2012

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THE LITURGY OF LIGHT
Solar Geometry and Kinematic Liturgical Iconography in an Early 19th Century California Mission

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And he was transfigured before them, and his face shone like the sun, and his garments became white as light.

The Fourth Mystery of Light[1]
Matthew 17: 1-2

Introduction

It is clear to this investigator that a concerted effort was made to integrate astronomically or liturgically significant solar geometries into the construction of churches and chapels throughout the Americas. Whether inspired wholly or in part by considerations specific to syncretic accommodation or ecclesiastical computation, or the result of Amerindian agency and the indigenous conflation of Christian doctrine with local beliefs or pan-Indian cosmologies, many questions remain. The singular manifestation of liturgically-significant solstitial or equinoctial solar geometry is here taken to constitute a variation of what Mircea Eliade has long since identified with the concept of the Hierophany, or an earthly manifestation of the sacred borne of light, the intent of which is to herald revelations regarding the divine, the Messiah, or the supernatural intermediaries of the heavenly kingdom. Accordingly, I contend that for the Hispanicized Indian converts of the early mission communities of Alta California, and the Americas more generally, the solstitial and or equinoctial illumination of the tabernacle enclosure in particular was akin to the theophany, or the manifestation or appearance of God.[2] Whereas the midwinter solstitial illumination or “transubstantiation” of the tabernacle, and the Eucharist contained therein, would have constituted a rite of intensification and renewal for Native Californians, and other New World populations; one is left to ponder the very power inherent in a theology of light wherein the sol invictus or Cristo helios (Unconquered Sun/Solar Christ), failed to materialize as the result of inclement weather, and thereby, the auspicious darkening of the midwinter sun and the dreaded coming of the End of Days.

About the Author
Dr. Rubén G. Mendoza is an archaeologist, writer, and photographer who has explored the length and breadth of Mexico, Central America, Europe, and the US Southwest documenting both pre-Columbian and Colonial era sites and collections. A founding faculty member of the California State University, Monterey Bay, Professor Mendoza has directed major archaeological investigations and conservation projects at missions San Juan Bautista, San Carlos Borromeo de Carmelo, and Nuestra Señora de la Soledad, among others. Recent efforts at the Royal Presidio of Monterey resulted in the tandem discovery of the earliest Fray Junípero Serra chapels in California dated to 1770 and 1771. A charter member of both the California Missions Foundation since 1998, and the California Missions Curators and Directors Conference since 1999, he has personally raised over one-million dollars on behalf of the Foundation and the Diocese of Monterey in an effort to save the historic Missions of the California central coast. Much of his effort has been directed to Old Mission San Juan Bautista with the long-term support of patron Phil Hudner of the Botto Law firm. As founding Director of the Institute for Archaeological Science, Technology, and Visualization at CSU Monterey Bay, he has worked to build an institute oriented to the digital visualization of archaeological sites and data; and a program devoted to delivering excellence in higher education while provisioning equity and access for the communities of the California Central Coast. His Mission Solstice Survey has in turn resulted in the astronomically and liturgically-significant discoveries of solstice, equinox, and feast day solar illuminations of mission church altars throughout California, the US Southwest, and Mesoamerica. His work on behalf of the Royal Presidio Chapel Conservation Project was awarded the California Preservation Foundation Preservation Design Award for 2009.
While some detractors to this line of inquiry have cited an imagined and overarching “purist” or “fundamentalist” bent by the early religious of the Franciscan order of California as cause enough to avoid syncretic accommodation, or stated differently, “pagan” leanings; one other detractor has gone so far as to claim that the California mission tabernacles would have remained empty as “Native Californians were denied the sacrament (read Eucharist) for a period of eight years” in the earliest days of the Mission era.[3] This latter observation has little bearing on how specifically Native Californians would have perceived the stated “illumination” of the tabernacle, and thereby the Eucharist contained, or not contained, therein.[4] As noted to this investigator by Bernard Herman, the George B. Tindall Professor of American Studies at the University of North Carolina, Chapel Hill, rather than seeing the solstitial “illumination” as a projection of light onto the tabernacle, the neophyte converts (and their “gentile” counterparts) who bore witness to the annual spectacle of light would have perceived it as an “emanation” or projection of divine light issuing from the tabernacle or sancta sanctorum itself. Moreover, their denial of the Eucharist by the friars, therefore, would have heightened the desire of the neophyte or native convert to seek full acceptance, and thereby, total conversion within the very setting within which they experienced the Hierophany of light, and bore witness to that dimension of theophany inherent in The Fourth Mystery of Light foretold in Matthew 17:1-2 – or, stated differently, the Transubstantiation of the Eucharist into the body of Christ, and thereby, the Cristo helios. From the perspective of the neophyte convert, the denial of the very Eucharist or Sacrament identified with the midwinter or midsummer solstice sun, and the Mystery of Light, or Transubstantiation, would have proven a powerful incentive to validating agency and raising one’s status within the Hispanicized Indian communities of the Mission era. According to Mircea Eliade (1961: 21), “the manifestation of the sacred ontologically founds the world,” and seen through the veil of the eschatology of the times, one’s place in the world to come was directly contingent on access to the power and glory of the Sacrament of the Sun (Mendoza 2005b).

Figure 1. The abalone-encrusted and mirrored Chumash Tabernacle of Mission Santa Barbara, California. Photo by Rubén G. Mendoza, 2010.
Geometry of the Equinox

While by and large the solar geometry exemplified at each of the equinocial type sites identified to date by this investigator from throughout California, the US Southwest, and northern Mexico is biased to the patronal feast day of Saint Francis, the founder of the Order of Friars Minor, variations on the equinocial illuminations have been correlated by this investigator with the patronal feast days identified with specific sites and or local identities and sources of veneration (Mendoza 1985, 2002, 2004a, 2004b, 2004c, 2005a, 2005b, 2006, 2008, 2009d, 2010). Unlike the solstice sites, while the actual or projected pattern of equinocial solar geometry has been found to favor a pre-meridian or easterly orientation for church buildings, and thereby, sunrise illumination patterns; sites such as San Fernando Rey de España and San José depart from this pattern, and appear to favor a post-meridian or sunset illumination of their respective altar features.

Rather than review each and every one of the aforementioned equinocial sites, which are far too numerous to address in this treatment, I now move to a consideration of California’s Archangel sites by way of the singular analysis of Mission San Miguel. This investigator has identified and documented a dynamic liturgy of light, and or “moveable iconography” encompassing the entirety of the main altar screen and its liturgical icons for the church of San Miguel. The illuminations span the period encompassing the feast day of the patron saint on September 29th through October 19th; and thereby, the mirrored dates spanning February 22nd through March 9th. Significantly, given that a host of Mission sites has been documented to produce equinocial illuminations on or near the vernal or autumnal equinox, each has been found to replicate its illumination in a mirrored pattern on the period of its equinocial counterpart. As such, following on the work of Dawson (2004), each of the aforementioned sites has been demonstrated to incorporate “mirror dates” during which the defined pattern of a given illumination is repeated during the course of any given year,[5] and as in the case of Archangel sites, the iconography of light is reversed; and thereby, the “Myth of the Eternal Return” is manifest through the guise of the liturgy of light (Eliade 1971).

An Exemplar of the Liturgy of Light

I now turn to a specific consideration of one of a number of particularly significant exemplars of solar geometry in the service of liturgical drama, networked or kinetic liturgical iconography, and thereby, the liturgy of light. The following architectural exemplar is here highlighted as it is taken to constitute the first substantive case of an ecclesiastical system of kinetic or kinematic liturgical iconography. Within the context of ecclesiastical architecture, I hereby contend that kinematic iconography or kinetic iconographic systems
necessarily entail the use of directed light and motion to highlight a networked constellation of religious icons and symbols that, taken together, express systems of sacred meaning; and thereby, serve as architectonic constructs or archetypes of the prevailing cosmological order of the site within which they occur.

The site, previously cited as the type site of a triad or constellation of California mission churches identified with the devotion of the Archangels, is that of San Miguel Arcángel. The equinoctial illumination of the main altar reredos in this instance spans a period encompassing the September 29th feast day of the patronal saint San Miguel Arcángel through to the October 19th illumination of Saint Anthony of Padua and the painted icon of the Stigmata or five wounds of Christ. The processional illumination in question is here deemed to constitute a system of kinematic liturgical iconography in that each of the bultos or carved wooden saints of the main altar, and their attendant iconographic equivalents, are precisely illuminated in liturgically significant succession through the course of five-day intervals spanning the aforementioned period. Perhaps, more significantly, the kinematic liturgical schema in question has in turn been found to coincide in form, pattern, and timing with that of the equinoctial solar geometry of the second of the Archangel sites; that of Mission San Gabriel Arcángel in the Los Angeles Basin located hundreds of miles to the south of San Miguel Arcángel. Given that all three of the Archangel sites were identically oriented to within a degree or two of the very same azimuth bearing (even factoring out variation due to declination differences), I hereby contend that the three Archangel sites, mainly, San Miguel, San Gabriel, and San Rafael, were participants in a pan-regional liturgical drama or theater rendered writ large on a monumental (cosmological) scale.

_San Miguel Arcángel_ (35.7450° N 120.6975° W, +199m) was founded by the Order of Friars Minor on 25 July 1797, and the present church was completed in 1818. Within three years of its completion, the walls and ecclesiastical features of the nave and sanctuary were festooned with an elaborate ensemble of fresco murals and other painted surfaces. According to Mardith Schuetz-Miller (1994: 174), “the paintings are a veritable potpourri of classical elements, wallpaper and brocade designs, and an exuberantly colored main altar” replete with an elaborate sunburst version of the All Seeing Eye of God, the symbol of God’s omniscience. The painted brocade designs, bannisters, draperies, and the ceiling-mounted system of pulleys used to raise and lower painted back-drops and or liturgical lienzos insinuating the life of the saints and the Passion of the Christ, was all meant to facilitate the use

*Figure 2.* The recently restored main façade and window/oculus of Mission San Miguel Arcángel, California. Photo by Rubén G. Mendoza, 2010.
and identification of this sanctuary with those passion plays and theatrical reenactments that once brought the time-honored (biblical) events of Holy Week to the stage in this colorful theater of conversion (Edgerton 2001).

Initial identification and early observations of the equinoctial orientation of the mission church of San Miguel Arcángel were made in the spring of 2003. A tentative determination of site significance was established on the basis of azimuth bearings obtained with a Brunton pocket transit shortly thereafter, and a preliminary assessment of the associated iconography, and a corollary photographic survey of the church sanctuary undertaken in September of 2003. On Sunday, October 14th of 2003, the author made yet another site visit in order to record the equinoctial orientation of the sun at first light, and while doing so, witnessed for the first time (while seated within the nave) the illumination of the main altar bulto or patronal saint’s statue of San Miguel stationed at the center of the altar screen. Because the illumination in question happened to coincide with Sunday mass, no photographs or video were obtained on that occasion as the author sought to avoid disrupting the solemn occasion of the Holy mass. Having noted the time and day of the illumination, further investigation determined that the equinoctial mirror date of 27 February 2004 would thereby mirror the illumination seen that morning in October of 2003. Unfortunately, two months after the 14 October illumination of the patronal saint, Mission San Miguel was jolted by the San Simeon Earthquake of 22 December 2003. Measuring 6.5 on the Richter scale, the midwinter solstice earthquake severely compromised the structural integrity of the church and its associated cloister. Shortly thereafter, San Luis Obispo County “Red Tagged”, and very nearly condemned, the now beautifully restored site.

As a result of the damages so noted, this investigation was temporarily halted at that site. Ultimately, it was not until after two subsequent, and largely fruitless, attempts (under the cover of safety helmets) to document the equinoctial illumination at San Miguel that this investigator was joined in the badly damaged sanctuary of San Miguel by Brother William “Bill” Short, OFM. On October 4th of 2008, the first photographic documentation for the equinoctial illumination of the statue or bulto of Saint Francis (beneath the Franciscan Escutcheon, or symbol of the Conformity or Tau cross) located on the Gospel or south side of the main altar reredos, was finally obtained.[6] Two years would pass before another opportunity to observe the equinoctial illumination was had, and that was a year after the restoration, and one year after the St. Michael’s feast day rededication of the church on 29 September 2009. In October of 2010, this investigator contacted Mission San Miguel museum Curator John Warren, and apprised him of plans to undertake a site visit for the purposes of documenting the equinoctial illumination of the main altar reredos. In the end, it was only by virtue of John Warren’s dedicated efforts to track the sun through the period extending from
October 3rd through the 19th that this effort ultimately proved successful. As I found it necessary to make the 1.5 hour commute each morning between Salinas and San Miguel, California (on those days projected to entail liturgically-significant solar geometry), I was in part reliant on John Warren’s weekly observations and email reports of each morning’s solar geometry. [7] As a result, the kinematic liturgical geometry in question was fully documented with both digital photography and videography at each post-equinoctial interval projected in advance to entail a liturgically-significant illumination of the main altar and its statuary. The results obtained were phased or sequenced as follows: (a) Where the October 4th patronal saint’s day illumination of the bulto of San Francisco de Asís is concerned (Phase 1: Autumnal Equinox), first light at the horizon was recorded at 7:04 am on an azimuth bearing of 104.3° E, with the centered illumination of Saint Francis taking place at 7:28 am on an azimuth bearing of 108.2° E with the sun at an altitude of 16.2° (Mirror Date: 9 March); (b) the next liturgically significant post-equinoctial illumination was that centered over the tabernacle (Phase 2: Autumnal Equinox), precisely five days later, on October 9th. On that day, first light was recorded at 7:09 am on an azimuth bearing of 107.2° E, with the centered illumination of the main altar tabernacle recorded at 7:36 am on an azimuth bearing of 111.5° E with the sun at an altitude of 16.6° (Mirror Date: 4 March); (c) Phase 3 (Autumnal Equinox) registered five days after the Phase 2 illumination of the main altar tabernacle, and was recorded on October 14th. First light on the horizon dawned at 7:12 am on an azimuth bearing of 109.0° E, with the Phase 3 centered illumination of the bulto of Saint Michael recorded at 7:26 am on an azimuth bearing of 111.3° E with the sun at an altitude of 13.9° (Mirror Date: 27 February); and finally, the kinematic liturgical event at San Miguel culminated five days later with the (d) Phase 4 (Autumnal Equinox) illumination of the bulto of San Antonio de Padua on 19 October. First light on the horizon was manifest this day at 7:17 am on an azimuth bearing of 111.6° E, with the Phase 4 centered illumination of the bulto of Saint Anthony projected to occur at circa 7:44 am on a bearing of 115.9° E, with the sun at an altitude of 16.1° (Mirror Date: 22 February).[8] Given that the corresponding autumnal equinoctial mirror dates of 4, 9, 14, and 19 October are necessarily “mirrored” during the course of the vernal equinox, then so too is the kinematic iconographic ensemble and its solar geometry mirrored (albeit, reversed) during the moveable feast day associations of the forty-day Lenten season that culminates with Holy Week, and thereby, Easter.[9] Given that Easter constitutes a moveable feast timed to coincide with the first full moon after the vernal equinox, Ash Wednesday serves to acknowledge the beginning of the Lenten season, and takes place forty-six days before Easter, and as such, both the Lenten season and Easter coincide with the vernal equinox. The vernal equinox, and thereby, Lent, are directly identified by the Catholic Church with the renewal of life and the rebirth of the sun, and thereby, the Resurrection identified with the life, death, and rebirth of the Christ.
A Mirrored Liturgy Revealed

As for those dates, and thereby, that sequence of kinematic liturgical iconography expressed during the Lenten season in the solar geometry of the sanctuary at Mission San Miguel, the procession of the sun across the main altar reredos is reversed. Therefore, what is hereby identified with the October 19th Phase 4 illumination of Saint Anthony in the autumn, is subsequently mirrored in such a way as to correspond with Phase 1 of a vernal equinoctial cycle of solar geometry specific to saints identified with the Third Order of Saint Francis. As such, the mirror date for the Phase 4 autumnal illumination of Saint Anthony has been determined to coincide with the February 22nd feast day of Santa Margarita de Cortona (St. Margaret of Cortona) cited in the Kalendarium Festorum of the Missale Romanum of 1803 (Concilii Tridentini Restitutum 1803). That solar geometry identified with February 22nd, and thereby, Saint Margaret of Cortona, has similarly been identified with Mission Santa Inés Virgen y Mártir, founded in 1804; and that only eleven years after the publication of a significant and widely known tome on the saintly life and sacrifices of Saint Margaret. Whereas the illumination at San Miguel is specific to

Figure 3. Kinematic liturgical schema and solar geometry from Mission San Miguel Arcángel. Photo by Rubén G. Mendoza, 2011.
the bulto of Saint Anthony, that at Santa Inés coincides with the February 22nd illumination of the main altar tabernacle, and that at this one of five sites in Alta California dedicated to women specifically identified with the Order of Friars Minor and its devotional traditions (McLaughlin and Mendoza 2009). Significantly, the depiction of the Christ child identified with Saint Anthony on the north side of the main altar reredos is said to have manifested himself to the saint in the form of an apparition at either Arles, France, or Padua, Italy; and as such, the apparition of the Christ child to Anthony is celebrated to this day by the Order of Friars Minor. The *Phase 3* autumnal illumination of Saint Michael is in turn mirrored by the *Phase 2* vernal equinoctial date of 27 February which corresponds to Saint Gabriel of the Sorrowing Virgin in the *Roman Missal* of today, and to *Beata Eusthoquii Virgen* (Santa Eustaquio, Virgin) of the *Kalendarium Festorum* of 1803. The *Phase 2* autumnal illumination of the main altar tabernacle is in turn mirrored by the *Phase 3* vernal equinoctial date of 4 March which approximates the feast of Saint John Joseph of the Cross in the *Kalendarium Festorum* of 1803; and Saints Casimir, and Lucius I, Pope and Martyr, in the modern Roman Missal. Finally, the *Phase 1* autumnal illumination of the *bulto* of Saint Francis at Mission San Miguel is mirrored by the *Phase 4* vernal equinoctial date of 9 March, which coincides with the feast of Santa *Catharina Bononiensis Virgen* (Saint Catherine of Bologna, Virgin) in the *Kalendarium Festorum* of 1803 and today. In this instance, I believe the greater significance of the correlated or “mirrored” liturgical calendar, and thereby the mirror dates of the vernal equinox, lies with their respective identification with Ash Wednesday, and the beginnings of the moveable feast days of the Lenten season and Easter.

Significantly, in this instance, the date attributed to the Easter observance coincides with April 16th for the 1797 year of San Miguel’s founding. Therefore, Ash Wednesday, or the start of the Lenten observance falling forty-six days before, coincides with 4 March, and the mirrored vernal equinoctial illumination of the main altar tabernacle at Mission San Miguel. As such, by virtue of the moveable feast day schedules identified with the vernal equinox, the solar geometry in this instance may well have been intended to coincide with Ash Wednesday, and the start of those observances identified with the Lenten season, Holy Week, and when calibrated for concerns with those wide variations due to the use of the Ecclesiastical (as opposed to astronomical) Equinox, Easter proper. Regardless of what was intended, the fact remains that when taken together as a whole, the entirety of the illumination pattern forms the Sign of the Cross writ large, a fact that was not likely lost on the brothers of the Order of Friars Minor.[10]
Concluding Remarks

In the final analysis, I believe that liturgical drama inherent in the configuration of the main altar reredos and solar geometry of San Miguel Arcángel does indeed demonstrate the basis for a broader modeling of kinematic liturgical iconography. I contend, therefore, that the equinoctial type sites identified to date in fact bear clear associations with the Lenten season, Holy Week, and Easter, and do so by virtue of both equinoctial mirror dates and that brand of kinematic liturgical iconography since defined for the particularly complex solar array of Mission San Miguel Arcángel. The otherworldly tabernacle and bulto light array and solar geometry of San Miguel span the whole of the altar screen in the form of a moveable iconography of light that encompasses San Francisco de
Asís, the Tabernacle enclosure, San Miguel Arcángel, and San Antonio de Padua; and are in turn mirrored and reversed during the Lenten season as a pre-equinoctial pattern of apparitions. Ultimately, San Miguel Arcángel presents the best evidence available to date for what now appears to constitute the most widespread pattern of solar geometry yet identified with the cult of solar Eucharistic worship in the Americas. Said pattern spans the tandem illuminations of the Archangel sites of Alta California (i.e., San Miguel Arcángel, San Gabriel Arcángel, and San Rafael Arcángel), and thereby serves to substantiate the likelihood of a predetermined and or synchronized pan-regional expression of kinematic liturgical iconography, and sacred and solar geometry, inculcated into the larger sacred landscapes of the missionary enterprise.

In the final analysis, the evangelization of the American hemisphere, and the rise of solar Eucharistic worship and the solar Christ constitute a sanctified conflation, cultural accommodation, and spiritual reconciliation of both pre-Columbian and European cosmologies. Nowhere is this conjunction of liturgical and syncretic features manifest more clearly than within the context of the equinoctial solar geometry of the largest cathedral in the American hemisphere, that of the Catedral Metropolitana de la Asunción de María (1573-1813). As the seat of the Roman Catholic Archdiocese of Mexico, and as the epicenter of the vast missionary enterprise that

Figure 5. The equinoctial illumination of three of seven western side altars, of a total fourteen side altars, within the Metropolitan Cathedral, Mexico City, DF. Photo by Rubén G. Mendoza, 2005.
fueled the evangelization of the New World, it is only appropriate that the Metropolitan Cathedral is oriented such that the feast days of San Francisco de Asís, and that of the Assumption of the Virgin Mary, frame the makings of a complex and sophisticated solar geometry – centered on the illumination of a constellation of fourteen side altars – in so monumental and sacred a theater of conversion.

**Epilogue**

Shortly after the completion of an earlier draft of the manuscript from which this essay was abstracted, CSU Monterey Bay Institute for Archaeology research assistant Jewel Gentry launched a preliminary exploration of the ecclesiastical architecture of the churches of the Philippines (Gentry 2012; see Gentry, this volume). Upon learning that the Filipino churches were in turn the product of missionary ventures launched by the Church and the Viceroyalty of New Spain based in Mexico City, Gentry discovered documentation pertaining to how it was that the Baroque architecture of the Philippines was “…fashioned in conformity with the reforms of the Council of Trent” (1554-63; cf., Amorsolo 1986). This in turn led Gentry to a Council-mandated building code instituted by San Carlos Borromeo (1538-84) as a measured response to the Protestant Reformation. Published in Milan in 1577, Borromeo’s *Instructiones Fabricae et Supellectilis Ecclesiasticae*, constitutes the official building code for all aspects of church construction, art, and architecture, for the period of the Counter Reformation, and thereby, the whole of the evangelization of the New World (Gentry 2012: 5). Significantly, said document makes clear the role of the Council of Trent, and thereby, the Vatican, in the promulgation of an edict officially mandating that brand of equinoctial solar geometry most widely integrated into the churches of the New World in the period after AD 1577.

**Acknowledgements**

I acknowledge David Bolton and the editors of the CMSA Boletín for their patience and professionalism in permitting me to see through publication of this contribution. I am particularly indebted to the long-term support of the Diocese of Monterey, including the honorable DD Bishop Richard J. Garcia; Sir Richard Joseph Menn, Curator Emeritus of the Diocese of Monterey (2002-05); and the Reverend Carl Faria, Archivist of the Diocese of Monterey. Brother Timothy L. Arthur, O.F.M., Director of the Fray Junípero Serra Cause, and Interim Archives Librarian Pat Livingstone of Mission Santa Bárbara, provided unprecedented access to the Santa Bárbara Mission Archives colonial-era science collection. Fathers William Short, O.F.M., Raymond Tintle, O.F.M., and Guardian Larry Gosselin, O.F.M. have each welcomed my work and have generously provided accommodations and access to the old church and grounds at
Mission San Miguel Arcángel. San Miguel Mission Curator John Warren proved an invaluable resource and partner in the visual documentation of the October 4th through 19th San Miguel mission church equinoctial illuminations. I am particularly indebted to Mission San José administrator Dolores Ferenz who kindly granted initial access to the church in 2005. I am similarly indebted to Lawrence Tracy of Mission Protection Systems for his very generous contributions and long-term support toward my efforts to obtain security-based video footage of the illumination events at a host of mission sites. George Dawson, a docent at Mission Nuestra Señora de la Concepción de Acuña, San Antonio, Texas, and Robert Espinosa, a park Ranger at San Antonio Missions National Historical Park, kindly shared both unpublished manuscripts and photographs of their joint discoveries at Missions Concepción and San Francisco de la Espada. Dawson’s analysis of the solar geometry at Mission Concepción led me to adopt the notion of “mirror dates” into my own analysis. Dr. Gerald Shenk, Division Chair of the Social and Behavioral Sciences program, and SBS Administrative Analyst Lilly Martinez, are acknowledged for their long-term support of the instructional and research programs of the CSU Monterey Bay Institute for Archaeology. The CSU Monterey Bay Library staff is acknowledged for their efforts to facilitate interlibrary loan acquisitions and electronic resources for this and related scholarly undertakings. The wonderfully gifted (CSU Monterey Bay Science Illustration graduate) Emily Nisbet produced the diagram used herein. Former CSU Monterey Bay Social and Behavioral Sciences archaeology lab coordinator, and current Sonoma State University Cultural Resources Management program graduate student, Jennifer A. Lucido provided invaluable and professional transcription and research assistance, and to that end prepared typewritten materials and undertook research for this and related editorial projects. Both Jennifer Lucido and CSU Monterey Bay Integrated Studies/Archaeology student Jewel Gentry continue to challenge me with their many gifted and formidable insights, and their particularly contagious enthusiasm for all things related to the California missions, indigenous acculturation, and Spanish colonialism more generally. Finally, I extend my heartfelt gratitude for the continuing support and encouragement of my loving wife and companion Linda Marie Mendoza, and the stalwart patience and considerable understanding of my daughters Natalie Dawn Marie, and Maya Nicole, Mendoza without whom this work would not have been possible.
[1] Those prayers ascribed to the Mysteries of the Rosary are based in part on the Five Mysteries of Light identified with the life of Christ. These consist of the First Mystery of Light (The Baptism in the Jordan), The Second Mystery of Light (The Wedding Feast of Cana), The Third Mystery of Light (The Proclamation of the Kingdom of God), The Fourth Mystery of Light (The Transfiguration), and the Fifth Mystery of Light (The Institution of the Eucharist). Each is in turn identified with the Eucharist, the Body of Christ, and thereby, the Solar Christ and the light of the sun. Cited from http://www.vatican.va/special/roary/documents/misteri_luminosi_en.html.


[3] According to Andrew Galvan, an Ohlone activist and descendant of those Mission era populations of San Francisco de Asís and San José, Fray Junípero Serra (the founding Father President of the Alta California missions) was directed to refrain from providing the Sacrament or Eucharist to Native California converts for a period of some eight years during the early Mission era. A self-professed Serraphile, Galvan remains convinced that Serra was a religious fundamentalist who would have refrained from accommodating indigenous belief within the context of the practice of the pure faith in order to facilitate conversion (see http://peninsulapress.com/2011/06/23/ancient-secret-of-california-missions-sparks-debate-video/ for related commentaries by Galvan). Yet, the documentary record makes clear that Serra was himself a devotee of the Catholic mystic and theologian María de Jesús de Ágreda (2 April 1602 to 24 May 1665), also known as the Lady in Blue or the Blue Nun, whose bilocation and supernatural apparitions among the indigenous populations of the American Southwest were of considerable import to evangelization among the native populations of those regions (María de Jesús de Ágreda 1722). On the flip side, Galvan contends that if in fact the solar geometry in question was intentional, and not merely the result of sheer coincidence on a massive scale, then it had to be the result of Native Californians duping or “tricking” the friars by inserting their own respective indigenous systems of belief into the architectural ensembles of the buildings that they themselves built under the guidance of the friars. Similarly, others have gone so far as to claim that Irish workmen employed under the auspices of the Works Progress Administration were responsible for the re-orientation of mission churches during restoration work undertaken during the 1930s. Therefore, the “logic” in question is that neither the mission friars nor their Indian charges can be rightfully credited with the solstitial and equinoctial orientations in question; and I quote, “These Missions were rebuilt by the mainly Irish construction industry during the Depression...The Irish plan was to rebuild as close as possible to the original designs, but not without improvements.” (cf., http://www.sfgate.com/cgi-bin/blogs/inthepeninsula/detail?entry_id=91662 on August 21, 2011; and http://articles.sfgate.com/2009-07-13/news/172186536_1_summer-solstice-san-juan-bautista-illumination comments posted in July of 2009).

[4] This fact alone requires just consideration of the cultural contexts, and thereby, social, religious, and political landscapes of the time so as to properly assess the emic and etic dimensions of the phenomenon under consideration.
[5] *Mirror Dates* constitute those equinoctial periods or days in any given year “mirrored” by their vernal or autumnal (equinox) day or period counterpart.

[6] The Franciscan Escutcheon consists of the “T”-shaped Tau cross over which the crossed arms of St. Francis and Christ are each nailed thereupon.

[7] My teaching schedule at the California State University, Monterey Bay, did not permit the option of remaining on site through the course of the nearly three week period under study; particularly as I often found it necessary to return to the campus with sufficient time to make my 10:00 am course schedule.

[8] It should be noted that while the October 2010 observations succeeded in recording and photo-documenting the 4, 9, and 14 October illuminations of St. Francis, the Tabernacle, and Saint Michael, respectively, John Warren who was present for the 19 October illumination was stymied when atmospheric interference obscured the complete illumination of the bulto of San Antonio, and storm conditions and overcast precluded further study through the succeeding week. As such, the “centered” illumination was projected on the basis of US Naval Observatory Sun or Moon Altitude/Azimuth Tables available at http://aa.usno.navy.mil/data/docs/AltAz.php.

[9] During the Lenten season, devout Catholics both fast and forsake temptation for a period of 40 days intended to reenact and live the period during which Christ sought refuge in the desert. Ash Wednesday, which anticipates the moveable feast of Easter, is that day during which the devout enter the church to be consecrated with the ashes of palm fronds burnt for use in making the sign of the cross on the forehead of those who thereby undertake the sacrifices of the Lenten season.

[10] The observation that the solar geometry at San Miguel forms the Sign of the Cross, particularly as seen from the vantage point of Figure 3, above, was noted to this investigator by former CSU Monterey Bay graduate student and Mission Conservation Program collections manager, Shari Rene Harder, on August 19, 2011.