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Cultural Transformations

Religion and Science

1450–1750

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Working with Evidence: Global Christianity in the Early Modern Era

Nigerian pastor Daniel Ajayi-Adeniran is a missionary to the United States, with his mission field in the Bronx. The church he represents, the Redeemed Christian Church of God, began in Nigeria in 1952. It has acquired millions of members in Nigeria and boasts a missionary network with a presence in 100 countries. According to its leader, the church was “made in heaven, assembled in Nigeria, exported to the world.” And the Redeemed Church of God is not alone. As secularism and materialism born of the Scientific Revolution and modern life have eroded religious faith in the West, many believers in Asia, Africa, and Latin America have felt called to reinvigorate a declining Christianity in Europe and North America. In a remarkable reversal of an earlier pattern, they now seek to “re-evangelize” the West, from which they originally received the faith. After all, more than 60 percent of the world’s professing Christians now live outside Europe and North America, and, within the United States, one in six Catholic diocesan priests and one in three seminary students are foreign-born. For example, hundreds of Filipino priests, nuns, and lay workers now serve churches in the West. “We couldn’t just throw up our hands and see these churches turned into nightclubs or mosques,” declared Tokunboh Adeyemo, another Nigerian church leader seeking to minister to an “increasingly godless West.”¹

The early modern era of world history gave birth to two intersecting cultural trends that continue to play out in the twenty-first century. The first was the spread of Christianity to Asians, Africans, and Native Americans, some of whom now seem to be returning the favor. The second was the emergence of a modern scientific outlook, which sharply challenged Western Christianity even as it too acquired a global presence.

The Virgin of Guadalupe According to Mexican tradition, a dark-skinned Virgin Mary appeared to an indigenous peasant named Juan Diego in 1531, an apparition reflected in this Mexican painting from 1720. Belief in the Virgin of Guadalupe represented the incorporation of Catholicism into the emerging culture and identity of Mexico.

And so, alongside new empires and new patterns of commerce, the early modern centuries also witnessed novel cultural transformations that likewise connected distant peoples. Riding the currents of European empire building and commercial expansion, Christianity was established solidly in the Americas and the Philippines; far more modestly in Siberia, China, Japan, and India; and hardly at all within the vast and still-growing domains of Islam. A cultural tradition largely limited to Europe in 1500 now became a genuine world religion, spawning a multitude of cultural encounters. While this ancient faith was spreading, a new understanding of the universe and a new approach to knowledge were taking shape among European thinkers of the Scientific Revolution, giving rise to another kind of cultural encounter—that between science and religion. Science was a new and competing worldview, and for some it became almost a new religion. In time, it grew into a defining feature of global modernity, achieving a worldwide acceptance that exceeded that of Christianity or any other religious tradition.

Although Europeans were central players in the globalization of Christianity and the emergence of modern science, they did not act alone in the cultural transformations of the early modern era. Asian, African, and Native American peoples largely determined how Christianity would be accepted, rejected, or transformed as it entered new cultural environments. Science emerged within an international and not simply a European context, and it met varying receptions in different parts of

the world. Islam continued a long pattern of religious expansion and renewal, even as Christianity began to compete with it as a world religion. Buddhism maintained its hold in much of East Asia, as did Hinduism in South Asia and numerous smaller-scale religious traditions in Africa. And Europeans themselves were certainly affected by the many “new worlds” that they now encountered. The cultural interactions of the early modern era, in short, did not take place on a one-way street.

SEEKING THE MAIN POINT

To what extent did the cultural changes of the early modern world derive from cross-cultural interaction? And to what extent did they grow from within particular societies or civilizations?

AP® EXAM TIP

You need to know the expansion patterns of all major religions to do well on the AP® exam.

The Globalization of Christianity

Despite its Middle Eastern origins and its earlier presence in many parts of the Afro-Asian world, Christianity was largely limited to Europe at the beginning of the early modern era. In 1500, the world of Christendom stretched from Spain and England in the west to Russia in the east, with small and beleaguered communities of various kinds in Egypt, Ethiopia, southern India, and Central Asia. Internally, the Christian world was seriously divided between the Roman Catholics of Western and Central Europe and the Eastern Orthodox of Eastern Europe and Russia. Externally, it was very much on the defensive against an expansive Islam. Muslims had ousted Christian Crusaders from their toeholds in the Holy Land by 1300, and with the Ottoman seizure of Constantinople in 1453, they had captured the prestigious capital of Eastern Orthodoxy. The Ottoman siege of Vienna in 1529 marked a Muslim advance into the heart of Central Europe. Except in Spain and Sicily,

A MAP OF TIME

1453	Ottoman conquest of Constantinople
1469–1539	Life of Guru Nanak; beginning of Sikh tradition
1472–1529	Life of Wang Yangming in China
1498–1547	Life of Mirabai, bhakti poet of India
1517	Luther's Ninety-Five Theses; beginning of Protestant Reformation
1543	Publication of Copernicus's masterwork about a sun-centered universe
1545–1563	Council of Trent
1560s	Taki Onqoy movement in Peru
1582–1610	Matteo Ricci in China
1598	Edict of Nantes proclaiming religious toleration in France
Early 17th century	European missionaries expelled from Japan
1618–1648	Thirty Years' War in Europe
1642–1727	Life of Isaac Newton; culmination of European Scientific Revolution
18th century	European Enlightenment
Early 18th century	Missionaries lost favor in the Chinese court
1740–1818	Wahhabi movement of Islamic reform in Arabia

which had recently been reclaimed for Christendom after centuries of Muslim rule, the future, it must have seemed, lay with Islam rather than Christianity.

Western Christendom Fragmented: The Protestant Reformation

As if these were not troubles enough, in the early sixteenth century the Protestant Reformation shattered the unity of Roman Catholic Christianity, which for the previous 1,000 years had provided the cultural and organizational foundation of an emerging Western European civilization. The Reformation began in 1517 when a German priest, Martin Luther (1483–1546), publicly invited debate about various abuses within the Roman Catholic Church by issuing a document, known as the Ninety-Five Theses, allegedly nailing it to the door of a church in Wittenberg. In itself, this was nothing new, for many people were critical of the luxurious life of the popes, the corruption and immorality of some clergy, the Church's selling of

AP® EXAM TIP

Refer back to the sections in Chapter 4 on variations within Buddhism and in Chapter 9 on variations within Islam and compare them to variations in Christianity in this chapter.

The Protestant Reformation

An engraving of Martin Luther nailing his Ninety-Five Theses to the door of the Wittenberg castle church in 1517, thus launching the Protestant Reformation. (Photo © Tarker/ Bridgeman Images)



indulgences (said to remove the penalties for sin), and other aspects of church life and practice.

What made Luther's protest potentially revolutionary, however, was its theological basis. A troubled and brooding man anxious about his relationship with God, Luther had recently come to a new understanding of salvation: he believed that it came through faith alone. Neither the good works of the sinner nor the sacraments of the Church had any bearing on the eternal destiny of the soul, for faith was a free gift of God, graciously granted to his needy and undeserving people. To Luther, the source of these beliefs, and of religious authority in general, was not the teaching of the Church, but the Bible alone, interpreted according to the individual's conscience. All of this challenged the authority of the Church and called into question the special position of the clerical hierarchy and of the pope in particular. In sixteenth-century Europe, this was the stuff of revolution. (See the Snapshot, opposite, for a brief summary of Catholic and Protestant differences.)

Contrary to Luther's original intentions, his ideas provoked a massive schism within the world of Catholic Christendom, for they came to express a variety of political, economic, and social tensions as well as religious differences. Some kings and princes, many of whom had long disputed the political authority of the pope, found in these ideas a justification for their own independence and an opportunity to gain the lands and taxes previously held by the Church. In the Protestant idea

Guided Reading Question

■ CHANGE

In what ways did the Protestant Reformation transform European society, culture, and politics?

SNAPSHOT Catholic/Protestant Differences in the Sixteenth Century

	Catholic	Protestant
Religious authority	Pope and church hierarchy	The Bible, as interpreted by individual Christians
Role of the pope	Ultimate authority in faith and doctrine	Authority of the pope denied
Ordination of clergy	Apostolic succession: direct line between original apostles and all subsequently ordained clergy	Apostolic succession denied; ordination by individual congregations or denominations
Salvation	Importance of church sacraments as channels of God's grace	Importance of faith alone; God's grace is freely and directly granted to believers
Status of Mary	Highly prominent, ranking just below Jesus; provides constant intercession for believers	Less prominent; Mary's intercession on behalf of the faithful denied
Prayer	To God, but often through or with Mary and saints	To God alone; no role for Mary and saints
Holy Communion	Transubstantiation: bread and wine become the actual body and blood of Christ	Transubstantiation denied; bread and wine have a spiritual or symbolic significance
Role of clergy	Priests are generally celibate; sharp distinction between priests and laypeople; priests are mediators between God and humankind	Ministers may marry; priesthood of all believers; clergy have different functions (to preach, administer sacraments) but no distinct spiritual status
Role of saints	Prominent spiritual exemplars and intermediaries between God and humankind	Generally disdained as a source of idolatry; saints refer to all Christians

that all vocations were of equal merit, middle-class urban dwellers found a new religious legitimacy for their growing role in society, since the Roman Catholic Church was associated in their eyes with the rural and feudal world of aristocratic privilege. For common people, who were offended by the corruption and luxurious living of some bishops, abbots, and popes, the new religious ideas served to express their opposition to the entire social order, particularly in a series of German peasant revolts in the 1520s. Although large numbers of women were attracted to Protestantism, Reformation teachings and practices did not offer them a substantially greater role in the church or society. In Protestant-dominated areas, the veneration of Mary and female saints ended, leaving the male Christ figure as the sole

AP® EXAM TIP

Take notes on the causes of the Protestant Reformation within Christianity.

Map 15.1 Reformation Europe in the Sixteenth Century

The rise of Protestantism added yet another set of religious divisions, both within and between states, to the world of Christendom, which was already sharply divided between the Roman Catholic Church and the Eastern Orthodox Church.



object of worship. Protestant opposition to celibacy and monastic life closed the convents, which had offered some women an alternative to marriage. Nor were Protestants (except the Quakers) any more willing than Catholics to offer women an official role within their churches. The importance that Protestants gave to reading the Bible for oneself stimulated education and literacy for women, but given the emphasis on women as wives and mothers subject to male supervision, they had little opportunity to use that education outside of the family.

Reformation thinking spread quickly both within and beyond Germany, thanks in large measure to the recent invention of the printing press. Luther's many pamphlets and his translation of the New Testament into German were soon widely available. "God has appointed the [printing] Press to preach, whose voice the pope is never able to stop," declared one Reformation leader.² As the movement spread to France, Switzerland, England, and elsewhere, it also splintered, amoeba-like, into a variety of competing Protestant churches—Lutheran, Calvinist, Anglican, Quaker, Anabaptist—many of which subsequently subdivided, producing a bewildering array of Protestant denominations. Each was distinctive, but none gave allegiance to Rome or the pope.

Thus to the sharp class divisions and the fractured political system of Europe was now added the potent brew of religious difference, operating both within and between states (see Map 15.1). For more than thirty years (1562–1598), French society was torn by violence between Catholics and the Protestant minority known as Huguenots (HYOO-guh-naht). On a single day, August 24, 1572, Catholic mobs in Paris massacred some 3,000 Huguenots, and thousands more perished in provincial towns in the weeks that followed. Finally, a war-weary monarch, Henry IV, issued the Edict of Nantes (nahnt) in 1598, granting a substantial measure of religious toleration to French Protestants, though with the intention that they would soon return to the Catholic Church. The culmination of European religious conflict took shape in the Thirty Years' War (1618–1648), a Catholic–Protestant struggle that began in the Holy Roman Empire but eventually engulfed most of Europe. It was a horrendously destructive war, during which, scholars estimate, between 15 and 30 percent of the German population perished from violence, famine, or disease. Finally, the Peace of Westphalia (1648) brought the conflict to an end, with some reshuffling of boundaries and an agreement that each state was sovereign, authorized to control religious affairs within its own territory. Whatever religious unity Catholic Europe had once enjoyed was now permanently splintered.

The Protestant breakaway, combined with reformist tendencies within the Catholic Church itself, provoked a Catholic Reformation, or Counter-Reformation. In the Council of Trent (1545–1563), Catholics clarified and reaffirmed their unique doctrines and practices, such as the authority of the pope, priestly celibacy, the veneration of saints and relics, and the importance of church tradition and good works, all of which Protestants had rejected. Moreover, they set about correcting the abuses and corruption that had stimulated the Protestant movement by placing a new emphasis on the education of priests and their supervision by bishops. A crackdown on dissidents included the censorship of books, fines, exile, penitence, and occasionally the burning of heretics. Renewed attention was given to individual spirituality and personal piety. New religious orders, such as the Society of Jesus (Jesuits), provided a dedicated brotherhood of priests committed to the renewal of the Catholic Church and its extension abroad.

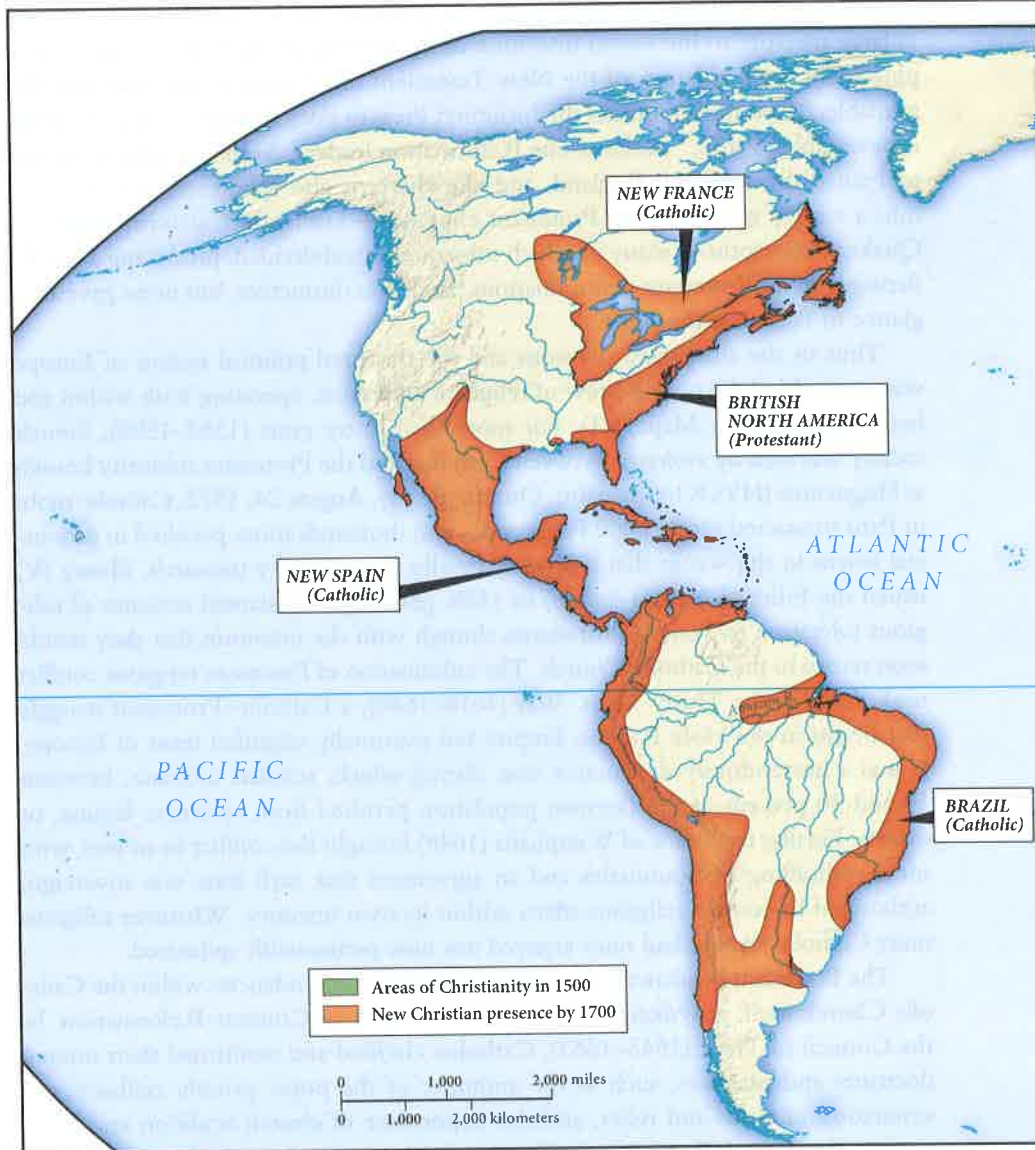
Although the Reformation was profoundly religious, it encouraged a skeptical attitude toward authority and tradition, for it had, after all, successfully challenged the immense prestige and power of the pope and the established Church. Protestant

AP® EXAM TIP

Pay attention to these political and social factors that divided Europe for centuries.

Map 15.2 The Globalization of Christianity

The growing Christian presence in Asia, Africa, and especially the Americas, combined with older centers of that faith, gave the religion derived from Jesus a global dimension during the early modern era.

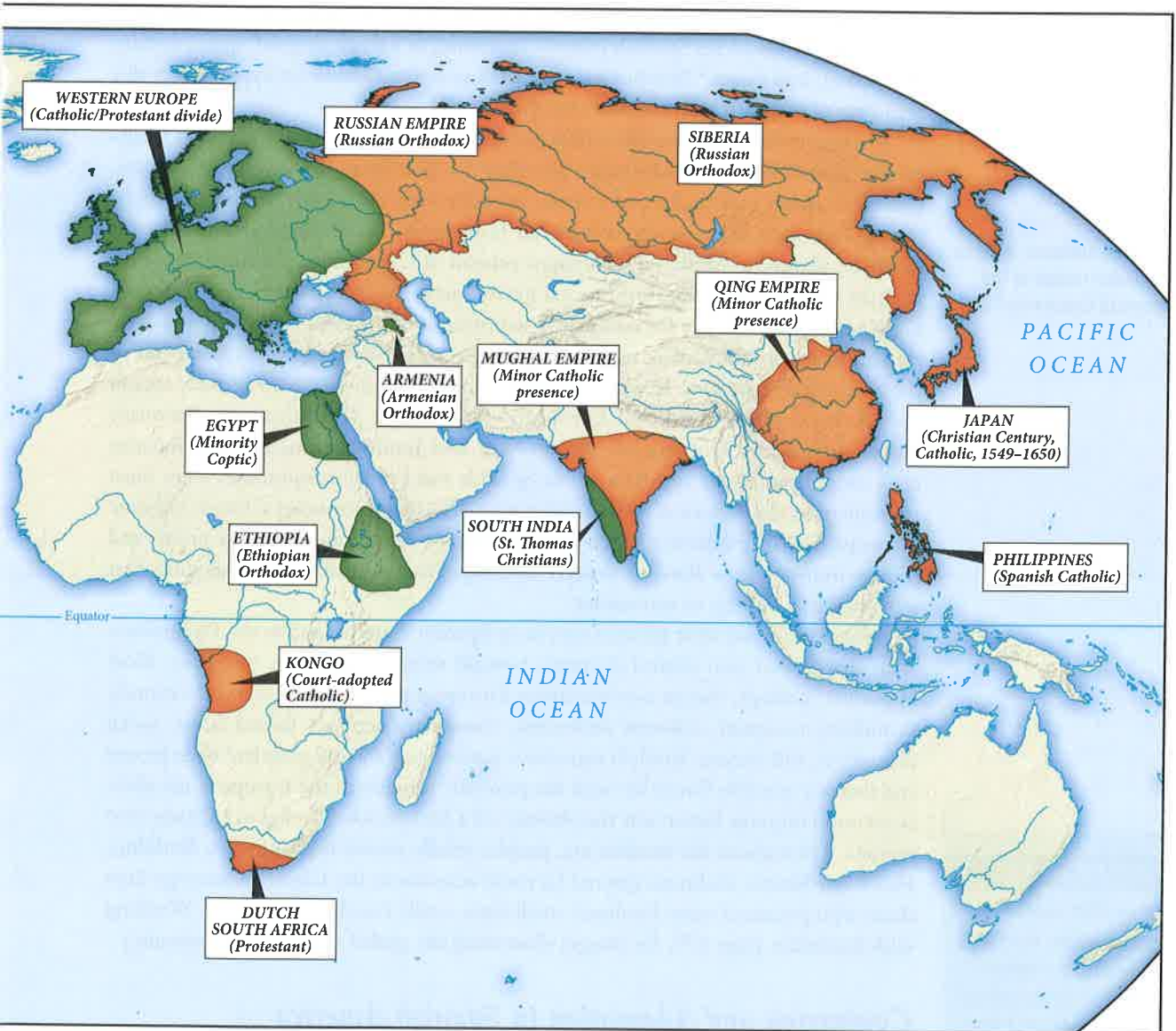


AP® EXAM TIP

Keep track of the global changes over time in the size of Christianity's influence.

reformers fostered religious individualism, as people were now encouraged to read and interpret the scriptures for themselves and to seek salvation without the mediation of the Church. In the centuries that followed, some people turned that skepticism and the habit of thinking independently against all conventional religion. Thus the Protestant Reformation opened some space for new directions in European intellectual life.

In short, it was a more highly fragmented but also a renewed and revitalized Christianity that established itself around the world in the several centuries after 1500 (see Map 15.2).



Christianity Outward Bound

Christianity motivated European political and economic expansion and also benefited from it. The resolutely Catholic Spanish and Portuguese both viewed their movement overseas as a continuation of a long crusading tradition, which only recently had completed the liberation of their countries from Muslim control. When Vasco da Gama's small fleet landed in India in 1498, local authorities understandably asked, "What brought you hither?" The reply: they had come "in search of Christians and of spices."³ Likewise, Columbus, upon arriving in the Americas,

Guided Reading Question

BE CONNECTION

How was European imperial expansion related to the spread of Christianity?

expressed the no doubt sincere hope that the people “might become Christians,” even as he promised his Spanish patrons an abundant harvest of gold, spice, cotton, aloe wood, and slaves.⁴ Neither man sensed any contradiction or hypocrisy in this blending of religious and material concerns.

If religion drove and justified European ventures abroad, it is difficult to imagine the globalization of Christianity (see Map 15.2) without the support of empire. Colonial settlers and traders, of course, brought their faith with them and sought to replicate it in their newly conquered homelands. New England Puritans, for example, planted a distinctive Protestant version of Christianity in North America, with an emphasis on education, moral purity, personal conversion, civic responsibility, and little tolerance for competing expressions of the faith. They did not show much interest in converting native peoples but sought rather to push them out of their ancestral territories. It was missionaries, mostly Catholic, who actively spread the Christian message beyond European communities. Organized in missionary orders such as the Dominicans, Franciscans, and Jesuits, Portuguese missionaries took the lead in Africa and Asia, while Spanish and French missionaries were most prominent in the Americas. Missionaries of the Russian Orthodox Church likewise accompanied the expansion of the Russian Empire across Siberia, where priests and monks ministered to Russian settlers and trappers, who often donated their first sable furs to a church or monastery.

Missionaries had their greatest success in Spanish America and in the Philippines, areas that shared two critical elements beyond their colonization by Spain. Most important, perhaps, was an overwhelming European presence, experienced variously as military conquest, colonial settlement, missionary activity, forced labor, social disruption, and disease. Surely it must have seemed as if the old gods had been bested and that any possible future lay with the powerful religion of the European invaders. A second common factor was the absence of a literate world religion in these two regions. Throughout the modern era, peoples solidly rooted in Confucian, Buddhist, Hindu, or Islamic traditions proved far more resistant to the Christian message than those who practiced more localized, small-scale, orally based religions. (See Working with Evidence, page 679, for images illustrating the global spread of Christianity.)

AP® EXAM TIP

Past AP® exams have asked questions about methods of conversion to Christianity in Latin America, so pay attention here!

Conversion and Adaptation in Spanish America

Spanish America and China illustrate the difference between those societies in which Christianity became widely practiced and those that largely rejected it. Both cases, however, represent major cultural encounters of a kind that was becoming more frequent as European expansion brought the Christian faith to distant peoples with very different cultural traditions.

The decisive conquest of the Aztec and Inca empires and all that followed from it—disease, population collapse, loss of land to Europeans, forced labor, resettlement into more compact villages—created a setting in which the religion of the victors took hold in Spanish American colonies. Europeans saw their political and military success as a demonstration of the power of the Christian God. Native American

Guided Reading Question

BE CONNECTION

In what ways was European Christianity assimilated into the Native American cultures of Spanish America?

peoples generally agreed, and by 1700 or earlier the vast majority had been baptized and saw themselves in some respects as Christians. After all, other conquerors such as the Aztecs and the Incas had always imposed their gods in some fashion on defeated peoples. So it made sense, both practically and spiritually, to affiliate with the Europeans' God, saints, rites, and rituals. Many millions accepted baptism, contributed to the construction of village churches, attended services, and embraced images of saints. Despite the prominence of the Virgin Mary as a religious figure across Latin America, the cost of conversion was high, especially for women. Many women, who had long served as priests, shamans, or ritual specialists, had no corresponding role in a Catholic church, led by an all-male clergy. And, with a few exceptions, convent life, which had provided some outlet for female authority and education in Catholic Europe, was reserved largely for Spanish women in the Americas. (See Zooming In: Úrsula de Jesús, page 654, for an exception.)

Earlier conquerors had made no attempt to eradicate local deities and religious practices. The flexibility and inclusiveness of Mesoamerican and Andean religions had made it possible for subject people to accommodate the gods of their new rulers while maintaining their own traditions. But Europeans were different. They claimed an exclusive religious truth and sought the utter destruction of local gods and everything associated with them. Operating within a Spanish colonial regime that actively encouraged conversion, missionaries often proceeded by persuasion and patient teaching. At times, though, their frustration with the persistence of "idolatry, superstition,



Andean Christianity

In 1753, Marcos Zapata, a native Peruvian artist trained in European techniques, painted this rendering of Jesus' Last Supper with his disciples, which included a number of Andean elements. The central dish on the table was a roasted guinea pig, a traditional sacrificial animal, while a local fermented corn drink called *chicha* was also part of the meal. Side dishes featured pomegranates, a Eurasian fruit brought to Peru by the Columbian exchange symbolizing the passion of Christ. At the bottom right, looking away from Jesus while grasping a money bag, is the figure of Judas, painted, some say, to resemble Francisco Pizarro, the Spanish conqueror of the Inca Empire. (© Yadid Levy/age fotostock)

Úrsula de Jesús, an Afro-Peruvian Slave and Christian Visionary

Úrsula de Jesús was born in the prosperous Spanish colonial city of Lima, Peru, in 1606, the daughter of a slave mother. Thus she entered life at the lowest rung of Spanish colonial society. But among enslaved people, Úrsula was fortunate. Her mother's owner was a wealthy aristocratic woman, and at age eight Úrsula was sent to live in the home of another elite woman with a reputation for piety and religious visions. Five years later, Úrsula accompanied a third woman into the Convent of Santa Clara, where she spent the rest of her life. There Úrsula found a place for herself in the world of colonial Peru and Latin American Christianity—but not easily or immediately.⁵

For the next quarter of a century, Úrsula was one of more than a hundred slaves in the convent, where she attended to the personal needs of her mistress and participated in communal labor—cooking, cleaning, and attending the sick. In the convent, as in the larger society, Úrsula was at the bottom of the social ladder as nuns, novices, and *doñadas* (religious laywomen) all



A wealthy white Peruvian woman and her African slave.

enjoyed a higher status. But the wealth of her mistress or perhaps her own day labor allowed her to dress well and to elevate herself above common slaves. She later noted that she went about “beautifully adorned from head to toe.” She recalled, “I used to wear fancy clothes and parade about the choir.”

The year 1642 marked a dramatic turning point in Úrsula's life, when she almost fell into a deep well. Crediting her deliverance from certain death to the Virgin of Carmen, Úrsula turned decisively away from her earlier vain and self-centered ways and embraced an ever-deepening spiri-

tuality. She sold her lovely clothes, devoted every spare moment to prayer, and sought out the most onerous tasks such as caring for contagious patients and washing soiled garments. She took to whipping herself twice daily, wearing a coarse and painful hair shirt, and placing a crown of thorns beneath her hair. In Catholic

photo: *Fruits of Peru*, painting by Vicente Alban, 1783/The Granger Collection, NYC—All rights reserved

AP® EXAM TIP

You should know examples of resistance to forced cultural conversions in history.

and error” boiled over into violent campaigns designed to uproot old religions once and for all. In 1535, the bishop of Mexico proudly claimed that he had destroyed 500 pagan shrines and 20,000 idols. During the seventeenth and early eighteenth centuries, church authorities in the Andean region periodically launched movements of “extirpation,” designed to fatally undermine native religion. They destroyed religious images and ritual objects, publicly urinated on native “idols,” desecrated the remains of ancestors, flogged “idolaters,” and held religious trials and “processions of shame” aimed at humiliating offenders.

It is hardly surprising that such aggressive action generated resistance. Writing around 1600, the native Peruvian nobleman Guaman Poma de Ayala commented on the posture of native women toward Christianity: “They do not confess; they

religious thinking of the time, such “mortification” of the body served to enhance identification with Jesus’ suffering.

Úrsula’s new religious fervor incurred the displeasure of her mistress, who felt neglected by her slave. By 1645, a deeply unhappy Úrsula determined to leave the convent and find a new owner. Then one of the nuns, hoping to retain her pious services, purchased Úrsula’s freedom. Nonetheless, Úrsula chose to stay in the convent as a *doñada*. Doing so represented a modest elevation in her social status, an opportunity to pursue her spiritual life with fewer restrictions, and a measure of social and economic security.

Still, she continued to perform the same exhausting tasks she had as a slave and complained frequently about them. “I was up to my ears with cooking and other things,” she confided to her diary, “desiring only to be in the mountains where there are no people.” Even as she struggled with the restrictions of her position in the convent, Úrsula enhanced her reputation as a “servant of God,” a woman of extraordinary devotion and humility, and as a visionary and a mystic.

In her diary, Úrsula recounted numerous direct encounters with God, Jesus, Mary, and with dead souls seeking her intervention to shorten their time in the purifying fires of purgatory. These visions frequently reflected the tensions of class, race, and position within

the convent and in the larger society. Several priests, suffering in purgatory for their sexual sins, luxurious living, and mistreatment of slaves, appealed to Úrsula. So too did nuns who had been lax in their spiritual practices or placed their business interests above their religious duties. Úrsula had a special concern for the female slaves and servants who asked for her intercession. One feared becoming an “orphan” in purgatory with no one to remember her. Another confessed to a lesbian love affair with a nun. Although Úrsula once questioned “whether black women went to heaven,” it was later revealed to her as an abode of “great harmony,” but not of social equality, for “everyone had their place . . . in accordance with their standing and the obligations of their class.” By the end of her life, however, Úrsula was able to affirm the spiritual equality of all. “In memory, understanding, and will,” she declared, “they [blacks and whites] are all one.”

When Úrsula died in 1666, a prominent nun confirmed that she had entered Heaven directly, with no intervening time in purgatory. Her funeral was attended by many high officials of both state and church, and she was buried beneath the chapel of the convent she had served.

Question: To what extent did Úrsula shape her own life, and in what way was it shaped by larger historical forces?

do not attend catechism classes . . . nor do they go to mass. . . . And resuming their ancient customs and idolatry, they do not want to serve God or the crown.”⁶ Occasionally, overt resistance erupted. One such example was the religious revivalist movement in central Peru in the 1560s, known as Taki Onqoy (dancing sickness). Possessed by the spirits of local gods, or *huacas*, traveling dancers and teachers predicted that an alliance of Andean deities would soon overcome the Christian God, inflict the intruding Europeans with the same diseases that they had brought to the Americas, and restore the world of the Andes to an imagined earlier harmony. They called on native peoples to cut off all contact with the Spanish, to reject Christian worship, and to return to traditional practices. “The world has turned about,” one member declared, “and this time God and the Spaniards [will be] defeated and all

the Spaniards killed and their cities drowned; and the sea will rise and overwhelm them, so that there will remain no memory of them.”⁷⁷

AP® EXAM TIP

Take notes on the blending of Christianity and local cultures now to compare them with examples from Islam later in this chapter.

More common than such frontal attacks on Christianity, which colonial authorities quickly smashed, were efforts at blending two religious traditions, reinterpreting Christian practices within an Andean framework, and incorporating local elements into an emerging Andean Christianity. Even female dancers in the Taki Onqoy movement sometimes took the names of Christian saints, seeking to appropriate for themselves the religious power of Christian figures. Within Andean Christian communities, women might offer the blood of a llama to strengthen a village church or make a cloth covering for the Virgin Mary and a shirt for an image of a huaca with the same material. Although the state cults of the Incas faded away, missionary attacks did not succeed in eliminating the influence of local huacas. Images and holy sites might be destroyed, but the souls of the huacas remained, and their representatives gained prestige. One resilient Andean resident inquired of a Jesuit missionary: “Father, are you tired of taking our idols from us? Take away that mountain if you can, since that is the God I worship.”⁷⁸

In Mexico as well, an immigrant Christianity was assimilated into patterns of local culture. Parishes were organized largely around precolonial towns or regions. Churches built on or near the sites of old temples became the focus of community identity. *Cofradias*, church-based associations of laypeople, organized community processions and festivals and made provisions for proper funerals and burials for their members. Central to an emerging Mexican Christianity were the saints who closely paralleled the functions of precolonial gods. Saints were imagined as parents of the local community and the true owners of its land, and their images were paraded through the streets on the occasion of great feasts and were collected by individual households. Mexico’s Virgin of Guadalupe neatly combined both Mesoamerican and Spanish notions of Divine Motherhood (see the chapter-opening photo on page 642). Although parish priests were almost always Spanish, the *fiscal*, or leader of the church staff, was a native Christian of great local prestige, who carried on the traditions and role of earlier religious specialists.

Throughout the colonial period and beyond, many Mexican Christians also took part in rituals derived from the past, with little sense of incompatibility with Christian practice. Incantations to various gods for good fortune in hunting, farming, or healing; sacrifices of self-bleeding; offerings to the sun; divination; the use of hallucinogenic drugs—all of these practices provided spiritual assistance in those areas of everyday life not directly addressed by Christian rites. Conversely, these practices also showed signs of Christian influence. Wax candles, normally used in Christian services, might now appear in front of a stone image of a precolonial god. The anger of a neglected saint, rather than that of a traditional god, might explain someone’s illness and require offerings, celebration, or a new covering to regain his or her favor. In such ways did Christianity take root in the new cultural environments of Spanish America, but it was a distinctly Andean or Mexican Christianity, not merely a copy of the Spanish version.

An Asian Comparison: China and the Jesuits

The Chinese encounter with Christianity was very different from that of Native Americans in Spain's New World empire. The most obvious difference was the political context. The peoples of Spanish America had been defeated, their societies thoroughly disrupted, and their cultural confidence sorely shaken. China, on the other hand, encountered European Christianity between the sixteenth and eighteenth centuries during the powerful and prosperous Ming (1368–1644) and Qing (1644–1912) dynasties. Although the transition between these two dynasties occasioned several decades of internal conflict, at no point was China's political independence or cultural integrity threatened by the handful of European missionaries and traders working there.

The reality of a strong, independent, confident China required a different missionary strategy, for Europeans needed the permission of Chinese authorities to operate in the country. Whereas Spanish missionaries working in a colonial setting sought primarily to convert the masses, the leading missionary order in China, the Jesuits, took deliberate aim at the official Chinese elite. Following the example of their most famous missionary, Matteo Ricci (in China 1582–1610), many Jesuits learned Chinese, became thoroughly acquainted with classical Confucian texts, and dressed like Chinese scholars. Initially, they downplayed their mission to convert and instead emphasized their interest in exchanging ideas and learning from China's ancient culture. As highly educated men, the Jesuits carried the recent secular knowledge of Europe—science, technology, geography, mapmaking—to an audience of curious Chinese scholars. In presenting Christian teachings, Jesuits were at pains to be respectful of Chinese culture, pointing out parallels between Confucianism and Christianity rather than portraying it as something new and foreign. They chose to define Chinese rituals honoring the emperor or venerating ancestors as secular or civil observances rather than as religious practices that had to be abandoned. Such efforts to accommodate Chinese culture contrast sharply with the frontal attacks on Native American religions in the Spanish Empire undertaken by many missionaries.

The religious and cultural outcomes of the missionary enterprise likewise differed greatly in the two regions. Nothing approaching mass conversion to Christianity took place in China, as it had in Latin America. During the sixteenth and seventeenth centuries, a modest number of Chinese scholars and officials did become Christians, attracted by the personal lives of the missionaries, by their interest in Western science, and by the moral certainty that Christianity offered. Jesuit missionaries found favor for a time at the Chinese imperial court, where their mathematical, astronomical, technological, and mapmaking skills rendered them useful. For more than a century, they were appointed to head the Chinese Bureau of Astronomy. Among ordinary people, Christianity spread very modestly amid tales of miracles attributed to the Christian God, while missionary teachings about “eternal life” sounded to some like Daoist prescriptions for immortality. At most, though,

Guided Reading Question

■ COMPARISON

Why were missionary efforts to spread Christianity so much less successful in China than in Spanish America?

AP® EXAM TIP

You should know about some of the scientific and religious contributions of Jesuit missionaries in China.



Jesuits in China

In this seventeenth-century Dutch engraving, two Jesuit missionaries hold a map of China. Their mapmaking skills were among the reasons that the Jesuits were initially welcomed among the educated elite of that country. (Frontispiece [engraving] from *China Monumentis* by Athanasius Kircher, 1667/Private Collection/Bridgeman Images)

missionary efforts over the course of some 250 years (1550–1800) resulted in 200,000 to 300,000 converts, a minuscule number in a Chinese population approaching 300 million by 1800. What explains the very limited acceptance of Christianity in early modern China?

Fundamentally, the missionaries offered little that the Chinese really wanted. Confucianism for the elites and Buddhism, Daoism, and a multitude of Chinese gods and spirits at the local level adequately supplied the spiritual needs of most Chinese. Furthermore, it became increasingly clear that Christianity was an all-or-nothing faith that required converts to abandon much of traditional Chinese culture. Christian monogamy, for example, seemed to require Chinese men to put away their concubines. What would happen to these deserted women?

By the early eighteenth century, the papacy and competing missionary orders came to oppose

the Jesuit policy of accommodation. The pope claimed authority over Chinese Christians and declared that sacrifices to Confucius and the veneration of ancestors were “idolatry” and thus forbidden to Christians. The pope’s pronouncements represented an unacceptable challenge to the authority of the emperor and an affront to Chinese culture. In 1715, an outraged Emperor Kangxi wrote:

I ask myself how these uncultivated Westerners dare to speak of the great precepts of China. . . . [T]heir doctrine is of the same kind as the little heresies of the Buddhist and Taoist monks. . . . These are the greatest absurdities that have ever been seen. As from now I forbid the Westerners to spread their doctrine in China; that will spare us a lot of trouble.⁹

This represented a major turning point in the relationship of Christian missionaries and Chinese society. Many were subsequently expelled, and missionaries lost favor at court.

In other ways as well, missionaries played into the hands of their Chinese opponents. Their willingness to work under the Manchurian Qing dynasty, which came

to power in 1644, discredited them with those Chinese scholars who viewed the Qing as uncivilized foreigners and their rule in China as disgraceful and illegitimate. Missionaries' reputation as miracle workers further damaged their standing as men of science and rationality, for elite Chinese often regarded miracles and supernatural religion as superstitions, fit only for the uneducated masses. Some viewed the Christian ritual of Holy Communion as a kind of cannibalism. Others came to see missionaries as potentially subversive, for various Christian groups met in secret, and such religious sects had often provided the basis for peasant rebellion. Nor did it escape Chinese notice that European Christians had taken over the Philippines and that their warships were active in the Indian Ocean. Perhaps the missionaries, with their great interest in maps, were spies for these aggressive foreigners. All of this contributed to the general failure of Christianity to secure a prominent presence in China.

Persistence and Change in Afro-Asian Cultural Traditions

Although Europeans were central players in the globalization of Christianity, theirs was not the only expanding or transformed culture of the early modern era. African religious ideas and practices, for example, accompanied slaves to the Americas. Common African forms of religious revelation—divination, dream interpretation, visions, spirit possession—found a place in the Africanized versions of Christianity that emerged in the New World. Europeans frequently perceived these practices as evidence of sorcery, witchcraft, or even devil worship and tried to suppress them. Nonetheless, syncretic (blended) religions such as Vodou in Haiti, Santería in Cuba, and Candomblé and Macumba in Brazil persisted. They derived from various West African traditions and featured drumming, ritual dancing, animal sacrifice, and spirit possession. Over time, they incorporated Christian beliefs and practices such as church attendance, the search for salvation, and the use of candles and crucifixes and often identified their various spirits or deities with Catholic saints.

Expansion and Renewal in the Islamic World

The early modern era likewise witnessed the continuation of the “long march of Islam” across the Afro-Asian world. In sub-Saharan Africa, in the eastern and western wings of India, and in Central and Southeast Asia, the expansion of the Islamic frontier, a process already a thousand years in the making, extended farther still. Conversion to Islam generally did not mean a sudden abandonment of old religious practices in favor of the new. Rather, it was more often a matter of “assimilating Islamic rituals, cosmologies, and literatures into . . . local religious systems.”¹⁰

Continued Islamization was not usually the product of conquering armies and expanding empires. It depended instead on wandering Muslim holy men or Sufis, Islamic scholars, and itinerant traders, none of whom posed a threat to local rulers. In fact, such people often were useful to those rulers and their village communities.

AP® EXAM TIP

Compare these “blended” forms of Afro-Asian Christianity with those developed by native believers in Latin America.

Guided Reading Question

EXPLANATION

What accounts for the continued spread of Islam in the early modern era and for the emergence of reform or renewal movements within the Islamic world?

They offered literacy in Arabic, established informal schools, provided protective charms containing passages from the Quran, served as advisers to local authorities and healers to the sick, often intermarried with local people, and generally did not insist that new converts give up their older practices. What they offered, in short, was connection to the wider, prestigious, prosperous world of Islam. Islamization extended modestly even to the Americas, where enslaved African Muslims practiced their faith in North America, particularly in Brazil, where Muslims led a number of slave revolts in the early nineteenth century. (See *Zooming In*: Ayuba Suleiman Diallo in Chapter 14, page 630.)

AP® EXAM TIP

You need to know ways that Islam changed as it spread into Southeast Asia and also ways that it stayed the same.

The islands of Southeast Asia illustrate the diversity of belief and practice that accompanied the spread of Islam in the early modern era. During the seventeenth century in Aceh, a Muslim sultanate on the northern tip of Sumatra, authorities sought to enforce the dietary codes and almsgiving practices of Islamic law. After four successive women ruled the area in the late seventeenth century, women were forbidden from exercising political power. On Muslim Java, however, numerous women served in royal courts, and women throughout Indonesia continued their longtime role as buyers and sellers in local markets. Among ordinary Javanese, traditional animistic practices of spirit worship coexisted easily with a tolerant and accommodating Islam, while merchants often embraced a more orthodox version of the religion in line with Middle Eastern traditions.

To such orthodox Muslims, religious syncretism, which accompanied Islamization almost everywhere, became increasingly offensive, even heretical. Such sentiments played an important role in movements of religious renewal and reform that emerged throughout the vast Islamic world of the eighteenth century. The leaders of such movements sharply criticized those practices that departed from earlier patterns established by Muhammad and from the authority of the Quran. For example, in India, which was governed by the Muslim Mughal Empire, religious resistance to official policies that accommodated Hindus found concrete expression during the reign of the emperor Aurangzeb (r. 1658–1707) (see Chapter 13, page 581). A series of religious wars in West Africa during the eighteenth and early nineteenth centuries took aim at corrupt Islamic practices and the rulers, Muslim and non-Muslim alike, who permitted them. In Southeast and Central Asia, tension grew between practitioners of localized and blended versions of Islam and those who sought to purify such practices in the name of a more authentic and universal faith.

The most well-known and widely visible of these Islamic renewal movements took place during the mid-eighteenth century in Arabia itself, where the religion had been born more than 1,000 years earlier. This movement originated in the teachings of the Islamic scholar Muhammad Ibn Abd al-Wahhab (1703–1792). The growing difficulties of the Islamic world, such as the weakening of the Ottoman Empire, were directly related, he argued, to deviations from the pure faith of early Islam. Al-Wahhab was particularly upset by common religious practices in central Arabia that seemed to him idolatry—the widespread veneration of Sufi saints and their tombs, the adoration of natural sites, and even the respect paid to Muhammad’s

tomb at Medina. All of this was a dilution of the absolute monotheism of authentic Islam.

The Wahhabi movement took a new turn in the 1740s when it received the political backing of Muhammad Ibn Saud, a local ruler who found al-Wahhab's ideas compelling. With Ibn Saud's support, the religious movement became an expansive state in central Arabia. Within that state, offending tombs were razed; "idols" were eliminated; books on logic were destroyed; the use of tobacco, hashish, and musical instruments was forbidden; and certain taxes not authorized by religious teaching were abolished.

Al-Wahhab's ideas about the role of women have attracted considerable attention in light of the highly restrictive practices of Wahhabi Islam in contemporary Saudi Arabia. He did on one occasion reluctantly authorize the stoning of a woman who persisted in an adulterous sexual relationship after numerous warnings, but more generally he emphasized the rights of women within a patriarchal Islamic framework. These included the right to consent to and stipulate conditions for a marriage, to control her dowry, to divorce, and to engage in commerce. Such rights, long embedded in Islamic law, had apparently been forgotten or ignored in eighteenth-century Arabia. Furthermore, he did not insist on head-to-toe covering of women in public and allowed for the mixing of unrelated men and women for business or medical purposes.

By the early nineteenth century, this new reformist state encompassed much of central Arabia, with Mecca itself coming under Wahhabi control in 1803 (see Map 15.3). Although an Egyptian army broke the power of the Wahhabis in 1818, the movement's influence continued to spread across the Islamic world. Together with the ongoing expansion of the religion, these movements of reform and renewal signaled the continuing cultural vitality of the "abode of Islam," even as the European presence on the world stage assumed larger dimensions. In the nineteenth and twentieth centuries, such movements persisted and became associated with resistance to the political, military, and cultural intrusion of the European West into the affairs of the Islamic world.

China: New Directions in an Old Tradition

Neither China nor India experienced cultural or religious change as dramatic as that of the Reformation in Europe, nor did Confucian or Hindu cultures during the early modern era spread widely, as did Christianity and Islam. Nonetheless, neither



Map 15.3 The Expansion of Wahhabi Islam

From its base in central Arabia, the Wahhabi movement represented a challenge to the Ottoman Empire, while its ideas subsequently spread widely within the Islamic world.

AP® EXAM TIP

Take notes on elements of the Wahhabi movement within Islam.

Guided Reading Question

CHANGE

What kinds of cultural changes occurred in China and India during the early modern era?

AP® EXAM TIP

Pay attention to factors that led to the rise of Neo-Confucianism. List the ways in which it differed from traditional Confucianism.

of these traditions remained static. As in Christian Europe, challenges to established orthodoxies in China and India emerged as commercial and urban life, as well as political change, fostered new thinking.

China during the Ming and Qing dynasties continued to operate broadly within a Confucian framework, enriched now by the insights of Buddhism and Daoism to generate a system of thought called Neo-Confucianism. Chinese Ming dynasty rulers, in their aversion to the despised Mongols, embraced and actively supported this native Confucian tradition, whereas the foreign Manchu or Qing rulers did so to woo Chinese intellectuals to support the new dynasty. Within this context, a considerable amount of controversy, debate, and new thinking emerged during the early modern era.

During late Ming times, for example, the influential thinker Wang Yangming (1472–1529) argued that “intuitive moral knowledge exists in people . . . even robbers know that they should not rob.”¹¹ Thus anyone could achieve a virtuous life by introspection and contemplation, without the extended education, study of classical texts, and constant striving for improvement that traditional Confucianism prescribed for an elite class of “gentlemen.” Such ideas figured prominently among Confucian scholars of the sixteenth century, although critics later contended that such thinking promoted an excessive individualism. They also argued that Wang Yangming’s ideas had undermined the Ming dynasty and contributed to China’s conquest by the foreign Manchus. Some Chinese Buddhists as well sought to make their religion more accessible to ordinary people, by suggesting that laypeople at home could undertake practices similar to those performed by monks in monasteries. Withdrawal from the world was not necessary for enlightenment. This kind of moral or religious individualism bore some similarity to the thinking of Martin Luther, who argued that individuals could seek salvation by “faith alone,” without the assistance of a priestly hierarchy.

Another new direction in Chinese elite culture took shape in a movement known as *kaozheng*, or “research based on evidence.” Intended to “seek truth from facts,” *kaozheng* was critical of the unfounded speculation of conventional Confucian philosophy and instead emphasized the importance of verification, precision, accuracy, and rigorous analysis in all fields of inquiry. During the late Ming years, this emphasis generated works dealing with agriculture, medicine, pharmacology, botany, craft techniques, and more. In the Qing era, *kaozheng* was associated with the recovery and critical analysis of ancient historical documents, which sometimes led to sharp criticism of Neo-Confucian orthodoxy. It was a genuinely scientific approach to knowledge, but it was applied more to the study of the past than to the natural world of astronomy, physics, or anatomy, which was the focus in the West.

While such matters occupied the intellectual elite of China, in the cities a lively popular culture emerged among the less educated. For city-dwellers, plays, paintings, short stories, and especially novels provided diversion and entertainment that were a step up from what could be found in teahouses and wineshops. Numerous “how-to” painting manuals allowed a larger public to participate in this favorite

Chinese art form. Even though Confucian scholars disdained popular fiction, a vigorous printing industry responded to the growing demand for exciting novels. The most famous was Cao Xueqin's mid-eighteenth-century novel *The Dream of the Red Chamber*, a huge book that contained 120 chapters and some 400 characters, most of them women. It explored the social life of an eighteenth-century elite family with connections to the Chinese court.

India: Bridging the Hindu/Muslim Divide

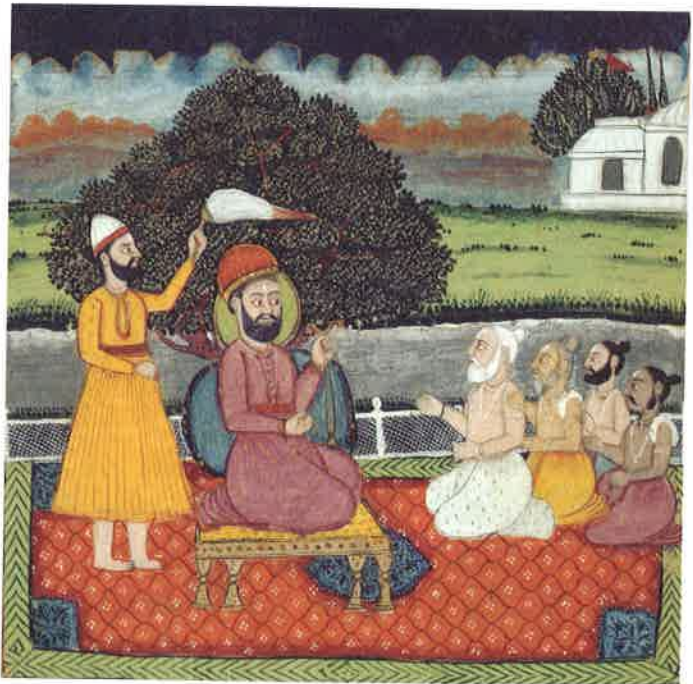
In a largely Hindu India, ruled by the Muslim Mughal Empire, several significant cultural departures took shape in the early modern era that brought Hindus and Muslims together in new forms of religious expression. At the level of elite culture, the Mughal ruler Akbar formulated a state cult that combined elements of Islam, Hinduism, and Zoroastrianism (see Chapter 13, page 581). The Mughal court also embraced Renaissance Christian art, and soon murals featuring Jesus, Mary, and Christian saints appeared on the walls of palaces, garden pavilions, and harems. The court also commissioned a prominent Sufi spiritual master to compose an illustrated book describing various Hindu yoga postures. Intended to bring this Hindu tradition into Islamic Sufi practice, the book, known as the *Ocean of Life*, portrayed some of the yogis in a Christ-like fashion.

Within popular culture, the flourishing of a devotional form of Hinduism known as *bhakti* also bridged the gulf separating Hindu and Muslim. Through songs, prayers, dances, poetry, and rituals, devotees sought to achieve union with one or another of India's many deities. Appealing especially to women, the *bhakti* movement provided an avenue for social criticism. Its practitioners often set aside caste distinctions and disregarded the detailed rituals of the Brahmin priests in favor of direct contact with the Divine. This emphasis had much in common with mystical Sufi forms of Islam and helped blur the distinction between these two traditions in India.

Among the most beloved of *bhakti* poets was Mirabai (1498–1547), a high-caste woman from northern India who abandoned her upper-class family and conventional Hindu practice. Upon her husband's death, tradition asserts, she declined to burn herself on his funeral pyre (a practice known as *sati*). She further offended caste restrictions by

AP® EXAM TIP

Take notes on attempts to connect Hindu and Muslim beliefs in South Asia in this era.



Guru Nanak

This painting shows a seated Guru Nanak, the founder of Sikhism, disputing with four kneeling Hindu holy men. (British Library, London, UK) © British Library Board. All Rights Reserved/Robena/Art Resource, NY

taking as her guru (religious teacher) an old untouchable shoemaker. To visit him, she apparently tied her saris together and climbed down the castle walls at night. Then she would wash his aged feet and drink the water from these ablutions. Much of her poetry deals with her yearning for union with Krishna, a Hindu deity she regarded as her husband, lover, and lord. She wrote:

What I paid was my social body, my town body, my family body, and all my inherited jewels. Mirabai says: The Dark One [Krishna] is my husband now.¹²

Yet another major cultural change that blended Islam and Hinduism emerged with the growth of Sikhism as a new and distinctive religious tradition in the Punjab region of northern India. Its founder, Guru Nanak (1469–1539), had been involved in the bhakti movement but came to believe that “there is no Hindu; there is no Muslim; only God.” His teachings and those of subsequent gurus also generally ignored caste distinctions and untouchability and ended the seclusion of women, while proclaiming the “brotherhood of all mankind” as well as the essential equality of men and women. Drawing converts from Punjabi peasants and merchants, both Muslim and Hindu, the Sikhs gradually became a separate religious community. They developed their own sacred book, known as the Guru Granth (teacher book); created a central place of worship and pilgrimage in the Golden Temple of Amritsar; and prescribed certain dress requirements for men, including keeping hair and beards uncut, wearing a turban, and carrying a short sword. During the seventeenth century, Sikhs encountered hostility from both the Mughal Empire and some of their Hindu neighbors. In response, Sikhism evolved from a peaceful religious movement, blending Hindu and Muslim elements, into a militant community whose military skills were highly valued by the British when they took over India in the late eighteenth century.

PRACTICING AP® HISTORICAL THINKING

In what ways did religious changes in Asia and the Middle East parallel those in Europe, and in what ways were they different?

A New Way of Thinking: The Birth of Modern Science

While some Europeans were actively attempting to spread the Christian faith to distant corners of the world, others were nurturing an understanding of the cosmos at least partially at odds with traditional Christian teaching. These were the makers of Europe’s Scientific Revolution, a vast intellectual and cultural transformation that took place between the mid-sixteenth and early eighteenth centuries. These men of science would no longer rely on the external authority of the Bible, the Church, the speculations of ancient philosophers, or the received wisdom of cultural tradition. For them, knowledge would be acquired through rational inquiry based on evidence, the product of human minds alone. Those who created this revolution—Copernicus from Poland, Galileo from Italy, Descartes from France,

AP® EXAM TIP

You must know about the causes, as well as the consequences, of the Scientific Revolution to have success on the AP® exam.

Newton from England, and many others—saw themselves as departing radically from older ways of thinking. “The old rubbish must be thrown away,” wrote a seventeenth-century English scientist. “These are the days that must lay a new Foundation of a more magnificent Philosophy.”¹³

The long-term significance of the Scientific Revolution can hardly be overestimated. Within early modern Europe, it fundamentally altered ideas about the place of humankind within the cosmos and sharply challenged both the teachings and the authority of the Church. Over the past several centuries, it has substantially eroded religious belief and practice in the West, particularly among the well educated. When applied to the affairs of human society, scientific ways of thinking challenged ancient social hierarchies and political systems and played a role in the revolutionary upheavals of the modern era. But science was also used to legitimize racial and gender inequalities, giving new support to old ideas about the natural inferiority of women and enslaved people. When married to the technological innovations of the Industrial Revolution, science fostered both the marvels of modern production and the horrors of modern means of destruction. By the twentieth century, science had become so widespread that it largely lost its association with European culture and became the chief marker of global modernity. Like Buddhism, Christianity, and Islam, modern science became a universal worldview, open to all who could accept its premises and its techniques.

The Question of Origins: Why Europe?

Why did the breakthrough of the Scientific Revolution occur first in Europe and during the early modern era? The realm of Islam, after all, had generated the most advanced science in the world during the centuries between 800 and 1400. Arab scholars could boast of remarkable achievements in mathematics, astronomy, optics, and medicine, and their libraries far exceeded those of Europe.¹⁴ And what of China? Its elite culture of Confucianism was both sophisticated and secular, less burdened by religious dogma than that of the Christian or Islamic worlds; its technological accomplishments and economic growth were unmatched anywhere in the several centuries after 1000. In neither civilization, however, did these achievements lead to the kind of intellectual innovation that occurred in Europe.

Europe’s historical development as a reinvigorated and fragmented civilization arguably gave rise to conditions particularly favorable to the scientific enterprise. By the twelfth and thirteenth centuries, Europeans had evolved a legal system that guaranteed a measure of independence for a variety of institutions—the Church, towns and cities, guilds, professional associations, and universities. This legal revolution was based on the idea of a “corporation,” a collective group of people that was treated as a unit, a legal person, with certain rights to regulate and control its own members.

Most important for the development of science in the West was the autonomy of its emerging universities. By 1215, the University of Paris was recognized as a

Guided Reading Question

■ COMPARISON

Why did the Scientific Revolution occur in Europe rather than in China or the Islamic world?

AP® EXAM TIP

Here's another example of the roles played by cities in world history: the rise of universities in major European towns.

“corporation of masters and scholars,” which could admit and expel students, establish courses of instruction, and grant a “license to teach” to its faculty. Such universities—for example, in Paris, Bologna, Oxford, Cambridge, and Salamanca—became “neutral zones of intellectual autonomy” in which scholars could pursue their studies in relative freedom from the dictates of church or state authorities. Within them, the study of the natural order began to slowly separate itself from philosophy and theology and to gain a distinct identity. Their curricula featured “a basically scientific core of readings and lectures” that drew heavily on the writings of the Greek thinker Aristotle, which had only recently become available to Western Europeans. Most of the major figures in the Scientific Revolution had been trained in and were affiliated with these universities.

In the Islamic world, by contrast, science was patronized by a variety of local authorities, but it occurred largely outside the formal system of higher education. Within colleges known as madrassas, Quranic studies and religious law held the central place, whereas philosophy and natural science were viewed with great suspicion. To religious scholars, the Quran held all wisdom, and scientific thinking might well challenge it. An earlier openness to free inquiry and religious toleration was increasingly replaced by a disdain for scientific and philosophical inquiry, for it seemed to lead only to uncertainty and confusion. “May God protect us from useless knowledge” was a saying that reflected this outlook. Nor did Chinese authorities permit independent institutions of higher learning in which scholars could conduct their studies in relative freedom. Instead, Chinese education focused on preparing for a rigidly defined set of civil service examinations and emphasized the humanistic and moral texts of classical Confucianism. “The pursuit of scientific subjects,” one recent historian concluded, “was thereby relegated to the margins of Chinese society.”¹⁵

Beyond its distinctive institutional development, Western Europe was in a position to draw extensively on the knowledge of other cultures, especially that of the Islamic world. Arab medical texts, astronomical research, and translations of Greek classics played a major role in the birth of European natural philosophy (as science was then called) between 1000 and 1500. Then, in the sixteenth through the eighteenth centuries, Europeans found themselves at the center of a massive new exchange of information as they became aware of lands, peoples, plants, animals, societies, and religions from around the world. This tidal wave of new knowledge, uniquely available to Europeans, shook up older ways of thinking and opened the way to new conceptions of the world. The sixteenth-century Italian doctor, mathematician, and writer Girolamo Cardano (1501–1576) clearly expressed this sense of wonderment: “The most unusual [circumstance of my life] is that I was born in this century in which the whole world became known; whereas the ancients were familiar with but a little more than a third part of it.” He worried, however, that amid this explosion of knowledge, “certainties will be exchanged for uncertainties.”¹⁶ It was precisely those uncertainties—skepticism about established views—that provided such a fertile cultural ground for the emergence of modern science.

AP® EXAM TIP

Read this paragraph twice and take notes; it's a good example of how cross-cultural interactions create change.

The Reformation too contributed to that cultural climate in its challenge to authority, its encouragement of mass literacy, and its affirmation of secular professions.

Science as Cultural Revolution

Before the Scientific Revolution, educated Europeans held a view of the world that derived from Aristotle, perhaps the **greatest** of the ancient Greek philosophers, and from Ptolemy, a Greco-Egyptian **mathematician** and astronomer who lived in Alexandria during the second century C.E. To medieval European thinkers, the earth was stationary and at the center of the universe, and around it revolved the sun, moon, and stars embedded in ten spheres of transparent crystal. This understanding coincided well with the religious outlook of the Catholic Church because the attention of the entire universe was centered on the earth and its human inhabitants, among whom God's plan for salvation unfolded. It was a universe of divine purpose, with angels guiding the hierarchically arranged heavenly bodies along their way while God watched over the whole from his realm beyond the spheres. The Scientific Revolution was revolutionary because it fundamentally challenged this understanding of the universe.

The initial breakthrough in the Scientific Revolution came from the Polish mathematician and astronomer Nicolaus Copernicus, whose famous book *On the Revolutions of the Heavenly Spheres* was published in the year of his death, 1543. Its essential argument was that “at the middle of all things lies the sun” and that the earth, like the other planets, revolved around it. Thus the earth was no longer unique or at the obvious center of God's attention.

Other European scientists built on Copernicus's central insight, and some even argued that other inhabited worlds and other kinds of humans existed. Less speculatively, in the early seventeenth century Johannes Kepler, a German mathematician, showed that the planets followed elliptical orbits, undermining the ancient belief that they moved in perfect circles. The Italian Galileo (gal-uh-LAY-oh) developed an improved telescope, with which he made many observations that undermined established understandings of the cosmos. (See **Zooming In: Galileo and the Telescope**, page 668.) Some thinkers began to discuss the notion of an unlimited universe in which humankind occupied a mere speck of dust in an unimaginable vastness. The French mathematician and philosopher Blaise Pascal (1623–1662) perhaps spoke for many when he wrote, “The eternal silence of infinite space frightens me.”¹⁷

The culmination of the Scientific Revolution came in the work of Sir Isaac Newton (1642–1727), the Englishman who formulated the modern laws of motion and **mechanics**, which remained unchallenged until the twentieth century. At the core of Newton's thinking was the concept of universal gravitation. “All bodies whatsoever,” Newton declared, “are endowed with a principle of mutual gravitation.”¹⁸ Here was the grand unifying idea of early modern science. The radical implication of this view was that the **heavens** and the earth, long regarded as separate and distinct spheres, were not so different after all, for the motion of a cannonball

AP® EXAM TIP

The Scientific Revolution marked a major turning point in the way Westerners saw the world around them. Pay close attention to this section.

Guided Reading Question

CHANGE

What was revolutionary about the Scientific Revolution?

Galileo and the Telescope: Reflecting on Science and Religion

The Scientific Revolution was predicated on the idea that knowledge of how the universe worked was acquired through a combination of careful observations, controlled experiments, and the formulation of general laws, expressed in mathematical terms. New scientific instruments capable of making precise empirical observations underpinned some of the most important breakthroughs of the period. Perhaps no single invention produced more dramatic discoveries than the telescope, the first of which were produced in the early seventeenth century by Dutch eyeglass makers.

The impact of new instruments depended on how scientists employed them. In the case of the telescope, it was the brilliant Italian mathematician and astronomer Galileo Galilei (1564–1642) who unlocked its potential when he used it to observe the night sky. Within months of creating his own telescope, which improved on earlier designs, Galileo made a series of discoveries that put into question well-established understandings of the cosmos. He observed craters on the moon and sunspots, or blemishes, moving across the face of the sun, which challenged the traditional notion that no imperfection or change



Galileo on trial.

marred the heavenly bodies. Moreover, his discovery of the moons of Jupiter and many new stars suggested a cosmos far larger than the finite universe of traditional astronomy. In 1610, Galileo published his remarkable findings in a book titled *The Starry Messenger*, where he emphasized time and again that his precise observations provided irrefutable evidence of a cosmos unlike

that described by traditional authorities. “With the aid of the telescope,” he argued, “this has been scrutinized so directly and with such ocular certainty that all the disputes which have vexed the philosophers through so many ages have been resolved, and we are at last freed from wordy debates about it.”¹⁹

Galileo’s empirical evidence transformed the debate over the nature of the cosmos. His dramatic and unexpected discoveries were readily grasped, and with the aid of a telescope anyone could confirm their veracity. His initial findings were heralded by many in the scientific community, including Christoph Clavius, the Church’s leading astronomer in Rome. Galileo’s findings led him

photo: *Trial of Galileo*, 1633, oil on canvas, Italian/Private Collection/Bridgeman Images

or the falling of an apple obeyed the same natural laws that governed the orbiting planets.

By the time Newton died, a revolutionary new understanding of the physical universe had emerged among educated Europeans: the universe was no longer propelled by supernatural forces but functioned on its own according to scientific principles that could be described mathematically. Articulating this view, Kepler wrote, “The machine of the universe is not similar to a divine animated being but similar to a clock.”²⁰ Furthermore, it was a machine that regulated itself, requiring neither God nor angels to account for its normal operation. Knowledge of that universe could be obtained through human reason alone — by observation, deduction, and experimentation — without the aid of ancient authorities or divine reve-

to conclude that Copernicus (1473–1543), an earlier astronomer and mathematician, had been correct when he had advanced the theory that the sun rather than the earth was at the center of the solar system. But Galileo's evidence could not definitively prove Copernicus's theory to the satisfaction of critics, leading Galileo to study other phenomena, such as the tides, that could provide further evidence that the earth was in motion.

When the Church condemned Copernicus's theory in 1616, it remained silent on Galileo's astronomical observations, instead warning him to refrain from teaching or promoting Copernicus's ideas. Ultimately, though, Galileo came into conflict with church authorities when in 1629 he published, with what he thought was the consent of the Church, the *Dialogue Concerning the Two Chief World Systems*, a work sympathetic to Copernicus's sun-centric system. In 1632, Galileo was tried by the Roman Inquisition, an ecclesiastical court charged with maintaining orthodoxy, and convicted of teaching doctrines against the express orders of the Church. He recanted his beliefs and at the age of sixty-nine was sentenced to house arrest.

Although Galileo was formally convicted of disobeying the Church's order to remain silent on the issue of Copernicus's theory, the question most fundamentally at stake in the trial was "What does it mean, 'to know something'?"²¹ This question of the relationship between scientific knowledge, primarily concerned with how the

universe works, and other forms of "knowledge," derived from divine revelation or mystical experience, has persisted in the West. Over 350 years after the trial, Pope John Paul II spoke of Galileo's conviction in a public speech in 1992, declaring it a "sad misunderstanding" that belongs to the past, but one with ongoing resonance because "the underlying problems of this case concern both the nature of science and the message of faith." Addressing the central question of what it means to know something, the pope declared scientific and religious knowledge to be compatible: "There exist two realms of knowledge, one which has its source in Revelation and one which reason can discover by its own power. . . . The distinction between the two realms of knowledge ought not to be understood as opposition. . . . The methodologies proper to each make it possible to bring out different aspects of reality."²²

Strangely enough, Galileo himself had expressed something similar centuries earlier. "Nor is God," he wrote, "any less excellently revealed in Nature's actions than in the sacred statements of the Bible."²³ Finding the place of new scientific knowledge in a constellation of older wisdom traditions proved a fraught but highly significant development in the emergence of the modern world.

Question: What can Galileo's discoveries with his telescope and his conviction by the Inquisition tell us about the Scientific Revolution?

lation. The French philosopher René Descartes (day-KAHT) resolved "to seek no other knowledge than that which I might find within myself, or perhaps in the book of nature."²⁴

Like the physical universe, the human body also lost some of its mystery. The careful dissections of cadavers and animals enabled doctors and scientists to describe the human body with much greater accuracy and to understand the circulation of the blood throughout the body. The heart was no longer the mysterious center of the body's heat and the seat of its passions; instead it was just another machine, a complex muscle that functioned as a pump.

The movers and shakers of this enormous cultural transformation were almost entirely male. European women, after all, had been largely excluded from the



The Telescope

Johannes Hevelius, an astronomer of German Lutheran background living in what is now Poland, constructed extraordinarily long telescopes in the mid-seventeenth century with which he observed sunspots, charted the surface of the moon, and discovered several comets. Such telescopes played a central role in transforming understandings of the universe during the Scientific Revolution. (© World History Archive/Alamy)

AP® EXAM TIP

Compare examples of cooperation and conflict between science and religion in Europe to examples of these in the Islamic world in this era.

universities where much of the new science was discussed. A few aristocratic women, however, had the leisure and connections to participate informally in the scientific networks of their male relatives. Through her marriage to the Duke of Newcastle, Margaret Cavendish (1623–1673) joined in conversations with a circle of “natural philosophers,” wrote six scientific texts, and was the only seventeenth-century English woman to attend a session of the Royal Society of London, created to foster scientific learning. In Germany, a number of women took part in astronomical work as assistants to their husbands or brothers. Maria Winkelman, for example, discovered a previously unknown comet, though her husband took credit for it. After his death, she sought to continue his work in the Berlin Academy of Sciences but was refused on the grounds that “mouths would gape” if a woman held such a position.

Much of this scientific thinking developed in the face of strenuous opposition from the Catholic Church, for both its teachings and its authority were under attack. The Italian philosopher Giordano Bruno, proclaiming an infinite universe and many worlds, was burned at the stake in 1600, and Galileo was compelled by the Church to publicly renounce his belief that the earth moved around an orbit and rotated on its axis.

But scholars have sometimes exaggerated the conflict of science and religion, casting it in military terms as an almost unbroken war. None of the early scientists rejected Christianity. Copernicus in fact published his famous book with the support of several leading Catholic churchmen and dedicated it to the pope. After all, several earlier Catholic writers had proposed the idea of the earth in motion. He more likely feared the criticism of fellow scientists than that of the church hierarchy. Galileo himself proclaimed the compatibility of science and faith, and his lack of diplomacy in dealing with church leaders was at least in part responsible for his quarrel with the Church.²⁵ Newton was a serious biblical scholar and saw no inherent contradiction between his ideas and belief in God. “This most beautiful system of the sun, planets, and comets,” he declared, “could only proceed from the counsel and dominion of an intelligent Being.”²⁶ Thus the Church gradually accommodated as well as resisted the new ideas, largely by compartmentalizing them. Science might prevail in its limited sphere of describing the physical universe, but religion was still the arbiter of truth about those ultimate questions concerning human salvation, righteous behavior, and the larger purposes of life.

Science and Enlightenment

Initially limited to a small handful of scholars, the ideas of the Scientific Revolution spread to a wider European public during the eighteenth century. That process was aided by novel techniques of printing and bookmaking, by a popular press, by growing literacy, and by a host of scientific societies. Moreover, the new approach to knowledge—rooted in human reason, skeptical of authority, expressed in natural laws—was now applied to human affairs, not just to the physical universe. The Scottish professor Adam Smith (1723–1790), for example, formulated laws that accounted for the operation of the economy and that, if followed, he believed, would generate inevitably favorable results for society. Growing numbers of people believed that the long-term outcome of scientific development would be “enlightenment,” a term that has come to define the eighteenth century in European history. If human reason could discover the laws that governed the universe, surely it could uncover ways in which humankind might govern itself more effectively.

“What is Enlightenment?” asked the prominent German intellectual Immanuel Kant (1724–1804). “It is man’s emergence from his self-imposed . . . inability to use one’s own understanding without another’s guidance. . . . Dare to know! ‘Have the courage to use your own understanding’ is therefore the motto of the enlightenment.”²⁷ Although they often disagreed sharply with one another, European Enlightenment thinkers shared this belief in the power of knowledge to transform human society. They also shared a satirical, critical style, a commitment to open-mindedness and inquiry, and in various degrees a hostility to established political and religious authority. Many took aim at arbitrary governments, the “divine right of kings,” and the aristocratic privileges of European society. The English philosopher John Locke (1632–1704) offered principles for constructing a constitutional government, a contract between rulers and ruled that was created by human ingenuity rather than divinely prescribed. Much of Enlightenment thinking was directed against the superstition, ignorance, and corruption of established religion. In his *Treatise on Toleration*, the French writer Voltaire (1694–1778) reflected the outlook of the Scientific Revolution as he commented sarcastically on religious intolerance:

This little globe, nothing more than a point, rolls in space like so many other globes; we are lost in its immensity. Man, some five feet tall, is surely a very small part of the universe. One of these imperceptible beings says to some of his neighbors in Arabia or Africa: “Listen to me, for the God of all these worlds has enlightened me; there are nine hundred million little ants like us on the earth, but only my anthill is beloved of God; He will hold all others in horror through all eternity; only mine will be blessed, the others will be eternally wretched.”²⁸

Voltaire’s own faith, like that of many others among the “enlightened,” was deism. Deists believed in a rather abstract and remote Deity, sometimes compared to a clockmaker, who had created the world, but not in a personal God who intervened

AP® EXAM TIP

The AP® exam might ask you to explain how Europe’s new views of science led to new ideas about human government and philosophies.

Guided Reading Question

CHANGE

In what ways did the Enlightenment challenge older patterns of European thinking?



The Philosophers of the Enlightenment

This painting shows the French philosopher Voltaire with a group of intellectual luminaries at the summer palace of the Prussian king Frederick II. Such literary gatherings, sometimes called salons, were places of lively conversation among mostly male participants and came to be seen as emblematic of the European Enlightenment. (Painting by Adolph Menzel [1815–1905], 1850/© akg-images/The Image Works)

in history or tampered with natural law. Others became *pantheists*, who believed that God and nature were identical. Here was a conception of religion shaped by the outlook of science. Sometimes called “natural religion,” it was devoid of mystery, revelation, ritual, and spiritual practice, while proclaiming a God that could be “proven” by human rationality, logic, and the techniques of scientific inquiry. In this view, all else was superstition. Among the most radical of such thinkers were the several Dutchmen who wrote the *Treatise of Three Imposters*, which claimed that Moses, Jesus, and Muhammad were fraudulent impostors who based their teachings on “the ignorance of Peoples [and] resolved to keep them in it.”²⁹

Prominent among the debates spawned by the Enlightenment was the question of women’s nature, their role in society, and the education most appropriate for them. Although well-to-do Parisian women hosted in their elegant salons many gatherings of the largely male Enlightenment figures, most of those men were anything but ardent feminists. The male editors of the famous *Encyclopédie*, a vast compendium of Enlightenment thought, included very few essays by women. One of the male authors expressed a common view: “[Women] constitute the

AP® EXAM TIP

Pay attention to how the Enlightenment led to new ideas about women’s roles in Western society.

principal ornament of the world. . . . May they, through submissive discretion and . . . artless cleverness, spur us [men] on to virtue.” In his treatise *Emile*, Jean-Jacques Rousseau described women as fundamentally different from and inferior to men and urged that “the whole education of women ought to be relative to men.”

Such views were sharply contested by any number of other Enlightenment figures—men and women alike. The *Journal des Dames* (Ladies Journal), founded in Paris in 1759, aggressively defended women. “If we have not been raised up in the sciences as you have,” declared Madame Beaulmer, the *Journal’s* first editor, “it is you [men] who are the guilty ones; for have you not always abused . . . the bodily strength that nature has given you?”³⁰ The philosopher Condorcet looked forward to the “complete destruction of those prejudices that have established an inequality of rights between the sexes.” And in 1792, the British writer Mary Wollstonecraft directly confronted Rousseau’s view of women and their education: “What nonsense! . . . Til women are more rationally educated, the progress of human virtue and improvement in knowledge must receive continual checks.” Thus was initiated a debate that echoed throughout the centuries that followed.

Though solidly rooted in Europe, Enlightenment thought was influenced by the growing global awareness of its major thinkers. Voltaire, for example, idealized China as an empire governed by an elite of secular scholars selected for their talent, which stood in sharp contrast to continental Europe, where aristocratic birth and military prowess were far more important. The example of Confucianism—supposedly secular, moral, rational, and tolerant—encouraged Enlightenment thinkers to imagine a future for European civilization without the kind of supernatural religion that they found so offensive in the Christian West.

The central theme of the Enlightenment—and what made it potentially revolutionary—was the idea of progress. Human society was not fixed by tradition or divine command but could be changed, and improved, by human action guided by reason. No one expressed this soaring confidence in human possibility more clearly than the French thinker the Marquis de Condorcet (1743–1794), who boldly declared that “the perfectibility of humanity is indefinite.” Belief in progress was a sharp departure from much of premodern social thinking, and it inspired those who later made the great revolutions of the modern era in the Americas, France, Russia, China, and elsewhere. Born of the Scientific Revolution, that was the faith of the Enlightenment. For some, it was virtually a new religion.

The age of the Enlightenment, however, also witnessed a reaction against too much reliance on human reason. Jean-Jacques Rousseau (1712–1778) minimized the importance of book learning for the education of children and prescribed instead an immersion in nature, which taught self-reliance and generosity rather than the greed and envy fostered by “civilization.” The Romantic movement in art and literature appealed to emotion, intuition, passion, and imagination rather than cold reason and scientific learning. Religious awakenings—complete with fiery sermons, public repentance, and intense personal experience of sin and redemption—shook Protestant Europe and North America in the eighteenth and early

AP® EXAM TIP

It’s important to note that the Scientific Revolution led to the Enlightenment (“Age of Reason”), which led to major political and social reforms during the eighteenth and nineteenth centuries.

nineteenth centuries. The Methodist movement—with its emphasis on Bible study, confession of sins, fasting, enthusiastic preaching, and resistance to worldly pleasures—was a case in point.

Various forms of “enlightened religion” also arose in the early modern centuries, reflecting the influence of Enlightenment thinking. Quakers, for example, emphasized tolerance, an absence of hierarchy and ostentation, a benevolent God, and an “inner light” available to all people. Unitarians denied the Trinity, original sin, predestination, and the divinity of Jesus, but honored him as a great teacher and a moral prophet. Later, in the nineteenth century, proponents of the “social gospel” saw the essence of Christianity not in personal salvation but in ethical behavior. Science and the Enlightenment surely challenged religion, and for some they eroded religious belief and practice. Just as surely, though, religion persisted, adapted, and revived for many others.

Looking Ahead: Science in the Nineteenth Century and Beyond

The perspectives of the Enlightenment were challenged not only by romanticism and religious “enthusiasm” but also by the continued development of European science itself. This remarkable phenomenon justifies a brief look ahead at several scientific developments in the nineteenth and twentieth centuries.

Modern science was a cumulative and self-critical enterprise, which in the nineteenth century and later was applied to new domains of human inquiry in ways that undermined some of the assumptions of the Enlightenment. In the realm of biology, for example, Charles Darwin (1809–1882) laid out a complex argument that all life was in constant change, that an endless and competitive struggle for survival over millions of years constantly generated new species of plants and animals, while casting others into extinction. Human beings were not excluded from this vast process, for they too were the work of evolution operating through natural selection. Darwin’s famous books *The Origin of Species* (1859) and *The Descent of Man* (1871) were threatening to many traditional Christian believers, perhaps more so than Copernicus’s ideas about a sun-centered universe had been several centuries earlier.

At the same time, Karl Marx (1818–1883) articulated a view of human history that likewise emphasized change and struggle. Conflicting social classes—slave owners and slaves, nobles and peasants, capitalists and workers—successively drove the process of historical transformation. Although he was describing the evolution of human civilization, Marx saw himself as a scientist. He based his theories on extensive historical research; like Newton and Darwin, he sought to formulate general laws that would explain events in a rational way. Nor did he believe in heavenly intervention, chance, or the divinely endowed powers of kings. The coming of socialism, in this view, was not simply a good idea; it was inscribed in the laws of historical development. (See *Working with Evidence*, Source 17.1, page 776.)

Like the intellectuals of the Enlightenment, Darwin and Marx believed strongly in progress, but in their thinking, conflict and struggle rather than reason and edu-

Guided Reading Question

■ CHANGE

How did nineteenth-century developments in the sciences challenge the faith of the Enlightenment?

cation were the motors of progress. The Enlightenment image of the thoughtful, rational, and independent individual was fading. Individuals—plant, animal, and human alike—were now viewed as enmeshed in vast systems of biological, economic, and social conflict.

The work of the Viennese doctor Sigmund Freud (1856–1939) applied scientific techniques to the operation of the human mind and emotions and in doing so cast further doubt on Enlightenment conceptions of human rationality. At the core of each person, Freud argued, lay primal impulses toward sexuality and aggression, which were only barely held in check by the thin veneer of social conscience derived from civilization. Our neuroses arose from the ceaseless struggle between our irrational drives and the claims of conscience. This too was a far cry from the Enlightenment conception of the human condition.

And in the twentieth century, developments in physics, such as relativity and quantum theory, called into question some of the established verities of the Newtonian view of the world, particularly at the subatomic level and at speeds approaching that of light. In this new physics, time is relative to the position of the observer; space can warp and light can bend; matter and energy are equivalent; black holes and dark matter abound; and probability, not certain prediction, is the best that scientists can hope for. None of this was even on the horizon of those who made the original Scientific Revolution in the early modern era.

European Science beyond the West

In the long run, the achievements of the Scientific Revolution spread globally, becoming the most widely sought-after product of European culture and far more desired than Christianity, democracy, socialism, or Western literature. In the early modern era, however, interest in European scientific thinking within major Asian societies was both modest and selective. The telescope provides an example. Invented in early seventeenth-century Europe and endlessly improved in the centuries that followed, the telescope provoked enormous excitement in European scientific circles. It made possible any number of astronomical discoveries, including the rugged surface of the moon, the moons of Jupiter, the rings of Saturn, and the phases of Venus. “We are here . . . on fire with these things,” wrote an English astronomer in 1610.³¹ Soon the telescope was available in China, Mughal India, and the Ottoman Empire. But in none of these places did it evoke much interest or evolve into the kind of “discovery machine” that it was rapidly becoming in Europe.

In China, Qing dynasty emperors and scholars were most interested in European techniques, derived largely from Jesuit missionaries, for predicting eclipses, reforming the calendar, and making accurate maps of the empire. European medicine, however, was of little importance for Chinese physicians before the nineteenth century. But the reputation of the Jesuits suffered when it became apparent in the 1760s that for two centuries the missionaries had withheld information about Copernican views of a sun-centered solar system because those ideas had been condemned by the Church. Nonetheless, European science had a substantial impact on

Guided Reading Question

CONNECTION

In what ways was European science received in the major civilizations of Asia in the early modern era?

a number of Chinese scholars as it seemed compatible with the data-based *kaozheng* movement, described by one participant as “an ant-like accumulation of facts.”³² European mathematics was of particular interest to *kaozheng* researchers who were exploring the history of Chinese mathematics. To convince their skeptical colleagues that the barbarian Europeans had something to offer in this field, some Chinese scholars argued that European mathematics had in fact grown out of much earlier Chinese ideas and could therefore be adopted with comfort.³³ In such ways, early modern Chinese thinkers selectively assimilated Western science very much on their own terms.³⁴

AP® EXAM TIP

Know that Japan has a greater tradition of cultural borrowing than China. This will become more evident in the nineteenth century.

Although Japanese authorities largely closed their country off from the West in the early seventeenth century (see Chapter 14), one window remained open. Alone among Europeans, the Dutch were permitted to trade in Japan at a single location near Nagasaki, but not until 1720 did the Japanese lift the ban on importing Western books. Then a number of European texts in medicine, astronomy, geography, mathematics, and other disciplines were translated and studied by a small group of Japanese scholars. They were especially impressed with Western anatomical studies, for in Japan dissection was work fit only for outcasts. Returning from an autopsy conducted by Dutch physicians in the mid-eighteenth century, several Japanese observers reflected on their experience: “We remarked to each other how amazing the autopsy had been, and how inexcusable it had been for us to be ignorant of the anatomical structure of the human body.”³⁵ Nonetheless, this small center of “Dutch learning,” as it was called, remained isolated amid a pervasive Confucian-based culture. Not until the mid-nineteenth century, when Japan was forcibly opened to Western penetration, would European-style science assume a prominent place in Japanese culture.

AP® EXAM TIP

Pay attention to the similar reactions of China, Japan, and the Ottoman Empire to the Scientific Revolution.

Like China and Japan, the Ottoman Empire in the sixteenth and seventeenth centuries was an independent, powerful, successful society whose intellectual elites saw no need for a wholesale embrace of things European. Ottoman scholars were conscious of the rich tradition of Muslim astronomy and chose not to translate the works of major European scientists such as Copernicus, Kepler, or Newton, although they were broadly aware of European scientific achievements by 1650. Insofar as they were interested in these developments, it was for their practical usefulness in making maps and calendars rather than for their larger philosophical implications. In any event, the notion of a sun-centered solar system did not cause the kind of upset that it did in Europe.

More broadly, theoretical science of any kind—Muslim or European—faced an uphill struggle in the face of a conservative Islamic educational system. In 1580, for example, a highly sophisticated astronomical observatory was dismantled under pressure from conservative religious scholars and teachers, who interpreted an outbreak of the plague as God’s disapproval with those who sought to understand his secrets. As in Japan, the systematic embrace of Western science would have to await the nineteenth century, when the Ottoman Empire was under far more intense European pressure and reform seemed more necessary.

REFLECTIONS

Cultural Borrowing and Its Hazards

Ideas are important in human history. They shape the mental or cultural worlds that people everywhere inhabit, and they often influence behavior as well. Many of the ideas developed or introduced during the early modern era have had enormous and continuing significance in the centuries that followed. The Western Hemisphere was solidly incorporated into Christendom. A Wahhabi version of Islam remains the official faith of Saudi Arabia into the twenty-first century and has influenced many contemporary Islamic revival movements, including al-Qaeda. Modern science and the associated notions of progress have become for many people something approaching a new religion.

Accompanying the development of these ideas has been a great deal of cultural borrowing. Filipinos, Siberians, and many Native American peoples borrowed elements of Christianity from Europeans. Numerous Asian and African peoples borrowed Islam from the Arabs. North Indian Sikhs drew on both Hindu and Muslim teachings. Europeans borrowed scientific and medical ideas from the Islamic world and subsequently contributed their own rich scientific thinking to the entire planet.

In virtually every case, though, borrowing was selective rather than wholesale, even when it took place under conditions of foreign domination or colonial rule. Many peoples who appropriated Christianity or Islam certainly did not accept the rigid exclusivity and ardent monotheism of more orthodox versions of those faiths. Elite Chinese were far more interested in European mapmaking and mathematics than in Western medicine, while Japanese scholars became fascinated with the anatomical work of the Dutch. Neither, however, adopted Christianity in a widespread manner.

Borrowing was frequently the occasion for serious conflict. Some objected to much borrowing at all, particularly when it occurred under conditions of foreign domination or foreign threat. Thus members of the Taki Onqoy movement in Peru sought to wipe out Spanish influence and control, while Chinese and Japanese authorities clamped down firmly on European missionaries, even as they maintained some interest in European technological and scientific skills. Another kind of conflict derived from the efforts to control the terms of cultural borrowing. For example, European missionaries and Muslim reformers alike sought to root out “idolatry” among native converts.

To ease the tensions of cultural borrowing, efforts to “domesticate” foreign ideas and practices proliferated. Thus the Jesuits in China tried to point out similarities between Christianity and Confucianism, and Native American converts identified Christian saints with their own gods and spirits. By the late seventeenth century, some local churches in central Mexico had come to associate Catholicism less with the Spanish than with ancient pre-Aztec communities and beliefs that were now, supposedly, restored to their rightful position.

The pace of global cultural borrowing and its associated tensions stepped up even more as Europe’s modern transformation unfolded in the nineteenth century and as its imperial reach extended and deepened around the world.

Chapter Review

What's the Significance?

Protestant Reformation, 645–50	Sikhism, 664
Catholic Counter-Reformation, 649	Copernicus, 667
Úrsula de Jesús, 654–55	Newton, 667
Taki Onqoy, 655–56	Galileo, 667–69
Jesuits in China, 657–58	Voltaire, 671
Wahhabi Islam, 660–61	European Enlightenment, 671–74
<i>kaozheng</i> , 662	Condorcet and the idea of progress, 673
Mirabai, 663–64	

Big Picture Questions

1. Why did Christianity take hold in some places more than in others?
2. In what ways was the missionary message of Christianity shaped by the cultures of Asian and American peoples?
3. In what ways did the spread of Christianity, Islam, and modern science give rise to culturally based conflicts?
4. **Looking Back:** Based on Chapters 13 through 15, how might you challenge a Eurocentric understanding of the early modern era while acknowledging the growing role of Europeans on the global stage?

Next Steps: For Further Study

- Natana J. Delong-Bas, *Wahhabi Islam: From Revival and Reform to Global Jihad* (2004). A careful study of the origins of Wahhabi Islam and its subsequent development.
- Patricia Buckley Ebrey et al., *East Asia: A Cultural, Social, and Political History* (2005). A broad survey by major scholars in the field.
- Geoffrey C. Gunn, *First Globalization: The Eurasian Exchange, 1500–1800* (2003). Explores the two-way exchange of ideas between Europe and Asia in the early modern era.
- Toby E. Huff, *The Rise of Early Modern Science* (2003). A fascinating and controversial explanation as to why modern science arose in the West rather than in China or the Islamic world.
- Úrsula de Jesús, *The Souls of Purgatory: The Spiritual Diary of a Seventeenth-Century Afro-Peruvian Mystic* (2004). A scholarly introduction by Nancy E. van Deusen places Úrsula in a broader context.
- Diarmaid MacCulloch, *Christianity: The First Three Thousand Years* (2009). A masterful exploration of global Christianity with extensive coverage of the early modern era.
- Deva Sobel, *A More Perfect Heaven: How Copernicus Revolutionized the Cosmos* (2011). A fascinating account of a major breakthrough in the Scientific Revolution.
- "Christianity: A History of 'Dark Continents,'" <http://vimeo.com/15944175>.
- Internet Modern History Sourcebook, "The Scientific Revolution," <http://www.fordham.edu/halsall/mod/modsbook09.html>. A collection of primary-source documents dealing with the breakthrough to modern science in Europe.

WORKING WITH EVIDENCE

Global Christianity in the
Early Modern Era

During the early modern centuries, the world of European Christendom, long divided between its Roman Catholic and Eastern Orthodox branches, underwent two major transformations. First, the Reformation sharply divided Western Christendom into bitterly hostile Protestant and Catholic halves. And while that process was unfolding in Europe, missionaries—mostly Roman Catholic—rode the tide of European expansion to establish the faith in the Americas and parts of Africa and Asia. In those places, native converts sometimes imitated European patterns and at other times adapted the new religion to their own cultural traditions. Furthermore, smaller but ancient Christian communities persisted in Ethiopia, Armenia, Egypt, southern India, and elsewhere. Thus the Christian world of the early modern era was far more globalized and much more varied than before 1500. That variety found expression in both art and architecture, as the sources that follow illustrate.

Some of the differences between Protestant and Catholic Christianity become apparent in the interiors of their churches. To Martin Luther, the founder of Protestant Christianity, elaborate church interiors, with their many sculptures and paintings, represented a spiritual danger, for he feared that the wealthy few who endowed such images would come to believe that they were buying their way into Heaven rather than relying on God's grace. "It would be better," he wrote, "if we gave less to the churches and altars, . . . and more to the needy."³⁶ John Calvin, the prominent French-born Protestant theologian, went even further, declaring that "God forbade . . . the making of any images representing him."³⁷

Behind such statements lay different understandings of the church building. While Roman Catholics generally saw a church as a temple or "house of God," sacred because it is where God dwells on earth, Protestants viewed churches more as meetinghouses, gathering places for a congregation. They were not sacred in themselves as places, but only on account of the worship that occurred within them.³⁸ Furthermore, to Protestants, images of the saints were an invitation to idolatry. Acting on such ideas, Protestants in various places stripped older churches of the offending images, decapitated statues, and sometimes ritually burned statues and paintings at the stake. The new

Interior of the Choir of St. Bavo's Church at Haarlem, 1660 (oil on panel), by Pieter Jansz. Saenredam (1597–1665)/Worcester Art Museum, Massachusetts, USA/Bridgeman Images



Source 15.1 Interior of a Dutch Reformed Church

churches they created were often quite different from their Catholic counterparts. Source 15.1, a painting by the seventeenth-century Dutch artist Pieter Saenredam, portrays the interior of a Dutch Reformed (Protestant) church in the city of Haarlem.

Roman Catholic response to the Reformation took shape in the Catholic Reformation, or Counter-Reformation (see page 649). That vigorous movement found expression in a style of church architecture known as Baroque, which emerged powerfully in Catholic Europe as well as in the Spanish and Portuguese colonies of Latin America during the seventeenth and eighteenth

centuries. The interiors of such churches were ornately adorned with paintings, ceiling frescoes, and statues, depicting Jesus on the cross, the Virgin and child, numerous saints, and biblical stories. The exuberant art of these church interiors appealed to the senses, seeking to provoke an emotional response of mystery, awe, and grandeur while kindling the faith of the worshippers and binding them firmly to the Catholic Church in the face of Protestant competition. Source 15.2 is a photograph of the interior of the Pilgrimage Church of Mariazell, located in present-day Austria. A church site since the twelfth century, the building was enlarged and refurbished in Baroque style in the seventeenth century.



Erich Lessing/Art Resource, NY

Source 15.2 Catholic Baroque, Interior of Pilgrimage Church, Mariazell, Austria

- What obvious differences do you notice between these two church interiors? What kind of emotional responses would each of them have evoked?
- In what ways do these church interiors reflect differences between Protestant and Catholic theology? (See Snapshot, page 647.)
- How might Protestants and Catholics have reacted upon entering each other's churches?
- Keep in mind that Source 15.1 is a painting. Why do you think the artist showed the people disproportionately small?

Throughout Latin America, Christianity was established in the context of European conquest and colonial rule (see pages 652–56). As the new faith took hold across the region, it incorporated much that was of European origin, as the construction of many large and ornate Baroque churches illustrates. But local communities also sought to blend this European Catholic Christianity with religious symbols and concepts drawn from their own traditions in a process that historians call syncretism. In the Andes, for example, Inca religion featured a supreme creator god (Viracocha); a sun god (Inti), regarded as the creator of the Inca people; a moon goddess (Killa), who was the wife of Inti and was attended by an order of priestesses; and an earth mother goddess (Pachamama), associated with mountain peaks and fertility. Those religious figures found their way into Andean understanding of Christianity, as Source 15.3 illustrates.

Painted around 1740 by an unknown artist, this striking image shows the Virgin Mary placed within the “rich mountain” of Potosí in Bolivia, from which the Spanish had extracted so much silver (see Chapter 14, page 614). Thus Christianity was visually expressed in an Andean tradition that viewed mountains as the embodiment of the gods. A number of smaller figures within the mountain represent the native miners whose labor had enriched their colonial rulers. A somewhat larger figure at the bottom of the mountain is an Inca ruler dressed in royal garb receiving tribute from his people. At the bottom left are the pope and a cardinal, while on the right stand the Habsburg emperor Charles V and perhaps his wife.

- What is Mary's relationship to the heavenly beings standing above her (God the Father on the right; the dove, symbolizing the Holy Spirit, in the center; and Jesus on the left) as well as to the miners at work in the mountain? What is the significance of the crown above her head and her outstretched arms?
- The European figures at the bottom are shown in a posture of prayer or thanksgiving. What might the artist have been trying to convey? How would you interpret the relative size of the European and Andean figures?
- Why do you think the artist placed Mary actually inside the mountain rather than on it, while depicting her dress in a mountain-like form?



Museo de la Casa de la Moneda, Potosí, Bolivia/Gilles Mermet/akg-images

15.3 Cultural Blending in Andean Christianity

- What marks this painting and the one on page 653 as examples of syncretism?
- Do you read these two images from the Andes as subversive of the colonial order or as supportive of it? Do you think the artist who painted Source 15.3 was a European or a Native American Christian?

In China, unlike in Latin America, Christian missionaries operated in a setting wholly outside of European political control, bringing their faith to a powerful and proud civilization, long dominant in eastern Asia, where Confucianism, Daoism, and Buddhism had for many centuries mixed and mingled. The outcome of those missionary efforts was far more modest and much less

successful than in the Americas. Nonetheless, in China too the tendency toward syncretism was evident. Jesuit missionaries themselves sought to present the Christian message within a Chinese cultural context to the intellectual and political elites who were their primary target audience. And Chinese Christians often transposed the new religion into more familiar cultural concepts. European critics of the Jesuit approach, however, feared that syncretism watered down the Christian message and risked losing its distinctive character.

Source 15.4 provides an example of Christianity becoming Chinese.³⁹ In the early seventeenth century, the Jesuits published several books in the Chinese language describing the life of Christ and illustrated them with a series of woodblock prints created by Chinese artists affiliated with the Jesuits. Although they were clearly modeled on European images, those prints cast Christian



Roma, ARSI, Jap. Sin. I 43

Source 15.4 Making Christianity Chinese

figures into an altogether Chinese setting. The print in Source 15.4 portrays the familiar biblical story of the Annunciation, when an angel informs Mary that she will be the mother of Jesus. The house and furniture shown in the print suggest the dwelling of a wealthy Chinese scholar. The reading table in front of Mary was a common item in the homes of the literary elite of the time. The view from the window shows a seascape, mountains in the distance, a lone tree, and a “scholar’s rock”—all of which were common features in Chinese landscape painting. The clouds that appear at the angel’s feet and around the shaft of light shining on Mary are identical to those associated with sacred Buddhist and Daoist figures. To Chinese eyes, the angel might well appear as a Buddhist bodhisattva, while Mary may resemble a Ming dynasty noblewoman or perhaps Kuanyin, the Chinese Buddhist goddess of mercy and compassion.

- What specifically Chinese elements can you identify in this image?
- To whom might this image have been directed?
- How might educated Chinese have responded to this image?
- The European engraving on which this Chinese print was modeled included in the background the scene of Jesus’ crucifixion. Why might the Chinese artist have chosen to omit that scene from his image?
- How would European critics of the Jesuits’ approach to missionary work have reacted to this image? To what extent has the basic message of Catholic Christianity been retained or altered in this Chinese cultural setting?

As Chinese emperors welcomed Jesuit missionaries at court, so too did the rulers of Mughal India during the time of Akbar (r. 1556–1605) and Jahangir (r. 1605–1627). But while Chinese elite circles received the Jesuits for their scientific skills, especially in astronomy, the Mughal court seemed more interested in the religious and artistic achievements of European civilization. Akbar invited the Jesuits to take part in cross-religious discussions that included Muslim, Hindu, Jain, and Zoroastrian scholars. Furthermore, the Mughal emperors eagerly embraced the art of late Renaissance Europe, which the Jesuits provided to them, much of it devotional and distinctly Christian. Mughal artists quickly learned to paint in the European style, and soon murals featuring Jesus, Mary, and Christian saints appeared on the walls of palaces, garden pavilions, and harems of the Mughal court, while miniature paintings adorned books, albums, and jewelry.

In religious terms, however, the Jesuit efforts were “a fantastic and extravagant failure,”⁴⁰ for these Muslim rulers of India were not in the least interested in abandoning Islam for the Christian faith, and few conversions of any kind occurred. Akbar and Jahangir, however, were cosmopolitan connoisseurs of art, which they collected, reproduced, and displayed. European religious art

also had propaganda value in enhancing their status. Jesus and Mary, after all, had a prominent place within Islam. Jesus was seen both as an earlier prophet and as a mystical figure, similar to the Sufi masters who were so important in Indian Islam. Mughal paintings, pairing the adult Jesus and Mary side by side, were placed above the imperial throne as well as on the emperor's jewelry and his official seal, suggesting an identification of Jesus and a semi-divine emperor. That the mothers of both Akbar and Jahangir were named Mary only added to the appeal. Thus Akbar and Jahangir sought to incorporate European-style Christian art into their efforts to create a blended and tolerant religious culture for the elites of their vast and diverse realm. It was a culture that drew on Islam, Hinduism, Zoroastrianism, and Christianity.

But as Catholic devotional art was reworked by Mughal artists, it was also subtly changed. Source 15.5 shows an early seventeenth-century depiction of the Holy Family painted by an Indian artist.



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Source 15.5 Christian Art at the Mughal Court

- Why do you think that this Mughal painter portrayed Mary and Joseph as rather distinguished and educated persons rather than as the humble carpenter and his peasant wife, as in so many European images? Why might he have placed the family in rather palatial surroundings instead of a stable?
- How do you imagine European missionaries responded to this representation of the Holy Family?
- How might more orthodox Muslims have reacted to the larger project of creating a blended religion making use of elements from many traditions?
- What similarities can you identify between this Indian image and the Chinese print in Source 15.4? Pay attention to the setting, the clothing, the class status of the human figures, and the scenes outside the windows.

DOING HISTORY

Global Christianity in the Early Modern Era

1. **Making comparisons:** What common Christian elements can you identify in these visual sources? What differences in the expression of Christianity can you define?
2. **Considering Mary:** The Catholic Christian tradition as it developed in Latin America, China, and India as well as Europe assigned a very important role to representations of the Virgin Mary. Why might such images of Mary have been so widely appealing? But in what ways does the image of the Holy Mother differ in Sources 15.3, 15.4, and 15.5? In what ways were those images adapted to the distinctive cultures in which they were created?
3. **Pondering syncretism:** From a missionary viewpoint, develop arguments for and against religious syncretism using these visual sources as points of reference.
4. **Considering visual sources as evidence:** What are the strengths and limitations of these visual sources, as opposed to texts, as historians seek to understand the globalization of Christianity in the early modern era? What other visual sources might be useful?

Multiple-Choice Questions

Refer to the painting on page 565 and its caption to answer the following questions.

1. What was the most likely purpose of this painting?
 - a. To show the superiority of men over women in colonial Latin America
 - b. To warn against the mixing of ethnic groups in colonial Latin America
 - c. To show cultural blending that occurred throughout colonial Latin America
 - d. To train religious officials in classifying people into social classes
2. What level of society do the people in the painting seem to represent?
 - a. They are members of the lower class since they represent an interracial marriage.
 - b. They are members of the upper class, perhaps a Spanish man married to a descendant of native royalty.
 - c. They are members of the working class, indicated by the many shoes in the background.
 - d. They are members of the *peninsulares* class, born in Europe and living in the Americas.
3. Which of these is the best definition of the term *castas*?
 - a. The religious beliefs of people in Latin America
 - b. The laws set up in the Americas by Spain and Portugal
 - c. The system of acquiring slaves in Latin America
 - d. The socioeconomic hierarchy in Latin America

Short-Answer Question

4. Answer parts A, B, and C.
 - A. Briefly explain why ONE of the following developments best represents the beginning of global trade.
 - European transatlantic voyages in the late fifteenth century
 - Spanish transpacific voyages in the early sixteenth century
 - The chartering of joint stock corporations such as the Dutch East India Company in the early seventeenth century
 - B. Provide at least ONE example of a specific historical event or development to support your explanation in part A.
 - C. Briefly explain why ONE of the other options is not as persuasive as the one you chose in part A.

Document-Based Question

Directions: Question 5 refers to the following documents. You will likely need to flip back and forth between these documents to answer the question adequately. Use scrap pieces of paper or sticky notes to tab these documents. When answering the question, refer to the “Advice for Responding to a DBQ” on the inside of the back cover.

5. Using the following documents from this textbook and your knowledge of world history, discuss ways in which political leaders in the era c. 1450–c. 1750 used spectacle (i.e., ceremony, art, proclamations, lifestyle) to maintain their positions of power.

DOCUMENT	PAGE	DOCUMENT NAME
1	552	Illustration from the <i>Padshahnama</i>
2	591–92	Jahangir, “Memoirs”
3	593–95	Ogier Ghiselin de Busbecq, “The Turkish Letters”
4	596	Louis XIV, “Memoirs”
5	597–98	Pedro de Cieza de León, “Chronicles of the Incas”
6	619	Fur and the Russians

Long-Essay Question

When answering the following question, refer to the “Advice for Responding to an LEQ” on the inside of the back cover.

6. In ONE of the following regions, analyze causes for the development of syncretic beliefs and practices between 1450 and 1750.
- Caribbean and Latin America
 - South Asia
 - Southeast Asia