stones such as lapis lazuli and malachite, as well as silver and 24-karat gold, *The Saint John’s Bible* celebrates the tradition of medieval manuscripts while embracing 21st century technology to facilitate the design process and collaboration between Saint John’s in Collegeville and the scriptorium in Wales.

For more information, please visit www.saintjohnsbible.org.
The Saint John’s Bible

Modern Day Scribes May Provide Answers to Ancient Questions

*The Saint John’s Bible* illuminates the Word of God for a new millennium. It may also be able to help researchers answer questions about manuscripts written centuries ago.

Marilyn Lundberg and Ken Zuckerman of the West Semitic Research Project at the University of Southern California spent several days working with Bible folios in HMML’s imaging studio. They, along with the project’s director, Bruce Zuckerman, use specialized photographic techniques as their tool to examine objects and texts from the ancient world. In their past research, such as work on the famous Dead Sea Scrolls, they drew conclusions about such things as ink thickness and scribal practices based on their photographic explorations. By applying these methods to a modern manuscript such as *The Saint John’s Bible*, they can verify these conclusions by consulting the actual scribes. This would solidify their findings and conclusions about ancient texts photographed in the same manner.

For photographing selected areas of Bible folios, Lundberg and Zuckerman used an imaging technique called Reflectance Transformation Imaging (RTI). It is a relatively simple photographic concept made possible by highly sophisticated computer software. An RTI image is composed of dozens of individual photographs of the same object, each with the lighting coming from a different horizontal and vertical angle. The object itself is never moved; only the lighting angle changes.

To capture images with the different lighting angles, the team at the University of Southern California has constructed dome-like structures containing lights at different positions. This apparatus is not very portable, so for offsite photography, simpler tools are used: a shiny ball and a length of string. One end of the string is attached to a small handheld portable electronic flash unit. The other end is positioned at the center of the subject prior to the photograph being made. This measuring string ensures a fixed light-to-subject distance, keeping the exposures consistent. The flash is positioned at a variety of horizontal and vertical angles and the successive photographs are taken. The small reflective ball is placed in the periphery of each shot—the position of the reflection of the flash unit on this sphere tells the image processing software what the X and Y lighting coordinates are for each image. After the individual photos are created (in this case, 36 photos are taken), they are combined using specialized software into a Polynomial Texture Map (PTM), a type of image file that contains information about the appearance of each pixel in the image based on all of the horizontal and vertical lighting angles employed.

The result is an image that, when viewed with a special software application, is “adjustable” in terms of lighting angle. The viewer can choose the lighting angle with the computer mouse, and the appearance of the image will change in real time to represent the object as lit from the chosen angle. This “virtual light” can be moved around the image to see an infinite variety of views. This technology allows closer examination than was ever thought possible, revealing the tiniest of details. In using RTI, Lundberg and the Zuckermans will be able to study the dimensionality of the ink strokes made in *The Saint John’s Bible*. Their findings can then be confirmed by the actual scribes of the photographed texts, something not possible with ancient manuscripts. This will in turn provide factual “feedback” on the interpretation of RTI imagery and strengthen the capabilities of RTI as a research tool.

Marilyn Lundberg is driven by a passion for research; she strives to be able to “read” a document in the most thorough manner possible. Ken Zuckerman’s devotion lies in discovery, preservation and distribution. Together their philosophy combines an expert knowledge of ancient texts with expertise in applying advanced technology and promoting accessibility. To this end an online database, InscriptiFact delivers high-resolution RTI images to scholars in 41 countries at no cost.

Ken Zuckerman uses a length of string as a measuring tool to ensure that the light is at the same distance from the subject for all 36 photographs taken. This ensures consistent exposures on all the shots when they are combined to create the Polynomial Texture Map.
Want to receive periodic updates about HMML’s latest adventures? Send your e-mail address to: hmml@csbsju.edu and we will add you to our list.

We promise not to spam you, or ever sell or rent your personal information.

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