The Historical Antecedents of Higher Education in Africa

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NOTE: This reading comprises Appendix I ("An Exploration into the Provenance of the Modern African University") and Appendix II ("The Historical Antecedents of the Disjuncture Between Premodern and Modern African Higher Education") of a book titled *A History of African Higher Education from Antiquity to the Present: A Critical Synthesis* by Y.G-M. Lulat (Westport, CT: Praeger, 2005) For more on the book click here: http://bit.ly/hedbook

Key Themes

Appendix I

The Madrasah
The Origins of the University
Science in Antiquity
The Renaissance
Islam and Science
Islam and Western Modernity

Appendix II

Appendix I

An Exploration into the Provenance of the Modern African University

It is a truism that regardless of where we are educated, we all carry a cartographic vision of the world that is essentially Eurocentric. One consequence of this has been our inability to see Africa as part of the Eurasian landmass, culturally and geographically. Be that as it may, for the present purposes it will suffice to accept that Islam is primarily an Afro-Asian civilization. Given this fact, it is not surprising then to find that Africa, as we have seen, was host to a number of very important Islamic centers of higher learning (Cairo, Al-Qayrawan, Timbuktu, etc.), which were tied together in a web-like manner by peripatetic scholars with other centers of Islamic learning elsewhere in the Islamic empire. Now, this knowledge presents us with an interesting challenge, which can be articulated in the following manner: The existence of Islamic higher education institutions in Africa (and elsewhere) in the Islamic empire as early as the eighth-century (even though in its most developed incarnation, the *madrasah*, it does not make its appearance until the arrival of the Ayyubids toward the end of the twelfth-century), raises the intriguing matter of the pedigree of the modern African university of today.

In Chapter 2 we had noted the assertion by Ashby (1966) that the modern African university is an import from the West, and as such it is an entirely Western creation for it is the West that first invented the university as we know it today. A similar sentiment about the latter point is expressed by Cobban (1975: 21–22): "The medieval university was essentially an indigenous product of Western Europe…. However much the universities may have owed to the impulse of Greek, Roman or Arabic intellectual life," he explains further, "their institutional crystallization was a new departure born of the need to enlarge the scope of professional education in an increasingly urbanized society." Similarly, Verger (1992: 35) states: "No one today would dispute the fact that universities, in the sense in which the term is generally understood, were a creation of the Middle Ages, appearing for the first time between the twelfth and thirteenth centuries." He continues:

"It is no doubt true that other civilizations, prior to, or wholly alien to, the medieval West, such as the Roman Empire, Byzantium, Islam, or China, were familiar with forms of higher education, which a number of historians, for the sake of convenience, have sometimes described as universities." However, he asserts that these institutions were not really universities, they were a different kind of institutional animal; ergo, they have no link with Western universities. He then concludes: "Until there is definite proof to the contrary, these latter must be regarded as the sole source of the model which gradually spread through the whole of Europe and then to the whole world." Makdisi (1981: 292) is even more adamant: "Islam never developed the university; it simply borrowed it from Europe in the nineteenth-century along with many other borrowings, at a time when Western culture was far superior to that of the east." Presented this way, it would seem that the matter needs no further discussion. Yet, as Chapter 1 has tried to demonstrate, albeit subtextually, that historical truth is rarely simple truth (paradoxical though this may appear to the nonhistorian); especially the further one goes back in history.

The truth really is that historical truth is usually much, much more complex. Of course, no one can dispute the fact that the birth of an institution in any society of such ubiquity and long duration as the university, must in the first instance speak to the specific internal motivating circumstances of that society—the presence of external circumstances, if any, notwithstanding (see the discussion regarding this matter by Ruegg 1992). At the same time, one should be forewarned against the very serious threat of historiographical seduction presented by the "*propter hoc* and therefore *post hoc"* (that is, the fallacy of temporal sequence as causality) type of explanations. With these caveats in mind, here is the specific challenge that this chapter seeks to address: to demonstrate that even though the modern university readily found a fertile institutional soil in the specifics of European societies of the twelfth and thirteenth centuries, its genesis required the catalytic role of an external factor: specifically, an Afro-Asian civilization; that is, the Islamic civilization.

In responding to this challenge, the underlying motivating objective, to be discussed in the conclusion, is to go beyond simply the usual questions of the type that Ruegg, for example, poses ("How is the origin of the university to be explained? Is it a resultant of the society in which it exists or is it a factor in the formation of society?" p. 9) and consider the broader question of the relationship between historiography and historical truth. Of course, in the process, Ruegg's questions will also be dealt with: as the chapter will show, the answer is that it is both: it is a *resultant* and a *formative* factor. In other words, it is the thesis of this chapter that Islam had a decisive role to play in both the twin dialectical dimensions of the equation that Ruegg posits thusly: "Without the intellectual stimulus of the rationally controlled search for knowledge, there would be no university." Yet on the other hand, as he continues further, "the university, could have arisen only in the particular economic, political, and social circumstances obtaining in certain cities of Europe in the early Middle Ages." In other words, as Ruegg, quoting P. Classen, observes: "the spirit alone cannot create its body" (p. 11). In the first half of this chapter the spirit will be the focus of attention, to be followed by the body in the second half.

One can begin the discussion by first noting that the university is but just one form of a higher educational institution; there are other forms, the most common of which is the college. Now, if the college and the university were to be considered as institutionally related then one can easily challenge the claim of Western originality. For, as Makdisi

(1981) clearly shows, the West borrowed from the Muslims the concept of the college. The college in its early beginnings, as an eleemosynary institution, was already common in Islam (the *madrasah*). It is not surprising, therefore, that the earliest college in the West, was most probably modeled on the Islamic college. This was the College des Dix-Huit, founded in Paris in 1180 by John of London; who, not coincidentally, as Makdisi (1981) observes, had just returned from pilgrimage to Jerusalem. It is through that endeavor (which entailed journeying through Muslim lands) that he most likely came to learn of the idea of the college. (This model would later also be the basis of the founding of the earliest of the three Oxford colleges, Balliol, according to Makdisi 1981.)

The question, however, is: Can one say that the two are related in that the one, the college, is the precursor of the other, the university? Makdisi suggests that this is not so. Unlike in the United States, he states, in Europe the university emerged as an entirely separate higher educational institution with its own identity; that is, it did not begin its life as a college, but as a *studium generale* (a prototype European university that in its creation embodied the critical concept of *incorporation*). He is not alone on this point. Cobban (1975), Huff (1993), Pedersen (1997), and Verger (1992), for example, all share his view.

However, the matter cannot be left to rest here. To be sure, if one were to take the *narrow* legalistic definition of the university—as a higher educational institution that is virtually independent of state and/ or religious *administrative control* through the mechanism of *incorporation* (and the key words here are *narrow* and *incorporation*)—then, yes, they are quite correct: the university in this *limited* sense is a Western invention. Islam did not and could not recognize incorporation as a basis for the organization of an institution of higher education (or any other institution for that matter)—and yet without it, the modern university could not have emerged in the form that it is today.[1] If, on the other hand, the issue of the origin of the modern Western university was looked at in broader terms then it becomes more complicated. Why?

Because from a broader historical perspective, the modern university that was brought to Africa by the colonial powers *is as much Western in origin as it is Islamic (that is Afro-Asiatic) in origin*. How? Nakosteen (1964: vii) explains it this way: "At a time when European monarchs were hiring tutors to teach them how to sign their names, Muslim educational institutions were preserving, modifying and improving upon the classical cultures in their progressive colleges and research centers under enlightened rulers. Then as the results of their cumulative and creative genius reached the Latin West through translations... they brought about that Western revival of learning which is our modern heritage." Making the same observation, James Burke (1995: 36) reminds us that at the point in time when the first European universities at Bologna and Charters were being created, their future as academic centers of learning was far from certain. The reason? He explains: "The medieval mind was still weighed down by centuries of superstition, still fearful of new thought, still totally obedient to the Church and its Augustinian rejection of the investigation of nature. They lacked a system for investigation, a tool with which to ask questions and, above all, they lacked the knowledge once possessed by the Greeks, of which medieval Europe had heard, but which had been lost." But then, he further explains: "In one electrifying moment it was rediscovered. In 1085 the [Muslim] citadel of Toledo in Spain fell, and the victorious Christian troops found a literary treasure beyond anything they could have dreamed of." Through the mediation

of Spanish Jews, European Christians, and others, much of that learning would now be translated from Arabic, which for centuries had been *the* language of science, into Latin, Spanish, Hebrew, and other languages, to be disseminated all across Europe. (This translation activity, one would be remiss not to point out here parenthetically, was a replication of an earlier translation activity undertaken by the Muslims themselves over a 300-year period, eighth to tenth centuries, when they *systematically* organized the translation of Greek scientific works into Arabic—see Gutas 1998, and O'Leary 1949, for a detailed and fascinating account.)

Before proceeding further, however, there is a clarifying point of context that must be dispensed with concerning the presence of Arabic names in the historical literature dealing with the Islamic empire. An Arabic name does not in of itself guarantee that the person in question is an Arab Muslim; it is quite possible that the person is a Muslim of some other ethnicity. The reason is that for a considerable period of time not only was Arabic the lingua franca of such activities as learning and commerce in the Islamic empire, but then as today, for all Muslims throughout the world, Arabic is their liturgical language and this also often implies taking on Muslim (and hence Arabic) names. Therefore, the Islamic empire and civilization was not exclusively an Arabic empire and civilization, it was an *Islamic* empire and civilization in which all manner of nationalities and cultures had a hand, at indeterminable and varying degrees, in its evolution.[2] Consider, for example, this fact: over the centuries—from antiquity through the Islamic period—millions of Africans would go to Asia (as slaves, as soldiers, etc.) and yet the absence of a distinct group of people today in Asia who can be categorized as part of the African diaspora—akin to the situation in the Americas—is testament to the fact that in time they were genetically and culturally absorbed by the Asian societies. To be sure, in the early phases of the evolution of the Islamic empire, Arab Muslims were dominant; but note that domination does not translate into exclusivity.

Ultimately, then, one can assert that the Islamic civilization was and is primarily an *Afro-Asian* civilization—which boasted a web-like network of centers of learning as geographically dispersed as Al-Qarawiyyin (Tunisia), Baghdad (Iraq), Cairo (Egypt), Cordoba (Muslim Spain), Damascus (Syria), Jundishapur (Iran), Palermo (Muslim Sicily), Timbuktu (Mali), and Toledo (Muslim Spain)—and in which, furthermore, the Asian component ranges from Arabic to Persian to Indian to Chinese contributions and influences. As Pedersen (1997: 117) points out: "Many scholars of widely differing race and religion worked together…to create an Arab culture, which would have made the modest learning of the Romans seem pale and impoverished if a direct comparison had been possible." In other words, the presence of Arabic names in relation to the Islamic civilization can also indicate simply the Arabization of the person's name even though the person may not have been a Muslim at all! (Take the example of that brilliant Jewish savant of the medieval era, Moses Maimonides; he was also known by the Arabic name of *Abu Imran Musa ibn Maymun ibn Ubayd Allah*.) This fact is of great relevance whenever the issue of Islamic secular scholarship is considered. Secular knowledge and learning in the Islamic civilization (referred to by the Muslims as the "foreign sciences" to distinguish it from the Islamic religious sciences) had many diverse contemporary contributors; including savants who were from other faiths: Christianity, Hinduism, Judaism, Zoroastrianism, and so on. Consequently, when one talks about the Islamic contribution to knowledge and learning, one does not necessarily mean it is the contribution of Muslim scholars alone, but rather that it is the output of scholars who included non-

Muslims (albeit a numerical minority in relative terms), *but who all worked under the aegis of the Islamic civilization in its centers of learning and whose lingua franca was primarily Arabic.* The use of the phrase *Islamic* scholars or *Arabic* scholars in this book, therefore, should not imply that the scholars were necessarily Muslim scholars (or even Arab scholars for that matter), though most were—that is, most were Muslim scholars, but here again they were not all necessarily Arabs; they could have been of any ethnicity or nationality. (See Iqbal 2002; Nakosteen 1964; and Lindberg 1992, for more on this point.)

To move on then, it ought to be noted that long periods of peaceful co-existence among Christians, Jews, Muslims and others in Spain, even after the fall of Toledo, was also highly instrumental in facilitating the work of translation and knowledge export into Western Europe. To a lesser extent, but important still, the fall of Muslim Sicily, beginning with the capture of Messina in 1061 by Count Roger (brother of Robert Guiscard), and ending with his complete takeover of the island from the Muslims in 1091, was yet another avenue by which Muslim learning entered, via translations, Western Europe (see Ahmed 1975, for more).[3] This export of Islamic and Islamic-mediated Greek science to the Latin West would continue well into the thirteenth-century (after all, Islam was not completely vanquished from the Iberian peninsula until the capture of the Muslim province of Granada, more than 400 years after the fall of Toledo, in 1492).

Among the more prominent of the translators who worked in either Spain or Sicily (or even both) included: Abraham of Toledo; Adelard of Barth; Alfonso X the El Sabio; Constantine the African (Constantinus Africanus); the Archdeacon of Segovia (Dominicus Gundissalinus); Eugenius of Palermo; Gerard of Cremona; Isaac ibn Sid; John of Seville; Leonardo Pisano; Michael Scott; Moses ibn Tibbon; Qalonymos ben Qalonymos; Robert of Chester; Stephanus Arnoldi, and so on. (See Nakosteen 1964 for more names—including variants of these names—and details on when and what they translated.) To really drive the point home, however, it is necessary to provide here (even if, due to space constraints, only most cursorily) a few examples of the kinds of contributions that the Muslim savants (and non-Muslim savants too, but all working under the aegis of the Islamic civilization)—many of whom, it may be further noted, were polymaths in the truest sense of the word—made to the intellectual and scientific development of Europe on the eve of the Renaissance; and without which the development of the modern Western university would have been greatly compromised. This task is accomplished by the following highly *select* chronological listing (based on sources mentioned in the note that continues this listing) of some of the most important names in the pantheon of Islamic savants of the Middle Ages, together with a briefest delineation of their work, some of which would eventually make its way to the Latin West:

Abu Musa Jabir ibn-Hayyan (c. 721–815, known in the Latin West as Geber), an alchemist who advocated the importance of experiments in advancing scientific knowledge: "It must be taken as an absolutely rigorous principle that any proposition which is not supported by proofs is nothing more than an assertion which may be true or may be false" (quoted in Artz 1980: 166). His work would be foundational to the development of the field of chemistry, even if the raison d'etre of his scientific work (alchemy) was, from the vantage point of today, misguided.

Musa al-Khwarazmi (d. c. 863), his seminal contributions in mathematics helped to develop that field enormously. In fact, through his mathematical treatise, *al-Jabr wa'l-Mugabalah*, he not only gave the West the term "algebra" (Latinized shorthand of the title of his treatise), but far more significant than that, he was the conduit for the passage of arithmetic numerals from In-

dia to the West. For example, he would be responsible for the introduction to the Latin West of such key mathematical tools as the concept of "zero" (an independent Hindu/ Chinese invention in the sixth-century C.E.), and the decimal system. His other contributions included sine and cotangent tables, astronomical tables, and the cartographic concepts of latitude and longitude. Even the term algorithm comes from him, albeit unwittingly—it is the Latinized version of his name. He also produced a revised version of Ptolemy's geography, which he called *The Face of the Earth.*

Abu Yosuf Ya'qub Ibn Ishaq ibn al-Sabbah al-Kindi (died c. 870) a philosopher and mathematician, his contributions included works on Hindu numerals and geometry, and physiological optics.

Abu Bakr Muhammed bin Zakariyya' al-Razi (844–926, known as Rhazes in the Latin West), a physician whose work helped to further greatly the development of clinical medicine. His work on smallpox and measles would remain authoritative in the West for almost 400 years; and his work on the diseases of childhood would earn him the accolade of "Father of Pediatrics" in the West. It is no wonder that a large part of the medical curriculum at the Universities of Salerno and Paris comprised his work.

Muhammed Ibn Muhammed Ibn Tarkhan ubn Uzalagh al-Farabi (c. 878–c. 950, known in the Latin West as Alpharabius), author of the *Enumeration of the Sciences*, provided an integrated approach to the sciences and reiterated the distinction between divine knowledge and human knowledge.

Abu Al-Husayn Ali Ibn Al-Husayn Al-Masudi (d. 957), historian and explorer who is sometimes referred to as the "Herodotus of the Arabs." His works included the 132-chapter *The Meadows of Gold and Mines of Gems*, an abridgement of a multidisciplinary multivolume treatise on history and scientific geography of the world *Abd al-Rahman al-Sufi* (903–986), among the greatest Muslim astronomers (together with *Ibn Yunus* and *Ulegh Beg*), his contributions include a major treatise on observational astronomy titled *The Book of Fixed Stars.*

Abu al-Qasim Khalaf ibn al-Abbas Al-Zahrawi (930–1013, known to the Latin West as Albucasis), a famous physician and surgeon, he wrote a treatise on medicine and medical practice that ran into thirty volumes. The last of these volumes was extremely important because in it he covered all aspects of surgery including providing illustrations of surgical instruments. This work is thought to have been the first work on surgery ever written anywhere and it would in time become a standard text in medical schools in the Latin West. Interestingly, some of the surgical procedures that he described in his work are still carried out to this day in like manner.

Abu Alimacr al-Hassan Ibn al-Haitham (c. 965–1039, known in the Latin West as Alhazen). Through his works in optics and related fields, he became a major contributor to the development of the physical sciences in the Latin West. By means of his experiments with light he discovered the laws of refraction as well as the various colors that make up light. He was the first scientist to conclude that sight involved the transmission of light from the seen object to the eye, which acted as a lens. He also introduced the method of using the *camera obscura* for the purposes of studying solar eclipses. It would not be an exaggeration to say that his scientific work would remain unchallenged for nearly 600 years until the arrival of Johannes Kepler. In fact, Crombie (1990: 189) observes that Ibn al Haitham "ranks with Ptolemy and Kepler as an architect of scientific optics." He further adds, "[I]n his explorations of the physics, physiology and psychology of vision he stands comparison intellectually with Descartes and Helmholtz."

Abu' Ali Al-Husain Ibn Abdallah Ibn Sina (980–1037, known in the Latin West as Avicenna), who was among the progenitors of Scholasticism in the West and whose intellectual influence would touch Western thinkers as diverse as Thomas Aquinas, Roger Bacon, Robert Grosseteste, Albertus Magnus, Duns Scotus, was a great philosopher and scientist with one of the most prolific pens of his day: among his many works, two that the West got to know well are *The Book of the Remedy* (Kitab al-Shifa)—which, according to Stanton (1990: 85) stands as the "longest encyclopedia of knowledge ever authored by a single person"—and *The Canon of*

Medicine, which would remain the principal textbook par excellence on medicine in the West for many, many years. Going by Crombie (1990), Ibn Sina's contributions also included determinative influences on the beginnings of the scientific experimental method (without which no modern science would have been possible), as well as on a number of theories relating to blood circulation, fossils, vision, motion, music and the debunking of the alchemic theory of gold manufacture.

This super-abbreviated listing continues in endnote 4 at the end of this chapter.[4] Of course, it must be conceded, that the contributions by the Muslims to the intellectual and scientific development of Europe was made unwittingly; even so, it must be emphatically stressed, it was of no less significance. Moreover, that is how history, after all, really unfolds in practice; it is not made in the way it is usually presented in history textbooks: as a continuous chain of teleological developments. To explain: those who study history, especially comparative history, are burdened by the constant and sobering reminder that no matter how intelligently purposeful human beings (the Europeans in this particular instance) may consider themselves, at the end of the day, major social transformations are as much a product of chance and circumstance, as directed human endeavors (in the shape of "social movements"—a phrase that should be understood here broadly).[5] In other words, any grand purposive human design that may appear to exist in any history of major social transformations is in reality nothing more than an embodiment of the fallacy of historical teleology.

History (regardless of whether it is written or oral) is, ultimately, a selective chronicle of a series of conjunctures of fortuitously "propitious" historical factors where the role of purposive human agency, is, more often than not, absent from the social transformation in question. Stephen K. Sanderson, in his book, *Social Transformations: A General Theory of Historical Development* (1995: 13), makes this point with even greater clarity when he observes that "individuals acting in their own interests create social structures and systems that are the sum total and product of these socially oriented individual actions." However, he points out, "[t]hese social structures and systems are frequently constituted in ways that individuals never intended, and thus individually purposive human action leads to many unintended consequences." In other words, he concludes, "[s]ocial evolution is driven by purposive or intended human actions, but it is to a large extent not itself a purposive or intended phenomenon." Looking from the perspective of the West, the veracity of this fact was embodied at a particular point in time, on the eve of the Renaissance, in the retreat of the Muslims from Europe, under the aegis of the *Reconquista*—symbolized by the fall of Toledo in that fateful summer of 1085. The Europeans who entered Toledo under the leadership of Alfonso VI of Castille-Leon, could never have envisioned, much less planned, the centrality of Muslim intellectual and scientific contributions to the development of Europe, for centuries to come, that their actions would precipitate.[6]

The truth of the matter really, then, is this: during the medieval era, the Europeans acquired from the savants of the Islamic empire a number of essential elements that would be absolutely central to the foundation of the modern Western university: *First*, they acquired a huge corpus of knowledge that the Muslims had gathered together over the centuries in their various centers of learning (e.g., Baghdad, Cairo, and Cordoba) through a dialectical combination of their own investigations, as well as by gathering knowledge from across geographic space (from Afghanistan, China, India, the Levant, Persia, etc.) and from across time: through systematic translations of classical works of

Greek, Alexandrian, and other scholars.[7] Lest there is a misunderstanding here, it must be stressed that it is not that the Muslims were mere transmitters of Hellenic knowledge (or any other people's knowledge); far from it: they, as the French philosopher Alain de Libera (1997) points out, also greatly elaborated on it by the addition of their own scholarly findings. "Yet it would be wrong to think that the Arabs [sic] confined themselves to a slavish appropriation of Greek results. In practical and in theoretical matters Islam faced problems that gave rise to the development of an independent philosophy and science," states Pedersen (1997: 118) as he makes a similar observation—and as do Benoit and Micheau (1995), Huff (1993); King (2000); and Stanton (1990), among others).

What kinds of problems is Pedersen referring to here? Examples include: the problems of reconciling faith and scientific philosophy; the problems of ocean navigation (e.g., in the Indian Ocean); the problem of determining the direction to Mecca (*qibla*) from the different parts of the Islamic empire for purposes of daily prayers; the problem of resolving the complex calculations mandated by Islamic inheritance laws; the problems of constructing large congregational mosques (*jami al masjid*); the problems of determining the accuracy of the lunar calendar for purposes of fulfilling religious mandates, such as fasting (*ramadhan*); the problems of planning new cities; and so on. Commenting on the significance of this fact, Stanton (1990) reminds us that even if the West would have eventually had access to the Greek classical texts maintained by the Byzantines after the fall of Constantinople, it would have missed out on this very important Islamic contribution of commentaries, additions, revisions, interpretations, and so on, of the Greek classical texts.[8] A good example of the Muslim contribution to learning derived from Greek sources is Ibn Sina's *Canon Medicinae*, and from the perspective of medieval medical teaching, its importance, according to Pedersen (1997: 125) "can hardly be overrated, and to this day it is read with respect as the most superior work in this area that the past has ever produced."

Now, as Burke explains, this knowledge alone would have wrought an intellectual revolution by itself. However, the fact that it was accompanied by the Aristotelian concept of argument by syllogism that Muslim philosophers like Ibn Sina had incorporated into their scholarly work, which was now available to the Europeans for the first time, so to speak, that would prove to be an explosive "intellectual bombshell." In other words, they learned from the Muslims (and this is the *second* critical element) rationalism, combined with, in Burke's words "the secular, investigative approach typical of Arab natural science," that is, the scientific experimental method (1995: 42). Pedersen (1997: 116) makes the same point in his analysis of the factors that led to the development of the *studium generale* and from it the modern university: "To recreate Greek mathematics and science from the basic works was obviously out of the question, since even the knowledge of how to do research had passed into oblivion....That the study of the exact sciences did not end in a blind alley, was due to a completely different stream of culture now spilling out of [Islamic] civilization into the Latin world."

Until recently, the traditional Western view had been that the father of the scientific experimental method was the Englishman, Roger Bacon (born c. 1220 and died in 1292). However, as Qurashi and Rizvi (1996) demonstrate, even a cursory examination of the works of such Islamic savants as Abu Musa Jabir ibn-Hayyan, Abu Alimacr al-Hassan ibn al-Haitham, Abu Raihan al-Biruni, and Abu al-Walid Muhammed ibn Ahmad ibn Muhammed Ibn Rushd proves this view to be patently false.[9] What Bacon

ought to be credited with is the fact that he was a fervent proselytizer of the experimental method, the knowledge of which he had acquired from the Muslims through their translated works while studying at Oxford University. Bacon, it should be remembered, was well acquainted with the work of the university's first chancellor, Robert Grosseteste, who was an indefatigable apostle of Greco-Islamic learning in the Latin West (see also Crombie [1990]).

The *third* critical element was an elaborate and intellectually sophisticated map of scientific knowledge. The Muslims provided the Europeans a body of knowledge that was already divided into a host of academic subjects in a way that was very unfamiliar to the medieval Europeans: "medicine, astrology, astronomy, pharmacology, psychology, physiology, zoology, biology, botany, mineralogy, optics, chemistry, physics, mathematics, algebra, geometry, trigonometry, music, meteorology, geography, mechanics, hydrostatics, navigation, and history" (Burke 1995: 42).[10] The significance of this map of knowledge is that the European university, as de Libera (1997) observes, became its institutional embodiment. As he states: "The Muslim learning that was translated and passed on to the West formed the basis and the scientific foundation of the university in its living reality—the reality of its syllabus, the content of its teaching."

In other words, the highly restrictive and shallow curriculum of Martianus Capella's Seven Liberal Arts (divided into the *trivium* and the *quadrivium*), which the Carthaginian had promulgated sometime in the middle of the fifth-century C.E. to become, in time, the foundation of Latin education in the cathedral schools—the forerunners of the *studium generale*—would now be replaced by the much broader curriculum of "Islamic" derived education. It ought to be noted here that the curriculum of the medieval universities was primarily based on the teaching of science; and it was even more so, paradoxically, than it is in the modern universities of today. The fact that this was the case, however, it would be no exaggeration to state, was entirely due to Islam! As Grant (1994), for example, shows, the growth of the medieval European universities was, in part, a direct response to the Greco-Islamic science that arrived in Europe after the fall of Toledo (see also Beaujouan [1982], Grant [1996], Nakosteen [1964], and Stanton [1990]).

But what of the traditional view that the medieval universities had little or nothing to do with the scientific advances of the seventeenth-century that are supposed to have occurred primarily in the scientific academies/societies that emerged during this period? Those who have advanced such a view (see Cohen [1994], Gascoigne [1990], and Porter [1996], for a summary of the key literature on the matter) appear to forget to ask one very elementary question, Where did these scientists obtain their education in the first place? The answer, of course, is that most of them received their education in the medieval universities. As Gascoigne puts it: "There is, after all, something anomalous about the fact that these institutions, which are generally accorded so negative a role in the scientific revolution, were also the places where the vast majority of those representative of the scientific revolution received their education" (p. 208). Another related question is, How did these scientists make their living? Again the answer is that a substantial portion made their living by teaching in the medieval universities.

In other words, as Gascoigne and Porter demonstrate, the medieval universities, depending to some extent on which part of Europe one is looking at, were not as irrelevant to the scientific progress achieved by the dramatis personae of the seventeenth-century as has been traditionally portrayed. In fact, by carefully examining the curricula of these universities they prove that many of the universities were flexible enough to permit in-

novation—at least to the point where the task could be taken over by the scientific academies/ societies when they emerged. As Porter observes, "[r]evisionist studies are… demonstrating beyond question that early modern universities were not benighted, hidebound, monolithic institutions which shut their doors and minds to all but a diet of dead science and medicine, washed down with stale scholastic commentators" (p. 534). What is more, Gascoigne points out that the traditional view that there was an antagonistic disjointure between the academies/societies and the universities is not entirely borne out by facts. With some exceptions, universities did not always see the academies as competition to be opposed; rather they were often (though not always) viewed as complementary institutions with a different but legitimate mission from theirs: to do research (whereas they saw their mission as primarily teaching).

The *fourth* was the extrication of the individual from the grip of what de Libera describes as the "medieval world of social hierarchies, obligations, and highly codified social roles," so as to permit the possibility of a civil society, without which no university was possible. A university could only come into being on the basis of a community of scholars who were individuals in their own right, intellectually unbeholden to no one but reason, but yet gathered together in pursuit of one ideal: "the scientific ideal, the ideal of shared knowledge, of a community of lives based on the communication of knowledge and on the joint discovery of the reality of things." In other words, universities "were laboratories in which the notion of the European individual was invented. The latter is always defined as someone who strikes a balance between culture, freedom, and enterprise, someone who has the capacity to show initiative and innovate. As it happens, and contrary to a widely held view, this new type of person came into being at the heart of the medieval university world, prompted by the notion—which is not Greek but [Muslim]—that [scientific] work liberates" (de Libera 1997).

A *fifth* was the arrival of Islamic inspired scholarship, such as that of Averroes (Ibn Rushd), that helped to extricate the curriculum from the theological oversight of the church. In the struggle over the teaching of "Averroeism" in the academy, for example, the academy triumphed and the church retreated behind the compromise that there would be two forms of knowledge: divine or revealed knowledge that could not be challenged, and temporal knowledge that could go its separate way. (See Iqbal [2002] and Lindberg [1992], for an accessible summary of this struggle.) Henceforth, academic freedom in terms of what was taught and learned became an ever-increasing reality, jealously guarded by the academy. The implications of this development cannot be overstated: it would unfetter the pursuit of scientific inquiry from the shackles of religious dogma and thereby permit the emergence of those intellectual forces that in time would bring about the scientific revolution in the seventeenth-century (see also Benoit [1995]).

The s*ixth* critical element was the standardization of the university curricula across Europe that the arrival of Greco-Islamic learning made possible. Independent of where a university was located, Paris, Bologna, Oxford, and so on, the general pattern was that the curriculum rested on the same or similar texts addressing the same or similar problems in philosophy, science, theology, and so on, regardless of the curricular emphasis or specialty of the institution. What benefit did this standardization of the curricula confer on the development of universities in Europe? "For the first time in history," as Lindberg (1992: 212) explains, "there was an educational effort of international scope, undertaken by scholars conscious of their intellectual and professional unity." In other words, a standardized curricula helped to facilitate the development of a variety of at-

tributes characteristic of modern-day universities; such as the professionalization of the professoriate, universalization of academic qualifications, cross-fertilization of ideas through teacher/student interchanges across geographically dispersed institutions, the relative uniformity of entrance qualifications among institutions, and so on.

On the basis of the foregoing, then, what has been established? That the modern university is an Islamic invention? Not at all. Rather, that it is an institutional expression of a confluence of originality and influences. Makdisi (1981: 293) sums it up best: "The great contribution of Islam is to be found in the college system it originated, in the level of higher learning it developed and transmitted to the West, in the fact that the West borrowed from Islam basic elements that went into its own system of education, elements that had to do with both substance and method." At the same time, "[t]he great contribution of the Latin West," Makdisi continues, "comes from its organization of knowledge and its further development—knowledge in which the Islamic-Arabic component is undeniably considerable—as well as the further development of the college system itself into a corporate system."

The matter, however, cannot end here; having dealt with the spirit there is the matter of the body in the line quoted from Ruegg (1992: 11) at the beginning of this chapter (to repeat: "the spirit alone cannot create its body"). That is, in laying out earlier some of the very specific intellectual avenues of Islamic contribution to the growth of the modern Western university, one risks being blinded to an even more fundamental Islamic contribution: its assistance in the development of the *civilizational context* that facilitated the emergence and development of the modern university in Europe in the first place, that is, European *modernity* itself! To elaborate: the modern Western university emerged as a corporate institution at precisely the time (in the latter half of the twelfth-century and in the first half of the thirteenth-century) when Western Europe was about to undergo the Renaissance. But a critical question emerges here: How had Europe managed to developmentally come this far? After all, when the Muslims made their appearance in Europe in the eighth-century C.E., Europe was in almost every way a Neolithic cultural, economic, intellectual, scientific, and technological backwater. What is more: the presence of a few isolated individuals such as Boethius, Isidore of Seville, Gregory of Tours, Bede the Venerable, merely served to emphasize this state of affairs.[11] The answer, in one word, is: Islam! The Islamic civilization—which one must be reminded is primarily an Afro-Asian civilization—was highly *instrumental* (no, not causational it must be cautioned, but instrumental) in the creation of the *civilizational context* in Europe that produced the *studium generale* and from there the modern university.[12]

Before proceeding, one must begin by noting that European modernity was a generalized expression of a dialectic between the development of science and technology on one hand, and on the other, socioeconomic transformations that led to that momentous event—when seen through the eyes of Europe—the Columbian project of 1492 (without which Europe would never have achieved modernity—see Appendix II). This dialectic was characterized by such developmental markers as the invention of gunnery, the birth of the Copernican revolution, the invention of the printing press, the undertaking of voyages of *exploitation* (to use Berman's, term [1989]), the emergence of mercantile capitalism and commercial law, and so on. Yet, one of the central factors that helped to facilitate this dialectic was Islam. That is, at both levels—modernity in general and the development of science and technology in particular—the hand of Islam was *catalytically* present. How so?

Through the Muslim invasions of Spain in the eighth-century and Italy in the nineth-century, and later through the Crusades against the Muslims unleashed by Europe at turn of the eleventh-century (that would last, if one includes the final stages of the Spanish *Reconquista*—the fall of Granada in 1492—well into the fifteenth-century), Europe would learn much (theories and methods) and take much (artifacts and products) from the Islamic civilization that would prove absolutely decisive in its eventual quest for a sea route to the East and all the consequences that would ensue for Europe's journey to modernity.[13] Evidentiary support for this claim about Islam's critical role in helping to sow the seeds of Europe's journey to modernity during the period eighth through fifteenth-century—which, not coincidentally, encompasses the classical period of Islamic higher learning—is of course necessary here. However, because of space limitation, this task must regrettably be, perforce, cursory. *First,* Islam enabled Europe to reacquaint itself with its Greek and Alexandrian classical roots—in terms of knowledge and learning. Since this has already been noted above, no more need be said here other than this: It is not that Europe had completely lost all the classical texts as a result of such factors as the depredations of the Germanic barbarians (fourth to fifth centuries C.E.); the destructions of ancient places of learning by Christian zealots (such as Justinian I who, for example, in sixth-century C.E. ordered the closure of the famous Academy of Athens founded by Plato in fourth-century B.C.E.—forcing many of the scholars to take refuge in Sassanid Persia. They would take up residence in its capital, Jundishapur, and thereby inadvertently facilitate the early flowering of a purposive multicultural international scholarship that would later achieve explosively extensive development under the banner of Islam); and the vandalism of the Viking predators (nineth- to eleventh- century C.E.). A few of the texts had survived in the monasteries, but that is where the rub is. The monasteries, enthralled by Augustinian neoplatonist teachings (knowledge based on the material was of no consequence compared to that derived from the spiritual), to all intents and purposes, simply sat on these texts; moreover, the fact that the *studium generale* was not linked to the monastic schools in lineage also meant that whatever classical knowledge the monks had preserved was, for the most part, unavailable to the emerging academy.[14]

Second, Europe experienced a scientific and technological advancement that involved a critical (though not necessarily exclusive) Islamic role—without which it is doubtful that the Europeans would have experienced this advancement at all, in terms of magnitude and significance. (As Dorn [1991: 109] puts it: "[t]he line of scientific development and transmission from ancient Greece to modern Europe was drawn through a series of Middle Eastern cities—Alexandria, Pergamum, Constantinople, Jundishapur, and Baghdad.") Before proceeding any further with this point it is necessary to pause here for a moment to note this irony: in a world that is so heavily dominated by science and technology, there is, to one's chagrin, so little interest (relatively speaking) in researching and writing about the *history* of science and technology among scientists—the people best qualified to undertake this work—mainly because of the feeling among them that it is work that belongs to humanists. Though going by Turner (1990: 23), however, it would appear that the problem goes even deeper: many working scientists regard the study of the history of science as "some kind of intellectual weakness, or as an occupation suitable for ageing members of the profession who have lost their flair and are being put out to grass, a phase of life for which one scientist coined the pejorative term 'philopause.'" On the other hand, among the humanists, too, interest in the

subject is tardy, primarily because of a lack of confidence—not unjustified since few have the necessary science background. The outcome of this inadvertent academic stalemate is that adequate and thorough investigations of histories of science and technology remain to be written, most especially in circumstances where tracing the roots and origins of scientific and technological discoveries require simultaneous multicultural, transgeographic foci (e.g., China, India, Persia, etc.)[15] After all, when it comes to Islamic science, for example, it must be recognized that it was the first truly *international* science that the world had ever witnessed.

Nevertheless, there exists enough histories of science to give one at least a fair if not complete picture of the role of Islam in the genesis of Europe's scientific and technological developments. This role—which it must be reiterated was not always exclusively Muslim in origin (a point already hinted at above), but was most certainly mediated by the Islamic civilization—took the form of the introduction and reintroduction to the Latin West of essential scientific concepts, methods, and knowledge; a glimpse of which has already been provided at some length above. As Huff (1993: 13) succinctly puts it: "modern science is the product of intercivilizational encounters, including, but not limited to, the interaction between Arabs, Muslims, and Christians, but also other 'dialogues between the living and the dead' involving Greeks, Arabs, and Europeans."[16] Consider that if one were to insist on a clear marker for the beginning of scientific upsurgence in Europe than the prime candidate has to be the emergence of heliocentricism (*a la* Copernicus) in the middle of the sixteenth-century. Yet, everything, in terms of data, that the Copernican revolution was predicated on was acquired directly and indirectly from Islamic astronomers; they had already amassed this data centuries before.[17]

Of course, it is true that the Islamic scholars did not make the final leap, it is the Europeans who instead did.[18] However, that does not detract from the fact that without the import of Greco-Arabic science into Western Europe that was facilitated by the systematic translations of Islamic scientific scholarship (an exercise that, recall, was itself an echo of another systematic translation effort—Greek scholarship into Arabic—begun some 300 years earlier by the Muslims), the European scientific advancements may not have emerged at the time they did, if at all! "From the tenth to the thirteenth centuries, the [Muslims] acted as intermediaries between Greek science and the West," explain Benoit and Micheau (1995: 220–221). That is, "[t]through them came the first stirrings in the tenth and eleventh centuries, through them too the great mass of texts which in the twelfth-century provided the foundation for the intellectual renewal of the West." As to another related matter they are equally unequivocal: "This transfer affected all the disciplines: mathematics and physics, astronomy and medicine, chemistry and optics. *The role of direct transmission from Greek to Latin was minor, even if later the Latins found it convenient to turn to the original texts*" (emphasis added).

In fact, the science that the European scientific revolution was built upon is best described, as indeed Benoit and Micheau (1995: 221) do, as a Euro-Asiatic science. However, given the very nature of scientific progress, how else could it be? For, one should be reminded here of the fact that it is in the area of science, perhaps more than in any other area of human endeavor, that the following axiom is foundational: the present is always rooted in the past, just as the future is always rooted in the present. To put it another way, all scientific progress rests on the achievements and failures of existing science, which in turn rests on the achievements and failures of past science.[19] As Crombie (1990), Dorn (1991), Grant (1984), Huff (1993), Turner (1995) and others have correct-

ly pointed out: "The translations of Greco-Arabic science, with Aristotle's natural books forming the core," to quote Grant, "laid the foundation for the continuous development of science to the present" This is because, to quote Grant again: "Without the translations, which furnished a well articulated body of theoretical science to Western Europe, the great scientists of the sixteenth and seventeenth centuries, such as Copernicus, Galileo, Descartes, and Newton, would have had little to reflect upon and reject, little that could focus their attention on significant physical problems." What is more, he notes: "The overthrow of one world system by another does not imply a lack of continuity" (pp. 91–92). Lindberg (1992: 364–365) also makes the same point when he observes: "If, as we know by hindsight, ancient thought supplied the foundation on which Western scientific tradition would be build, it follows that the reception, assimilation, and institutionalization of ancient thought was a prerequisite to the further construction of that particular edifice."

Whether or not the methodologies and the content of medieval science bore any resemblance to those of the seventeenth-century (the period of the supposed scientific revolution), the fact that the scientists of the seventeenth-century were not working from a scientific *tabula rasa*, but rather were heirs to a medieval science that they still had to digest in order to eventually reject its basic Aristotelian core, points to an organic continuity that is the basis of all scientific progress (remember, the apocryphal tale of Archimedian Eureka was just that and nothing more; for, "eurekas" are not born in bathtubs, but rather emerge as precipitates of historically rooted intellectual matrixes).

In other words, and this point cannot be overemphasized, the "discontinuity" that European historians have traditionally identified between "medieval" and "modern" science marked by the arrival of the plague in the mid-fourteenth century, is essentially fallacious. Why? Because, as Dorn (1991: 131), for example, argues: "[g]eographically, European science is a coherent entity on the same analytical level as the scientific cultures that preceded it—in Islam, Persia, Byzantium, the Hellenistic kingdoms, classical Greece, and the Asiatic societies of the east." Therefore, he concludes, "[t]he division of European science into intellectual movements and the designation of a modern achievement may stroke the European ego, but its historiography loses sight of the essential unity of the European scientific enterprise."

This "continuity" versus "discontinuity" debate is of course central to the question, specifically, of the origins of the scientific developments of the seventeenth-century and European modernity, generally. However, Dorn has put his finger on the basic problem that is at the heart of this seemingly irresoluble debate among Western historians of science: it is freighted with ideology: specifically, a chauvinism that pits, on one hand, the ancient and the medieval against the modern (within Europe) and, on the other hand, the Western European against "others" (outside Europe)—for example, Muslims, Chinese, Jews, and so on. [20] Moreover, it is a debate that rests on the prior construction of a mythology: the so-called scientific revolution (credit for the conceptualization, as presently understood, of this mythology undoubtedly must go, according to Cohen [1994], to the Russian scholar, Alexandre Koyre [1978 (1939)]).

To explain: the penchant of many European historians—especially since Koyre—to isolate a seventeenth-century phase in the history of scientific developments in Europe and calling it the scientific revolution for the purpose of demonstrating the supposed uniqueness of European science on one hand, and on the other, its supposed unique centrality to European modernity, is a misguided endeavor. Even someone such as Cohen

(1994) who devotes a lengthy work to a history of the historiography of this phase and therefore appears to be much enamored by the concept, eventually concludes toward the end of his densely printed 600-page tome that the concept has less meaning than it was once thought to have. He even poses the question that is it not time perhaps to discard the concept altogether because "[t]he concept has by now fulfilled its once useful services." "After all," he further notes, "historical concepts are nothing but metaphors, which one should beware to reify; they may help focus the historical imagination for a while, but we should never forget that they are no more than lenses placed between our vision and the ultimately unknowable reality of a past irrevocably behind us" (p. 500). In the end Cohen, it may be noted, balks from taking the final logical step; but there others who do not. For example, Shapin (1996), and Frank (1996), are adamant that the isolation of a supposedly unique phase in the history of scientific and technological developments in Europe is a clear exercise in mythology. As Shapin observes: "Many historians are now no longer satisfied that there was any singular and discrete event, localized in time and space, that can be pointed to as 'the' scientific revolution." He continues: "And many historians do not now accept that the changes wrought on scientific beliefs and practices during the seventeenth-century were as 'revolutionary' as has been widely portrayed. The continuity of seventeenth-century natural philosophy with its medieval past is now routinely asserted" (pp. 3–4).

Third, through the agency of Islam—involving a variety of mechanisms of diffusion, such as direct residential contacts with immigrant Muslims (e.g., in Muslim Sicily and Muslim Spain), the Arabic to Latin translation movement during the *Reconquista*, the Crusades, and long-distance trade—Europe was introduced to a range of technological artifacts and methods derived from within the Islamic empire, as well as from without (from such places as China and India).[21] It is necessary, however, to briefly linger here on the concept of "technological diffusion." As Glick's study (1979) of Islamic Spain, for example, attests, one of the most important handmaidens of technological innovation is technological diffusion. However, one must be specific about what this concept means. It should be understood here to refer not only to the *direct* passage of artifacts and techniques from one culture to another (usually known as technology transfer), but also the *indirect* form of transmission that Pacey (1996) points to: the spread of information (actively or passively via travelers, traders, books, letters, etc.) about a given technology from one culture to another provoking an "independent" development of similar or even improved technology in the latter culture. Pacey refers to this technology as "responsive inventions."

Further, in the category of responsive inventions one may also throw in inventions arising out of direct imitation of technological artifacts acquired through trade (for commercial purposes), or acquired through some other means (including illegal means) for the explicit purpose of local manufacture. It follows then that the concept of technological diffusion also embodies (seemingly paradoxically) the possibility of independent inventions. A good example of this that immediately comes to mind is the windmill. It has been suggested (Hill 1993: 116), that whereas in all probability the European windmill—considering its design—was independently invented sometime toward the end of the twelfth-century, the concept of using wind as an energy source may, however, have arrived in Europe through the agency of Islam (windmills—of a different design—had long been in use in the Islamic empire). Another example is the effort by Europeans to imitate the manufacture of a high-quality steel common in the Islamic empire called

Damascus steel (primarily used in sword making). Even though, observes Hill (1993: 219), in the end Europeans never learned to reproduce Damascus steel, their 150-year-long effort in this direction was not entirely in vain: it provided them with a better insight into the nature of this steel, thereby allowing them to devise other methods to manufacture steel of a similar quality.

Anyhow, whatever the mode of diffusion, the arrival of Islamic technology and Islamic mediated technology of non-Islamic (e.g., Chinese, Indian) and pre-Islamic (e.g., Egyptian, Persian, etc.) provenance—examples would include: the abacus; the astrolabe; the compass; paper-making; the ogival arch; gun powder; specialized dam building (e.g., the use of desilting sluices, the use of hydropower, etc.); sericulture; weight-driven clocks; the traction trebuchet; specialized glass-making; sugarcane production and sugar-making; the triangular lateen sail (allowed a ship to sail into wind more efficiently than a regular square sail common on European ships); and cartographic maps (upon which the European nautical charts called *portolans* were based)—had profound catalytic consequences for Europe.[22] It became the basis of European technological advancement in a number of key areas and which in turn would help to propel it on its journey toward the fateful year of 1492 and therefrom modernity (see Appendix II).

Consider this: four of the most important technological advancements that would be foundationally critical to the development of a modern Europe (navigation, warfare, communication and plantation agriculture) had their roots outside Europe, in the East! Reference here, is, of course, to the compass (plus other seafaring aids such as the lateen sail, etc.); gunpowder; paper-making and printing (that is, block printing and printing with movable type); and cane sugar production. All four technologies first originated in the East and then slowly found their way to the West through the mediation of the Muslims.[23] Along the way, of course, the Muslims improved on them. Now it is true that Europe's ability to absorb these technologies was a function of internal developments, some unique to itself. As Pacey (1996: 44) observes: "if we see the use of nonhuman energy as crucial to technological development, Europe in 1150 was the equal of Islamic and Chinese civilizations." But, as he continues, the key point here is this: "In terms of the sophistication of individual machines, however, notably for textile processing, and in terms of the broad scope of its knowledge, Europe was still a backward region, which stood to benefit much from its contacts with Islam." [24]

Fourth, Islam introduced Europe to international commerce on a scale it had never experienced before. The characterization by Watt (1972: 15) that "Islam was first and foremost a religion of traders, not a religion of the desert and not a religion of peasants," is very close to the truth. Not surprisingly, then, the twin factors of geographic breadth of the Islamic empire (which included regions with long traditions of commerce going back to antiquity, such as the Mediterranean Basin) and the acceptance of commerce as a legitimate occupational endeavor for Muslims—one that had been pursued by no less than Prophet Muhammed himself—had created a vast and truly global long-distance trade unmatched by any civilization hitherto. In fact, the reach of the Islamic dominated commercial network was such that it would embrace points as far apart as China and Italy on the east-west axis and Scandinavia and the deepest African hinterland on the north-south axis, with the result that the tonnage and variety of cargo carried by this network went far beyond that witnessed by even Greece and Rome in their heyday (Turner 1995: 117). Al-Hassan and Hill (1986: 18) reminds us that the discovery of thousands upon thousands of Islamic coins dating from the seventh to thirteenth centu-

ries in Scandinavia and the Volga basin region highlights the fact that for many centuries Europe relied on Islamic currency for its commercial activities, such was the domination of international trade by the Muslims (see also Watson 1995 for more on the East-West numismatic relations).

Recall also that the wealth of the Italian city-states like Venice and Genoa (the latter being the birthplace of Christopher Columbus, it may be noted) in medieval Europe rested to a considerable degree on trade in Eastern luxury and other commodities. Now, to be sure, it is mainly Italian and Jewish merchants, trading in places such as Alexandria, Aleppo, and Cairo, who were responsible for the final Mediterranean leg of the huge transoceanic trade that spanned the entire Indian Ocean (see the remarkable study by Goitein [1967] of the awesome treasure house of Jewish historical documents, known as the Cairo Geniza documents, that span a period of nearly three centuries, eleventh through thirteenth, and discovered in Old Cairo around 1890). However, as Chaudhuri (1985) shows us in his fascinating history of this trade, it is Muslim merchants who recreated and came to dominate this transoceanic trade—the same pattern held also for the transcontinental trade that was carried on in the hinterland of the Indian Ocean, behind the Himalayan range.[25]

Consider the list of luxury and other commodities that Europe received from the East (including Africa) through the agency of the Muslim merchants: coffee; cotton textiles (a luxury commodity in Europe prior to the industrial revolution); fruits and vegetables of the type that medieval Europe had never known (e.g., almonds, apricots, bananas, eggplants, figs, lemons, mangoes, oranges, peaches); gold; ivory, paper; tulips; porcelain; rice; silks; spices (these were especially important in long-distance trade and they included cardamom, cinnamon, cloves, coriander, cumin, ginger, nutmeg, pepper, saffron, and turmeric); alum; dyes and dye-making products; medicinal drugs; aromatics (e.g., frankincense, myrrh, musk); cane sugar and sugarcane; and so on. (The last is of special historical significance, sadly, considering the ignominious role it would play in the genesis of the Atlantic slave trade—see Appendix II.) What is more, with the exception of a few items such as gold, silk, some aromatics, and a few spices like cinnamon and saffron, medieval Europe had not even known of the existence of most of these products prior to the arrival of Islam.[26]

In other words, the Islamic civilization, through its commercial network, introduced Europe, often for the first time, to a wide range of Eastern consumer products (the variety and quantity of which was further magnified via the agency of the Crusades) that whet the appetite of the Europeans for more—not surprisingly, they felt compelled to undertake their *voyages of exploitation*, *a la* Bartolomeu Diaz, Vasco da Gama, Christopher Columbus, Fernao de Magalhaes (Ferdinand Magellan), and so on.[27] This quest for an alternative trade route to the East—one that would have to be seaborne—was also, of course, a function of the desire to bypass the very people who had introduced them to the Eastern luxury commodities they so eagerly sought: their hated enemies, the Muslim intermediaries, who straddled the land-bridge between the East and the West and who at the same time held a monopoly over this ever-increasingly important and obscenely profitable East/West trade. (Only a few decades earlier [on May 29, 1453], prior to the departure of Columbus [on August 3, 1492] on his historic sea quest, Constantinople had fallen before the victorious forces of the Muslim Turks under the leadership of Sultan Mehmed II, thus effectively and permanently placing the landbridge in the hands of the Muslims.)[28]

Yet, the European commercial debt to Islam goes even deeper. For, as Fernand Braudel (1982) reminds one in volume 2 of his three-volume *magnum opus* (grandly titled *Civilization and Capitalism*), a number of critical elements of European long-distance trade were of Islamic origin; such as the "bill of exchange," the *commenda* (a partnership of merchants), and even the art of executing complex calculations—without which no advanced commerce is possible.[29] In fact, as Braudel further points out (p. 559), the very practice of long-distance trade itself in medieval Europe was an Islamic borrowing. Now, without long-distance trade, it is quite unlikely that Europe would have experienced the rise of mercantile capitalism (and therefrom industrial capitalism following the colonization of the Americas); for, while such trade may not be a sufficient condition for its development, it is a necessary condition.

Of course, it is not, it must be stressed here, that Europe had never engaged in long-distance trade before—consider the long-distance trade of the Greeks and the Romans with the East—but, like so many other things, it was reintroduced to them by the Islamic civilization, since the Europeans had, for all intents and purposes, "lost" it over the centuries with their retrogressive descent into the post–Alaric world of the Germanic dominated European Early Middle Ages.[30] On the basis of these observations, Braudel, is compelled to remark: "To admit the existence of these borrowings means turning one's back on traditional accounts of the history of the West as pioneering genius, spontaneous inventor, journeying alone along the road toward scientific and technical rationality. It means denying the claim of the medieval Italian city-states to have invented the instruments of modern commercial life. And it logically culminates in denying the Roman empire its role as the cradle of progress" (p. 556).

Fifth, and this point cannot be overemphasized, without Islam—albeit in a perverse way—Europe would not have become Europe, psychologically, culturally, and geographically, but rather would have remained a fratricidally riven heterogeniety of perhaps little consequence for centuries to come. It is not without reason that some have even suggested, with a hint of ironic jest, that the founding father of Europe was Prophet Muhammed (see Cardini 2001). To elaborate: Islam created for Western Europe the feared and despised "other" as the basis of its eventual genesis, as the European center of gravity was forced to move, as a result of Muslim conquests, from the classical Mediterranean to *Francia* and the Rhineland. The process began with the Carolingian Renaissance that had its roots in the defeat of the Muslims at the hands of the grandfather of Charlemagne, Charles Martel (as mentioned earlier) and ended in the inauguration of *Europeanized* Christendom in the wake of the Schism of 1054 under Pope Leo IX and the unleashing of the Crusades against the Muslims at the behest of Pope Urban II (the call went out on November 27, 1095, in Clermont, France). About the last factor, while more will be said about the Crusades in Appendix II, though in a slightly different context, their importance in the creation of the Christian (and therefore European) identity cannot be over emphasized. As Mastnak (2002: 117) explains:

> [T]he launching of the First Crusade was the historical moment in which the *respublica christiana* became conscious of its unity. An essential moment in the articulation of the self-awareness of the Christian commonwealth was the construction of the Muslim enemy. The antagonistic difference between themselves and the Muslims was a constitutive element of the Latin Christian's collective identity. The work of this collective identity or, rather, this collective identity at work was the new holy war against this fundamental enemy; for the Muslims represented infidelity as such. They were regarded as precisely the fundamental enemy of Christendom: the personification of the very

religion of the Antichrist.

In fact, it is instructive to observe here, as Mastnak (2002) does, that the institutionalization of the malevolent, hierarchic us-versus-them duality effected through the Crusading project was of such depth that even the ongoing systematic effort at importing Greco-Arabic learning appeared, over the long run, to have earned the Muslims not an iota of gratitude from the luminaries of the Christian West (let alone, of course, the masses). On the contrary, the appreciation of the superiority of the Greco-Arabic learning by the Latins, in a seemingly bizarre way, seems to have been directly proportional to the vilification of Islam and the Muslims—such was the corrupting power of the Crusading project (see Appendix II), as well as the depth of Europe's perception of its own inferiority.[31] As Watt (1972: 84), for example, points out: "Not merely did Islam share with Western Europe many material products and technological discoveries; not merely did it stimulate Europe intellectually in the fields of science and philosophy; but it provoked Europe into forming a new image of itself. Because Europe was reacting against Islam," he continues, "it belittled the influence of the Saracens [Muslims] and exaggerated its dependence on its Greek and Roman heritage." [32] Blanks, in his introduction to the excellent collection of papers on the Western perceptions of Islam (Blanks and Frassetto 1999) also makes a similar observation:

> During the Middle Ages, Islamic civilization was far ahead of its Christian rival, offering enticing advances in architecture, law, literature, philosophy, and, indeed, in most areas of cultural activity. It was therefore from a position of military and, perhaps more importantly, cultural weakness that Christian Europe developed negative images, some of which survive to the present day. In part, this hostility was the result of continued political and military conflict, but it likewise ensued from a Western sense of cultural inferiority…. By debasing the images of their rivals, Western Christians were enhancing their own self-images and trying to build self-confidence in the face of a more powerful and more culturally sophisticated enemy (Blanks 1999a: 3).

Clearly, then, it is because of the arrival of Islam on to the stage of human history that the East/ West continuum became a dichotomous geographic and cultural fragmentation.[33] That is, on one hand, through the Islamic mediated introduction to Europe of such intellectual and material artifacts ranging from the mathematical concept of zero and Arabic numerals to paper and paper making, from cane-sugar and cane-sugar production (which, via the Americas, would in time be foundational to the accumulation of capital necessary for the launching of the industrial revolution) to silk production, from navigation instruments like the astrolabe to the pointed vaulted arch in architecture, from paper money to the abacus; and on the other, the geographic and cultural containment of Europe beginning in the eighth-century, Islam came to play a critical role in the genesis of European science, modernity and identity. In other words, it was a role that was critical enough to permit Europe to emerge from the self-engendered, nearly 600-year, somnambulist interregnum of the Middle Ages (a period that, recall, historians of the past had often referred to as the Dark Ages—an exaggeration of course, but not entirely without reason.)

The Islamic civilization was a scientific, technological and cultural bridge in terms of both time (between the ancient and the modern) and geography (between the East and the West). Moreover, it was not a passive bridge but an active one, without which it is highly unlikely that Europe could have crossed over from barbarism into modernity, as

early as it did—if at all! In other words, no matter how much one may struggle to erect the chimeral edifice of "Western European exceptionalism"—which at its fundamental core is nothing more than a racist inspired project (as scholars such as Blaut [1993], and Frank [1998], would probably point out)—the fundamental truth is that historical facts will force one to recognize that there is no single variable that one can isolate to explain Europe's journey toward scientific and technological progress in particular and modernity in general; for, such monumental intellectual and social transformations that they represent, can only be explained on the basis of a conjuncture of fortuitously propitious historical factors originating from within and without Europe—central among these factors was the Islamic civilization with its tendency toward a global transformative centripetality of transgeographic and transtemporal civilizational contributions.[34]

To the extent, then, that Islam is an *Afro-Asian* civilization, both the Western civilization in general and one of its progeny in specific, the modern university, have a significant part of their roots within Africa and Asia. This is not to deny, of course, the immense significance of the Latin contribution itself to the development of the modern university. The critical point here, however, is this: to say that the modern university is an *entirely* Western invention is to assert only partial truth; not the whole truth. The whole truth is that the modern "Western" university—like so many other things that Westerners have so stridently claimed as their very own unique inventions—is the product of the Islamic-mediated intersection of three major civilizations: the Greek, the Islamic, and the Latin. (Yet, even this cannot constitute the whole truth. Why? Because each of these civilizations, in turn, in their genesis, incorporated contributions from other civilizations as well: Sumerian, Assyrian, Babylonian, Egyptian, Persian, East Indian, Chinese, etc.) Any view to the contrary, is simply an echo—albeit a recurrent one—of the narrow-minded, super ethnocentric perspective of the early Western European Christians who in their tirades against Muslims, Jews, and others often forgot that even the religion that they thought was their very own did not originate from within Europe, but came from the East. They refused then, as even many of their descendents of today refuse, to observe, for example, this simple fact: that Christ was not a European at all! But, then, when has universal historical memory ever been secure from being hijacked by those with the power to do so, for iniquitous ends?

Yet, this is not all: Makdisi (1981: 285–86) in dismissing the obscurantist claims of such European scholars as G. E. von Grunebaum (1961) that except for Averroism, Western intellectual development owes nothing to Islam, reminds one that "It is inconceivable that two cultures could develop side by side for literally centuries without being aware of developments on either side."[35] The fact that "Islam cared little for what was going on in the West is proof of its indifference to a lesser developed culture," he continues. "On the other hand," he points out, "it is common knowledge that the West was not oblivious of the higher civilization of Islam: it learned its language and translated its works in order to bring itself up to the level of the higher culture, the better to defend itself against it." Moreover, after identifying many parallels in the development of higher education in the West and in Islam he concludes with justifiable degree of impatience at Western obscurantism on this matter by saying "It unduly taxes the imagination to conceive parallel developments devoid of influence (1) when the number of parallels is so high, (2) when their points of correspondence are so identical, and (3) when the course of development involves a time-lag of roughly a century."

Among these parallels he covers in his work, there is one that deserves special attention: the Islamic technique of consensus-disagreement—known as *ijma'-khilaf,* and in the Latin West known as *sic et non*—as the basis for establishing legitimacy for a given Islamic doctrine, practiced by Islamic jurisconsults (since Islam does not possess such ecclesiastical institutions as councils and synods). It is on the basis of this technique that requires, by means of disputation, the triumph of *ijma* over *khilaf* (the authoritative body of disagreements on a given question) that the scholastic method arose in Islamic legal education. Since khilaf, a very specific Islamic institution, is an essential component of the scholastic method (adopted by the Western medieval universities and which laid the foundation for the triumph of reason and rationality—the backbone of science), one can assert with utmost confidence that Islam had a significant hand in "influencing the fundamental structure of the West," to quote Makdisi (1981: 289).

However, however, notwithstanding everything that has been said so far in this appendix, one is compelled to conclude with this point: in the final analysis, the fundamental question really is, Does it really matter as to *who* created the first universities? (Or, for that matter, Who were the first astronomers? The first mathematicians? The first scientists? And so on.) It matters only if one refuses to abandon those socially constructed categories that the modern world, paradoxically, is so obscenely mesmerized by (such as race or ethnicity) in order to deny the commonality of all humanity in which every ethnic variation of humankind has made some contribution at some point (even if only at the most rudimentary level of domestication of plant and/or animal life) to the totality of the modern human cultural experience. (See the fascinating study by Weatherford [1988], with respect to the last point.) As Joseph Needham (1954: 9) sagely observed in volume 1 of his work: "Certain it is that no people or group of peoples has had a monopoly in contributing to the development of science." For all its proclamation of the virtues of "civilization" (to be understood here in its normative sense) the denial of this fact has been, sadly, as much a project of the West as its other, laudable, endeavors—for reasons that, of course, one does not have to be a rocket scientist to fathom: domination of the planet under the aegis of various forms of imperialism (an endeavor that, even now in the twenty-first century, most regrettably, has yet to see its demise).

Consequently, under these circumstances, the true historian is burdened by the need for constant vigilance against this Western intellectual tradition of *erasure* of universal historical memory for the purposes of rendering irrelevant the contributions of others.[36] Moreover, one must be cognizant of the fact that it is a tradition that relies on a number of techniques: the most direct of which is "scholarly silence"—where there is a complete (or almost complete) absence of any recognition of a contribution. However, given the obvious transparency of this technique, it has increasingly been replaced by one that is more subtle (hence of greater intractability): achieving erasure not by a total lack of acknowledgement, but by the method of *token* (and sometimes even derisory) acknowledgement where the object of the erasure is mentioned in passing and then promptly dismissed from further consideration despite continuing relevance to the subject at hand.

As an extension of this last point, and as a prelude to Appendix II: it is questionable to even talk about a Western civilization at all; so much of its inheritance is from outside Europe—a more fitting term perhaps would be Afro-Eurasian civilization. To the ignorantsia, who are heirs to a Western ethnocentric mind-set honed over a period of some 600 years, of seeing humankind in no other terms than a color-coded hierarchical cultural fragmentation, this new appellation may, at first blush, appear hysterically prepos-

terous; yet, in actuality, there is a growing body of literature that cogently demonstrates that the so-called Western civilization is simply a developmental extension of Afro-Asian civilizations.[37] After all, if one were to take the entire 5,000-year period of recorded human history, commencing from say approximately thirtieth-century B.C.E. to the present twenty-first-century C.E., the European civilizational imprint, from a global perspective, becomes simply an *atomized* blip (the *notion* of an unbroken path going from the Greeks to the Renaissance to the Industrial Revolution, is just that, an illusory fabrication), and what is more, geographically, demographically, and culturally, a peripheral one at that when viewed against that of the neighboring Afro-Asian civilizations, taken together (ranging from the Sumerian to the Egyptian to the Chinese to the Islamic).[38]

It is only in the last 300 years or so that, civilizationally, Western Europe has taken center stage. The fact that many European and U.S. historians appear to be unaware of this simple fact is testimony to the enduring Western ethnocentric teleological tunnel vision that thoroughly imbues their work.[39] Note that Western ethnocentrism is to be understood here as an ideology that is shared by all classes of Western Europeans and their diasporic descendants, that is rooted in the assumption that, to quote Harding (1993: 2), "Europe functions autonomously from other parts of the world; that Europe is its own origin, final end, and agent; and that Europe and people of European descent in the Americas and elsewhere owe nothing to the rest of the world." See also Amin (1989) and Blaut (1993, 2000), for a brilliant, but scathing critique of the Western ethnocentric paradigm that undergirds much of Western historiography.

NOTES

1. A word or two about the concept of incorporation: to begin with, Islam does not recognize, in general, the legality of the "corporation"—"an abstraction endowed with legal rights and responsibilities"—because only a human being, not an organization, can have "juristic personality" (Makdisi 1981: 224—for an alternative, albeit unconvincing, view on this matter see Iqbal 2002). Moreover, within the Islamic world, the necessity for the incorporation of universities per se was absent. Why? Makdisi (1981) points out that because of the great difference in how citizenship was regarded between medieval Europe and the Islamic world (in the latter, as already noted, all Muslims, whatever their nationality, origin, ethnicity, and so on, had practically the same citizenship rights regardless of where they went in the Islamic world, whereas in the former, Europeans did not enjoy an equivalent privilege), there arose the need in medieval Europe to protect "foreign" students (students from out of town or out of region or out of country) in the inevitable town-and-gown conflicts that emerged wherever universities were beginning to be established (Bologna, Paris, etc.). This protection took the form of incorporation—a legal concept rooted in Roman law which permitted groups of persons bound together by a common purpose (as in guilds) to behave as individual persons in law (such an entity, interestingly, was referred to as *universitas*). Through papal or royal decrees, universities acquired, over time, protections and privileges that established their independence in virtually all matters: governance, curricula, instruction, finance, and so on. See Benoit (1995); Cobban (1975); Huff (1993), and Pedersen (1997), for an extensive account of how the process transpired; the last also proposes one more compelling factor: power struggles between the emperor and the pope.

2. The term civilization is used in this work in a very loose sense. Consider the problem: the Islamic civilization at one point encompassed a number of other civilizations, Byzantium, Persian, Hindu, and so on.

3. While it is true that evidence so far indicates that the bulk of Greco-Islamic learning arrived in Europe through the translation activity in Spain and Italy, Burnett (2003) shows that some of this learning also seeped into Europe by means of translations of works that were imported directly from the Islamic East, but executed by Latin scholars in other places (like Antioch and Pisa).

4. Continuation of a select listing of Islamic scholars:

Abu Raihan al-Biruni (c. 973–1051), a natural scientist whose work helped to lay the foundations of natural sciences in the Latin West. His work on astronomy would become the principal text for schools in the Latin West. In addition, he wrote extensively in almost every subfield of mathematics, astronomy, physics, and so on. He also wrote a treatise on drugs titled *The Book on Drugs,* in which he described numerous drugs and their effects, as well as providing their names in several other languages besides Arabic.

Ibn al-Zarqali (c. 1029–c.1080, known in Latin West as Arzachel). An astronomer who was responsible, among his accomplishments, for the invention of an improved astrolabe (named saphaea Arzachelis), the editing of the planetary tables produced by astronomers such as *Ibn Said* working in Muslim Toledo that came to be called the Toledan Tables, and authorship of an introductory work on trigonometry.

Ghiyath al-Din Abul Fateh Omar Ibn Ibrahim al-Nisaburi al-Khayyami (1044–1123) Omar Khayyam, as he is commonly known, achieved fame in the West in the nineteenth-century primarily because of his poetry (following the English translation of the Rubaiyat by Edward Fitzgerald). Yet, he was also an accomplished mathematician and astronomer making significant contributions in the area of algebra (e.g., binomial theorem). In the area of astronomy one of his achievements is the creation of a solar calendar (named *Al-Tarikh-al-Jalali*) that is said to be even more accurate then the Gregorian calendar. Khayyam's influence on the development of mathematics and analytical geometry in the West should not be underestimated. Among his works in this regard is *Treatise on Demonstration of Problems of Algebra*.

Ibn Bajjah (c. 1095–c. 1138, known in the Latin West as Avempace). A philosopher, whose work on the theory of motion is among his many contributions.

Ash-Sharif al-Idrisi (1100–1165/66?), a geographer and advisor to the Norman king of Sicily, Roger II, was the author of one of the most important medieval texts on geography titled *The Pleasure Excursion of One Who Is Eager to Traverse the Regions of the World*. He spent most of the later part of his life in the service of the Norman king who provided him with the resources necessary to undertake his scholarly pursuits, which included a number of texts that combined descriptive and astronomical geography.

Abu al-Walid Muhammed ibn Ahmad ibn Muhammed Ibn Rushd (1126–1198, known in the West as Averroes), considered to be among the most important commentators on Aristotelian philosophy of his time (hence he was also known by the name of the Commentator—such was his scholarly authority), would have a far-reaching influence on Western thought; in fact, so much so that it would be symbolized by the intellectual crisis that it would precipitate between the church and the academy as the former attempted to battle what it thought was the theologically corrupting influence of "Averroism" (the belief that philosophy and religion were not only compatible but that philosophy was, in a sense, religion in its purest form). Significantly, he was a great advocate of syllogism, the Aristotlian method of logic.

Nasir al-Din al-Tusi (Muhammad ibn Muhammad ibn al-Hasan al-Tusi) (1201–1274), an astronomer par excellence, he would greatly influence the work of such Western astronomers as Nicolaus Copernicus, Johannes Kepler, and Tyco Brahe by means of his accurate astronomical tables that he and his colleagues produced at a famous observatory he helped establish at Maraghah (in modern-day Iran)—under the sponsorship of the Mongols no less.

It ought to be mentioned here, as Ullman (1978) for example points out, in some instances—

especially where the author was unknown—the translations of the Islamic scholarship arrived in Europe masquerading as scholarship authored by the translators themselves or their benefactors (rather than as translations of Islamic scholarship). In fact there appears to be some evidence that even at that time Muslims were aware of this problem: d'Alverny (1982: 440) quotes a late eleventh-century Muslim scholar in Spain, Ibn Abdun, admonishing his fellow Muslims: "You must not sell books of science to Jews and Christians… because it happens that they translate these scientific books and attribute them to their own people and to their bishops, when they are indeed Muslim works." In other words, even if all the translated Islamic works were available today, the fullest extent of the Islamic scientific scholarly contribution to the Latin West will never be known because of such unashamed wholesale plagiarism.

For more on the Islamic and Islamic mediated scientific/philosophic contributions, the reader is directed to look at the following sources, among others: Alioto (1987); Authier (1995); Benoit and Micheau (1995); Crombie (1990); d'Alverny (1982); Grant (1974 and 1996); Gutas (1998); Hill (1993); Hodgson (1974); Hogendijk and Sabra (2003); Huff (1993); Kennedy (1966); King (2000); Leiser (1983); Lindberg (1978, and 1992); Mirza and Siddiqi (1986); Nakosteen (1964); Nasr (1968); Nasr and Leaman (1996); Peters (1968); Qurashi and Rizvi (1996); Rashed and Morelon (1996); Sabra (1994); Saliba (1994); Sarton 1962 (1927–1948); Schacht and Bosworth (1974); Selin (1997); Stock (1978); Turner (1975); Ullman (1978); Watt (1972). In addition to these specific sources, the reader should also mine the following three excellent multivolume encyclopedic sources for information on a range of issues covered in this chapter: *Dictionary of the Middle Ages* (1982–89); *Dictionary of Scientific Biography* (1970–80); and *Encyclopedia of Islam: New Edition* (1986). Note: in bludgeoning the reader with this list, the objective is to leave no doubt as to the significance of Islamic science for the development of the curricular knowledge base of European medieval universities specifically, and the advancement of science in Europe generally.

5. On this point about fortuity, see also Dorn [1991], whose exegesis on geography as among the factors of historical chance in the evolution of major scientific developments—to take one example—is brilliantly suggestive.

6. One more example: consider this mind-boggling "what ifs" of history: Would the European civilization have evolved to be the dominant civilization it has become had the Mongols possessed a succession mechanism different from the one that required the founder of the Golden Horde empire, Batu (the grandson of Genghis Khan), to return home just as he was poised to invade Western Europe in December of 1241? (The succession issue was precipitated by the death of the reigning head of the entire Mongol empire, Khagan (Great Khan) Ogadai, son of Genghis Khan.) Recall that by that point, the fate awaiting Western Europe at the hands of the Mongols had already befallen the Russians, the Poles, the Hungarians, and so on, which was: total and merciless slaughter and devastation, perhaps not even matched, in terms of ferocity, by that inflicted by Europe's own barbarians of an earlier period: the Vikings. Even the Muslims: they too, as already mentioned, would not be spared the barbarous Mongolian devastation beginning with the invasion of Northern Iran in 1218 by Genghis Khan. In the year 1238, to give just one example, close to a million would be slaughtered in a little over a month in the city of Baghdad alone. And all major artifactual expressions of cultural achievement (schools, libraries, bookstores, observatories, etc.), would be burned to the ground as the city was laid waste—it would mark the end of the 600-year classical period of Islam. In other words, the decision by Batu to return home, most likely, put Europe—and the world—on to a very different historical trajectory than the one that would have emerged had he not withdrawn from Europe. (See Chambers [2001]; Holland [1999]; and Spuler [1972] for more on the Mongols. See also the rest of the work that contains Holland for more examples of *what ifs* of history.)

7. See, for example: Grant (1996); Gutas (1998); Huff (1993); Nakosteen (1964); O'Leary (1949); Schacht and Bosworth (1974); Stanton (1990); and Watt (1972).

8. It should be remembered that the Byzantines did almost nothing, in comparative terms, with

the Greek intellectual heritage they had come to possess; though they had the good sense to at least preserve it (see Gutas 1998, for an account of the Byzantine role in the Muslim acquisition of Greek scientific knowledge).

9. It is interesting to note here that the suggestion by some, that "the failure of Arabic science to yield modern science was due to a failure to develop and use the experimental method are confronted with the fact that the Arabic scientific tradition was richer in experimental techniques than any other, whether European or Asian" (Huff 1993: 209). It also ought to be mentioned here, that in one of those unexplainable ironies of history, not even the Greeks (for the most part) were enamored with the scientific experimental method; rather their approach was predominantly one that may be described as (for want of a better phrase) "contemplative observation."

10. The European scientific debt to Islam is also attested to by etymology: Consider the following examples of words in the English language (culled from Watt 1972: 85–92) that have their origins in the Arabic language (either directly, or indirectly—that is, having originally come into Arabic from elsewhere): alchemy, alcohol, alembic, algebra, algorithm, alkali, amalgam, arsenal, average, azimuth, camphor, chemistry, cupola, drug, elixir, gypsum, natron, rocket, saccharin, sugar, zenith, zero.

11. Huff (1993: 48) reminds one, for example, that during the 700-year period marked by the eighth to almost the beginning of the fifteenth-century, "Arabic science was," in his words, "probably the most advanced science in the world, greatly surpassing the West and China." He continues: "In virtually every field of endeavor—in astronomy, alchemy, mathematics, medicine, optics and so forth—Arabic scientists (that is, Middle Eastern individuals primarily using the Arabic language but including Arabs, Iranians, Christians, Jews, and others) were in the forefront of scientific advance. The facts, theories, and scientific speculations contained in their treatises were the most advanced to be had anywhere in the world, including China." Making a similar point, Grant (1996) states: "Contrary to prevailing opinion, the roots of modern science were planted in the ancient and medieval worlds long before the scientific revolution of the seventeenth-century. Indeed, that revolution would have been inconceivable without the cumulative antecedent efforts of three great civilizations: Greek, Islamic, and Latin. With the scientific riches it derived by translation from Greco-Islamic sources in the twelfth and thirteenth centuries, the Christian Latin civilization of Western Europe began the last leg of the intellectual journey that culminated in a scientific revolution that transformed the world."

12. In drawing attention to this fact in the present political climate—where it is once again fashionable for Westerners of almost every stripe (except for an exemplary scholarly minority who will hew to the truth no matter what) to loudly and unabashedly proclaim themselves as bearers of a superior, self-made civilization in a style not seen since the heyday of eighteenth- and nineteenth-century Western imperialism—it runs the serious risk of being dismissed out of hand. This, of course, is one of the consequences of the anti-Islamic sentiment—reminiscent of the period of the Crusades (no historian writing about the Crusades today can escape experiencing the feeling of déjà vu)—that has once again enveloped the Western world in the wake of the terrorist attack that misguided "Muslim" zealots inflicted on the United States on September 11, 2001, and which has acted to serve as yet one more ideological layer to preserve the seemingly unassailable, granite-like ignorance about the Islamic civilization that characterized the vast bulk of the European peasantry during the Crusades. It is an ignorance that remains widespread to this day among both the elites and the masses in the West (and to some degree in the rest of the world as well) and which in turn has rendered the West blind to how much the so-called "Western" civilization owes to Islam. Yet even where ignorance is not a factor, there is the problem of prejudice: "For our cultural indebtedness to Islam… we Europeans have a blind spot. We sometimes belittle the extent and importance of Islamic influence in our heritage, and sometimes overlook it altogether." This observation by Watt (1972: 2) is as relevant today as it was when he made it more than three decades ago (see also Cardini [2001]).

13. Even the very concept of the crusade as a "holy war," observes Watt (1965: 172), may

have been another one of Western Christendom's borrowings from Islam (compare: the jihad of the Muslims) (See also Daniel [1989a], who has a dissenting view on this matter.)

14. This observation is also in order here: the traditional European view used to be, Crowthier (1967) reminds one, that it is with the fall of Constantinople to the Turkish Muslim Army on May 29, 1453, that Europe was reacquainted with the Greek intellectual heritage, which the Byzantines had preserved and which they now took with them to Europe as they fled the Muslims. This, however, is only partial truth, he notes, because Europe had already had access to much of the Greek knowledge through the Muslims. What the fleeing Byzantines brought with them that the Europeans did not yet have, was what the Muslims had had the least interest in: the arts and humanities of the Greeks (history, poetry, drama, etc). He further observes: "The Renaissance, insofar as it is regarded exclusively as a result of the fall of Constantinople, is of restricted interest for science. The cultural effects of the flight from Constantinople were at first narrowly literary, and on the whole may have been unfortunate" (p. 118). Moreover, one ought to also note here the point made by Gutas (1991) that the Muslims were also to some extent instrumental in the very preservation of the Greek texts within Byzantium because until the Muslims created a relatively lucrative market for these texts, the Byzantines may have been less inclined to preserve them. Recall that by this period (eighth-century) when the Greek to Arabic translation movement was underway in the Islamic empire, secular knowledge had fallen almost completely out of favor in Byzantium.

15. Iqbal (2002) reminds us that thousands of Arabic scholarly manuscripts from the past, scattered in libraries across the world, still await the scrutiny of the researcher. One can only surmise the tremendous consequences for the historiography of science in general if there were scholars willing to subject the sciences of Islam and India, for example, to what one may generically refer to as "The Joseph Needham Treatment." That is, a scholarly approach that is characterized by an awe-inspiring, multidisciplinary and relentless lifetime devotion to the historiographical study of science and technology—like the one undertaken by, needless to say, Joseph Needham with respect to Chinese science and technology and captured for posterity by his monumental multivolume magnum opus titled *Science and Civilization in China* (which the Cambridge University Press began publishing in 1954 as each volume was written [and which continues to be written, though others have now taken over authorship of the volumes published in recent years]). See also Serres (1995) on the challenges of producing a historiography of science.

16. Now, one can imagine here a small hand being raised hesitatingly, at the very back of the room, accompanied by the question, in a faltering voice: But, but… Sir/Madam, what about the Romans? Ah…, the Romans! For reasons that need not detract one here, one is on sure ground—pending of course research a la Pierre Duhem (whose monumental research effort rescued medieval European science from the dustbin of history) that may unearth findings to the contrary—when one boldly states that the Roman contribution to the development of modern science was about as much as that of the Byzantines: nothing to write home about. It is one of those ironies of history, that for all its brilliantly outstanding architectural and technological accomplishments, the Roman civilization was almost barren when it came to scientific achievements (Alioto 1987). No, the torch of science bypassed—for the most part—the Romans as it was transferred by the forces of history from the Greeks to the Muslims.

17. Benoit and Micheau (1995: 203) draw attention to this interesting and telling tidbit of history: there exists an annotated edition of Ptolemy's The Great Treatise (a work that came to be known by its Arabic derived name of Almagest—from al-Majisiti—in the Latin West); but the annotations are in the hand of none other than Nicolaus Copernicus himself; however, what is really fascinating is this: that the edition itself is a Latin translation of the Arabic translation of the Almagest! One, of course, will never know the magnitude of the influence of Islamic astronomy on Copernicus—for this was astronomy that did not just rest on the Greek and Alexandrian heritage alone, but was also based on the findings of astronomers from the East (India, Persia, etc.), as well as the observations of the Muslims themselves. (See Huff [1993], and Turner [1995].) While on the subject of astronomy, it should also be noted here that the computational basis of it, trigonome-

try, was an entirely Islamic invention. The Greeks did not appear to possess trigonometry. (See, for example, Kennedy [1983].)

18. See Iqbal (2002) for an analysis of the factors that led to the decline of scientific progress in the Islamic empire. For contrasting views, with which Iqubal is in strong disagreement, on this matter see Cohen (1994); Huff (1993); and Huff and Schluchter (1999).

19. One of the earliest proponents of this rule, which he termed "the law of continuity," is Pierre Duhem. Severely castigating those who appeared to be unaware of this law, writing in 1906, he would state: "It is commonly thought that progress in science is made by a succession of sudden and unexpected discoveries and thus, so one believes, is the work of men of genius who have no precursors at all. It is a useful effort, and one worth insisting on, to mark the point where these ideas are erroneous, the point where the history of scientific development is subject to the *law of continuity*. Great discoveries are almost always the fruit of slow and complex preparation, *which is pursued in the course of centuries*." (emphasis added; translated from the French by Cohen 1994: 48, and quoted in his book). An aside: it is ironic that Duhem dismissed the significance of Islamic science in the development European medieval science—is it possible that his strong Christian beliefs (he was an ardent Roman Catholic) greatly colored his views on this matter?

20. For a summary of this debate see Cohen (1994), as well as Lindberg (1992) whose verdict on it is an attempt to come down somewhere in the middle: there was continuity within discontinuity. However, contrary to his protestations, Lindberg appears to favor the continuity side of the debate if one goes by his exegesis on the matter. Moreover, his observation that a separation of macro-level (entire scientific enterprise) versus micro-level (individual scientific disciplines) analysis decisively tilts the debate toward continuity, is worth noting. What is Cohen's position? "There are no absolute discontinuities in history," he states. "Nothing," he continues, "happens entirely out of the blue; no event, however unexpected, is without prior preparation" (p. 147).

21. Regarding the Crusades, even though intuition alone would suggest otherwise (the Crusaders had colonized parts of the Islamic lands for considerable periods of time spanning almost two centuries), some Western scholars have tended to downplay the role of the Crusades in accelerating Eastern influences on the development of the West. However, there are at least three areas of Crusader activity that bore considerable fruit in this regard: namely, emulation of sumptuous lifestyles of the Muslims by wealthy resident Crusaders (yielding influences in art and architecture, for example); agricultural production (especially sugarcane); and trade and commerce. About the last: Hillenbrand's fascinating study clearly points to remarkable interchange between the Franks and the Muslims, even—unbelievable this may appear—during times of ongoing conflict. Consider this: while the robust siege of Karak by the forces under the command of Salah Ad-din Yusuf ibn Ayyub (Saladin) was underway in 1184, trading caravans from Egypt on their way to Damascus were allowed to pass through Crusader-held territories unhindered. This phenomenon would lead one Muslim chronicler of the period to remark: "One of the strangest things in the world is that Muslim caravans go forth to Frankish lands, while Frankish captives enter Muslims lands" (Hillenbrand 1999: 399). That the Muslims and the Franks refused to put aside the peaceful activity of trade and commerce between them on many an occasion (which it should be noted often required the conclusion of treaties and agreements), even as they fought each other, is indicative of how important such activity was for both sides. What is more, the Crusaders undertook these economic relations often in the face of strong strictures on the part of various popes condemning such activity. Note also that the importance of trade is also attested to, of course, by the currency in Crusader-held territories: it was an imitation of Islamic currency—in terms of design. (See also Bates and Metcalf [1989]; Ballard [2003]; and Verlinden [1995]). In other words, then, through trade and commerce, regardless of whether it was local trade or international trade, Europe opened yet another door to Eastern influences. (For more on this topic, see Abulafia [1994], and Ashtor [1976], and the *Dictionary of the Middle Ages*. About the last item, as already pointed out, the reader will do well to mine it for a number of other issues too, covered in this chapter.)

22. A note on the *portolans*, given their critical importance to the European sea navigators,

that should further give pose to those who continue to insist on European exceptionalism: while the immediate provenance of many of them was Islamic, the Muslims themselves were also indebted for some of their maps to the Chinese. Of singular importance are those that were of relevance to the European Atlantic voyages given that the Chinese had already preceded Columbus to the Americas—vide for example the voyage of Zhou Wen described by Menzies (2003). (Note: Menzies also discusses the Chinese contribution to the development of the portalans.)

23. There is some doubt as to exactly how the compass arrived in the West from the East in that, according to Watt (1972), it was probably invented jointly by the Muslims and Westerners (one reciprocally improving on the creation of the other) on the basis of the original Chinese discovery of the magnetic properties of the lodestone. Be that as it may, it is yet another instance pointing to the fact that the story of the diffusion to the West (via the Islamic intermediary) of the products of the Eastern technological genius *is one that has yet to be told in its entirety*.

24. For sources on the Eastern provenance of the technological artifacts mentioned and their Islamic mediated diffusion to the West, see also, besides Pacey (1991), al-Hassan and Hill (1986); Dold-Samplonius (2003); Dyson (2001); Jayyusi and Marin (1994); Kunitzsch (2003); Hill (1993); Pan (1996); Qurashi and Rizvi (1996); Williams (2000).

25. For more on the East/West trade see also Abulafia (1994); Abu-Lughod (1989); Ashtor (1976); Curtin (1984); Frank (1998); Hillenbrand (1999); Huzayyin (1942); Lach (1965); Lombard and Aubin (2000); and Lopez and Raymond (1967), Pomeranz (2000).

26. One can hardly imagine what would have been the fate of Europe if it had never found out about some of these commodities. Take, for instance, that absolutely wondrous plant fiber called cotton. Ahhh cotton… What would the world be like without cotton? Cotton was first domesticated, records so far indicate, in the Indus Valley civilization of India thousands of years ago. The cultivation of cotton and the technology of manufacturing cotton textiles (which in time would become the engine of European Industrial Revolution) eventually spread from India to the rest of the world, and Islam was highly instrumental in this diffusion. What did Europe export to the Islamic empire (specifically the Mediterranean region) in return for its imports, one may ask out of curiosity? According to Watt (1972), the principal exports comprised raw materials, such as timber and iron, and up to the eleventh-century, European slaves from the Slavic region. (About the latter export: following the conversion of the Slav peoples to Christianity in the eleventh-century, observes Watt, the enslavement of the Slavs soon petered out. Incidentally, this aspect of European history points to the etymology of the word *slave*.)

27. The use of the phrase "voyages of exploitation" instead of the more common "voyages of exploration," in this work should not be considered as an expression of gratuitous churlishness; rather it speaks to that popular misconception well described by Hallet (1995: 56): "It is commonly assumed that it was a passionate desire to expand the boundaries of knowledge or, more sharply defined, the rational curiosity of scientific research that formed the mainspring of the European movement of exploration. Undoubtedly such motives have inspired many individual explorers; but a review of the whole history of exploration reveals a process more complicated than is generally realized…. Three motives had led Europeans to venture into the unknown parts of the world: the search for wealth, the search for political advantage, the search for souls to save." An excellent example of how these factors were played out in practice is provided by Newitt's (1995) fascinating exegesis on the origins of the Portuguese voyages of exploitation down the coast of West Africa and finally on to the other side of the continent and therefrom into the Indian Ocean basin. Even the long cherished myth of Henry the Navigator as the heroic architect of the mission to the East and as "scientist and scholar of the Renaissance, the founder of the School of Navigation at Sagres," is laid to rest and in its place we are presented with the real "Henry the consummate politician" as a shrewd, powerful and wealthy man in fifteenth-century Portugal whose preoccupations were primarily with matters much more closer to home; such as the colonization of Morocco, piracy, and rent (levying taxes and dues on others involved in maritime profiteering activities in places like the Canaries and off the coast of West Africa). See also the riveting account by Bergeen

(2003) of the three-year harrowing odyssey (1519–22) of Magellan's fleet, Armada de Molucca (named, tellingly, after the Indonesian Spice Islands), as it circumnavigated the globe and the motivating forces behind it, including the powerful lure for the West of Eastern spices which, as in this case, literally propelled it to the "ends of the earth" despite unimaginable hardships. Moreover, as Appendix II will demonstrate, the veracity of his conclusion that "[I]n their lust for power, their fascination with sexuality, their religious fervor, and their often tragic ignorance and vulnerability, Magellan and his men," as with the other similar voyages, "epitomized a turning point in history," for, "[t]heir deeds and character, for better or worse, still resonate powerfully," is absolutely incontrovertible (p. 414). (Incidentally, Magellan was not the first to circumnavigate the planet—though perhaps he was the first European—the Chinese had already preceded him in that effort. See Menzies 2003.)

28. Taking Columbus's project specifically: that Islam is written all over it, directly and indirectly, is attested to, for instance, by the fact that only a few months prior to the departure of Columbus under the sponsorship of Spain, the Spanish crown, in what may be considered Europe's final crusade against the Muslims, had just defeated (on January 2) the last Muslim Spanish stronghold (the province of Granada). In bringing to an end the 700-year Muslim presence in Spain, the Spanish crown, after it had initially rejected Columbus's project on two different occasions as a hair brained scheme, now saw it in an entirely new light. The victory over the Muslims allowed the Spanish crown (specifically Queen Isabella) to dream of even grander possibilities of sidelining the Muslims (as well as Spain's other arch enemy, the Portuguese) in its quest for "Christian" glory, gold, spices, and perhaps even an empire that Columbus's project so coincidentally now promised. In fact, Columbus himself was present at the siege of Granada, and he was quick to bring to the queen's attention the larger import of the fall of Granada in the context of his project. As he would write in his log of the first voyage while addressing the Spanish monarchs (Ferdinand and Isabella): "Because, O most Christian, most elevated, most excellent, and most powerful princes, king and queen of the Spains and of the islands of the sea, our lords in this present year of 1492, after your highnesses had put an end to the war with the Muslims, who had been reigning in Europe, and finished the war in the great city of Granada, where on January 2 in this same year I saw the royal standards of your highnesses raised by force of arms atop the towers of the Alhambra, which is the fortress of that city, and I saw the Muslim king come out to the gates of the city.... your highnesses, as Catholic Christians and princes who love the holy Christian faith, exalters of it and enemies of the sect of Muhammad and of all idolatries and heresies, thought to send me, Christopher Columbus, to those aforementioned regions of India to see the princes, peoples, and lands, and their disposition and all the rest, and determine what method should be taken for their conversion to our holy faith.... So it was that, after having expelled all the Jews from your kingdoms and domains, in that same month of January, your highnesses commanded that I should go to the said regions of India with a suitable fleet" (from his journal—the *Repertorium Columbianum* edition, vol. 6 [ed. by Lardicci 1999], p. 37).

Then there is the matter of Columbus's monumental navigational blunder: Alioto (1987: 163) reminds one that even the chance "discovery" of the Americas by Columbus has its root in the mathematics of an Islamic scholar, Al-Farghani—albeit involving erroneous mathematical calculations on the part of this ninth-century astronomer. (In the Latin West, where his work, titled *The Elements,* on Ptolemaic astronomy had achieved considerable popularity, was known by the name of Alfraganus.) On the basis of these calculations, Columbus came to conclude that Cathay (China) lay only 2,500 miles due west of the Canary Islands! For good or ill, depending on whose interests one has in mind, how wrong he would turn out to be.

29. In a riveting exegesis, Benoit (1995) not only demonstrates the Islamic roots of Western mathematics, but also alerts one to a less well-known fact: it is primarily through the agency of commerce that Islamic mathematics in general was diffused to the West and it is in the environment of commerce that it first began to undergo innovation—greatly helped of course with the introduction of those seemingly mundane (as seen from the vantage point of today) artifacts of East-

ern origin: Indo-Arabic numerals and paper! This process especially got underway in Europe in the fourteenth-century as parts of it, notably the Italian city states like Florence, evolved on to the path of mercantile capitalism.

30. The importance of the development of European long-distance trade (and Islam's role in it) cannot be overemphasized. For, long-distance trade had the indirect outcome of accelerating a number of internally rooted, but incipient transformations in Europe, that in time would be of great import, including: its urbanization, the emergence of mercantile capitalism, and the disintegration of European feudalism (the last precipitating, in turn, the massive European diasporic movement to the Americas, and elsewhere, with all the other attendant consequences, including the monumental Columbian Exchange).

31. For more on Islam and the birth of Europe, see Davies (1996), and Roberts (1997). On the Crusades, excellent sources include: Hillenbrand (1999); Mastnek (2002); Payne (1984); Richard (1999 (1996); and the monumental six-volume work edited by Setton (1962–1989)—though of immediate relevance here from that work is Daniel (1989b).

32. The obsession among some Spanish historians with advocacy of the broad-as-daylight myth of non-Islamic origins of many aspects of modern Spanish culture—recall that Islam had a foothold in Spain for more than 700 years—is a case in point; see the superb critique of this chauvinistic historiography by Glick (1979). See also Iqbal (2002) for a summary of the Western European jingoistic movement that began some time toward the end of the seventeenth-century to denigrate the Islamic heritage in Western scientific learning, the legacy of which still fundamentally colors much of Western European thought vis-à-vis Islam to this day.

33. Here is a thought–experiment: Would the *Ancient Greece*—which, remember, was primarily based, in terms of early intellectual accomplishments, in Ionia (the present-day Turkish side of the Mediterranean); see, for example, Dorn (1991: 77)—that Westerners are so keen to call their own (without much protest from modern Greece—understandably, of course, given the context of the current international geopolitics) be so claimed today if Islam had not emerged to give rise to an unrelenting European jingoism? Would Greece not have remained what it really is: a Mediterranean, and therefore Eastern (but most certainly not Western) geographic and cultural entity? In fact, it should also be pointed out, that the Ancient Greeks themselves saw Ionia as part of Asia. Herodotus, that great historian and traveler, for example, went even further in that he did not see Europe as independent of Asia, but as an extension of it.

34. In discussing origins, one is not even taking into consideration here that whole other matter: the Afro-Asian roots—a la Bernal—of the foundations of the premodern Western civilization: the Greek civilization itself, discussed earlier.

35. Von Grunebaum is a perfect example of that unadulterated Eurocentrism still rampant today through out the West which even in the face of awe-inspiring counter evidence is unable to forsake the racist desire to deny credit where its due simply because it is not of the Occident. Vide: in the very same breath as he states that except for Averroism Islam has made no long-lasting contribution to the development of the Occident, he goes on to say: "There is hardly an area of human experience where Islam has not enriched the Western tradition. Foods and drinks, drugs and medicaments, armor and heraldry, industrial, commercial and maritime techniques, and again artistic tastes and motives, not to speak of the many terms of astronomy or mathematics—a list indicative of the full measure of the Islamic contribution would take up many a page without being even remotely complete." His laudation doesn't stop here: "The very existence of the Muslim world has done much to mold European history and European civilization.... Muslim narrative and poetical imagery, Muslim eschatology and the boldness of Muslim mysticism, all have left their traces on the medieval West. The greatest theologian[s] and the greatest poet[s] of the European Middle Ages are deeply indebted to Islam for inspiration as well as material" (p. 342). (He gives the examples of Thomas Aquinas and Dante.) Yet on the very same page, he has the temerity to insist that "never did original Muslim thought influence Western thought so as to remain a live force over a prolonged period of time completely integrated and indispensable to its further growth."

(See also the discussion in Chapter 2 on the matter of civilizational influences.) Or consider his observation on the very next page: "Mastery of nature, public morality, and the condition of the common man have been suggested as measures of backwardness or the achievement of a civilization. It does not require elaborate demonstration that, by these standards, the Islamic world has but a small contribution to make."

36. Consider, for example, the long line of Western science historians who have grappled with the issue of the origins of Europe's scientific revolution and who feature in Cohen's overview of their work (1994) but yet almost none of them deigned to even nod at the precursory presence of Islamic science.

37. Of course, the adoption of *civilization* as a unit of analysis presents its own set of problems given that it is more a historian's imaginary construct than a construct of reality. This entire chapter, in a sense, stands in complete opposition to a historiography that relies on encapsulating human experiences into normatively hierarchical, discrete, time, and spatially bounded categories labeled civilizations. Hodgson (1974: 31) alludes to the difficulties when he questions the delimitations of boundaries in the "Afro-Eurasian Oikoumene." As he observes, "it has been effectively argued on the basis of cultural techniques and resources to be found there, that all the lands from Gaul to Iran, from at least ancient classical times onward, have formed a single cultural world." "But," he argues, "the same sort of arguments would lead us on to perceive a still wider Indo-Mediterranean unity, or even (in lesser degree) the unity of the whole Afro-Eurasian citied zone." To decisively drive home the point: the myth of civilization becomes readily apparent when one turns one's gaze to the present and pose the question—regardless of one's geographic place of abode in this age of "globalization"—What civilization are we living in today? A world civilization, perhaps? (See also Wigen and Martin 1997.)

38. Consider what Hodgson says in volume 1 of his work on the matter of the geographic peripherality of Western Europe: "[T]he artificial elevation of the European peninsula to the status of a continent, equal in dignity to the rest of Eurasia combined, serves to reinforce the natural notion shared by Europeans and their overseas descendents, that they have formed at least half of the main theater (Eurasia) of world history, and, of course, the more significant half. Only on the basis of such categorization has it been possible to maintain for so long among Westerners the illusion that the 'mainstream' of world history ran through Europe" (p. 49).

39. For an antidote to this shallow type of history and in support of the foregoing thesis, see also: Amin (1989); Abu-Lughod (1989); Berman (1989); Bernal (1987, 1991, and 2001); Blaut (1992, 1993, and 2000); de Libera (2001); Frank (1998); Hodgson (1993); Needham, et al. (1954–to present); Pomeranz (2000).

Appendix II

The Historical Antecedents of the - Disjuncture Between Premodern and Modern African Higher Education

This appendix is sanctioned by the underlying logic of these facts: in 1798, Napoleon Bonaparte's Army would retrace the arrival in Egypt over 1,000 years before, in 639 C.E., of another army, that of the Muslims under the command of Amr ibn al-'As. Although Napoleon's stay in Egypt was brief, thanks to the British, in echoing 639 C.E., he would inaugurate, for good or ill, an entirely new historical trajectory for not only North Africa, but the entire African continent. Yet, however "natural" to Westerners 1798 may be from the perspective of today, the irony is that without 639 C.E. it would never ever have come about. How so? The seeds of 1798 were sown in 1492, but the seeds of 1492, in turn (as the preceding chapter has shown), were planted in 639 C.E.—since it is from North Africa that Islam would enter Europe. Now to elaborate by first drawing the relevance of these events to the subject matter of this work:

In surveying higher education institutions in Africa (in Chapter 2) that existed prior to the advent of the West precipitates this unavoidable question: Why were these institutions, in time, either completely replaced or eclipsed by those imported from the West? Leading Ashby (1966: 147) to observe about these new institutions that they, to quote him once more, "owe[d] nothing to [the] ancient tradition of scholarship" because, he states, "[t]he modern universities of Africa have their roots not in any indigenous system of education, but in a system brought from the West." A quick and simple answer is, obviously, the arrival of European colonialism. Yet, this response raises an even more fundamental question: Why did Africa (and many other parts of the world as well, of course) become prey to European colonialism in the first place? For many this question is tantamount to asking a vacuous question, in the order of "Why do birds fly?" However, the question is far from inane because its importance stems not only from the need to move away from the Eurocentric notion of the natural inevitability of European hegemonic dominance across the planet, which appears to pervade most Western histories of

those they colonized, but from the perspective of a history of higher education in Africa specifically, it emerges out of consideration of the implications of the two dates just mentioned (639 C.E. and 1798 C.E.), which are of particular relevance to that part of Africa that boasted the largest number of precolonial higher education institutions: Islamic Africa.[1] For, these two dates are parenthetical points of African history that enclose an interregnum of about 1,000 years within which a powerful Afro-Asian civilization (Islamic) becomes eclipsed and is *effectively* marginalized by an even more powerful civilization (Western) in North Africa (and elsewhere too). To the astute, this historical development would serve as yet one more confirmation of that profoundly humbling fact: that all civilizations are impermanent; however, that is not the issue that is of immediate concern here.

The problem presented here is different; it has been raised by many of course, albeit in different contexts. Hodgson (1974), for example, raises it in volume 3 of his brilliant *magnum opus*. Phrasing the rise of Europe in the typical Hodgsonian vocabulary as the "Great Western Transmutation" (of which the renaissance was an antecedent), and the consequence of which was "that by about 1800 the Occidental peoples (together with the Russians) found themselves in a position to dominate the lands of Islamdom" (p. 177), the question he asks is, How did this transmutation come about in the first place? For, as he further explains, "[i]t was not merely, or perhaps even primarily, that the Europeans and their overseas settlers found themselves in a position to defeat militarily any powers they came in contact with," but it was far more profound than that because "both occupied ('colonial or settled') areas and unoccupied ('independent') areas were fairly rapidly caught up in a worldwide political and commercial system, the rules of which were made by, and for the advantage of, the Europeans and their overseas settlers." What is more, he explains, "[e]ven 'independent' areas could retain their local autonomy only to the extent that they provided European merchants, European missionaries, even European tourists, with a certain minimum of that type of international law and order to which they had become accustomed in Europe, so that the Europeans remained free to vaunt a privileged position and to display among all peoples the unexampled new physical and intellectual luxuries of Europe."

Hodgson's response to his own rhetorical question is that it was an outcome of what he calls the saturation of all levels of society (economic, technological, intellectual, scientific, artistic, administrative, agricultural, educational, etc.) with the spirit of what he terms as "technicalism," (defined by him as large-scale and permanent "improvement in technical methods of achieving concrete, material ends by way of multiple, interdependent specialization," p. 183)—symptomatic of which were such developments as the ubiquitous rise of capitalism and capital accumulation, the agricultural transformation, the industrial transformation, the replacement of monarchical dictatorships with democracies, modernization, and so on.[2] Given that there was a time when in the "Afro-Eurasian ecumene" (his term—though he uses the Greek etymological spelling: "oikoumene") when the Occident lagged far behind the East from almost all perspectives, Why is it that it is the Occident and not the East that experienced this rise of technicalism?

In this age of overspecialization there is a temptation to come up with a simplistic, single variable explanation—especially of such ethnocentric variety as: the genetically inherent genius of the Western European mind, or the rise of the Weberian Protestant Ethic, or the inherent tendency toward decay and degeneracy in Afro-Asian civilizations, and so on.[3] As is being implied here, Eurocentrism is an excellent example of this

ethnocentrism. The Eurocentric mythology regarding the rise of Western global hegemony rests on two pillars. First, as was indicated in Chapter 2, that whatever contributions arrived in Europe from elsewhere (be it in the form of scientific ideas, or technology or capital accumulation, etc.) were irrelevant to the rise of Europe because they were of inconsequential magnitude. Second, that the Europeans, being blessed by God (or nature), were always destined for great things because of their inherent intellectual and/or environmental superiority. In other words: the Eurocentric version of history posits the following scenario as valid: imagine that the planet had only comprised the European peninsula populated only by Europeans; the Europe of today (in terms of modernity) would still have emerged, because modernity is an entirely autarkic European invention. This version of history is only possible by means of a mythic construction of a highly distorted and abbreviated European history: "a progression," in the words of Amin (1989: 90–91), "from Ancient Greece to Rome to feudal Christian Europe to capitalist Europe."[4] Observe that it is a myth, as Blaut (1993: 59) reminds us, in both senses of the word: a patent untruth and as a widely accepted false belief by a culture regarding the history of its own genesis.[5]

While openly racist views such as those expressed by Western intellectual luminaries of the caliber of a Hegel or a Marx or a Weber or a Piaget are no longer as common as they once were in the era when they were writing, one is still stunned by the fact that these views continue to reappear from time to time, even today, in their unadorned form—but yet all the while pretending to be serious scholarship.[6] Take the example of the Australian academic Eric L. Jones, an unrepentant Eurocentrist if there ever was one, who insists that Europe was always destined for civilizational greatness because, on one hand, despotism, corruption, senseless breeding, irrationality, exploitation, and so on, were not among its vices, while on the other it was endowed with a political and economic-friendly ecological environment. Gushing about the latter, he states: "Europe possessed such special features of site, location, and resource endowment that we are bound to try to grasp the nettle of environmental explanation" (p. 226). In fact, the title of the book itself is telling: *The European Miracle*. That is, it is nothing less than an unashamed celebration of the mythology of Western exceptionalism. If Jones's work deserves any attention at all then it is only because it has been published by no less than Cambridge University Press (a fairly prestigious university press). Plus, it has gained enough popularity among a sufficient number of Western academics as to have merited a second and a third edition (2003)—with a number of reprints thrown in between—a fact that in itself speaks volumes for the Eurocentric prejudices that continue to mesmerize many Western scholars.

It ought to be noted too that those who may have detected a mea culpa (of sorts) in his semi-apologetic book that came out after the first edition (Jones 1988), may be surprised (or perhaps not) to see that in this latest edition (which, except for the introduction and the afterword, remains completely unchanged), he blithely continues to reiterate his Eurocentric convictions by arguing that none of his critics have convincingly challenged them. Under the circumstances, it is not surprising that this singularly panegyric and inadequately referenced work, based in part on suspect pro-imperialist sources (as one would expect)—written in the spirit of "I was born and brought up an Englishman," as he puts it in his 1988 book (p. 184)—makes a mockery of true scholarship. Constructed on a shameless foundation of hubris, it is replete with such hoary and long discredited drivel as this:

- Europeans from ancient times have been "peculiarly inventive" because "ceaseless tinkering is a defining characteristic of [their] culture" (pp. 227, 62).
- "European society always contained a number of individuals whose creative talents were directed to improving the means of production. The supply of their talents was inelastic with respect to material reward: it was their hobby or obsession" (p. 228).
- Asian males, unlike their European counterparts, have historically preferred sex to material goods; as he puts it, "seemingly, copulation was preferred above commodities" (p. 15). In other words, "Europe did not spend the gifts of its environment 'as rapidly as it got them in a mere insensate multiplication of the common life.'" This, Jones argues, "sums up the quality of Europeanness" (p. 3).
- Unlike European rulers, Asian rulers were too despotic to allow political and economic progress: "Emperors were surrounded by sycophants. They possessed multiple wives, concubines, and harems of young women, a phenomenon that may have been less the perquisite of wealth and power than the assertion of dominance relationships, the propensity to use people as objects…. Great attention was paid to submission symbols, kneeling, prostration, the kowtow, in recognition of the emperor's personal dominance" (p. 109).
- "Despite great creative surges in times when Europe had still been primitive, despotic Asian institutions suppressed creativity or diverted it into producing voluptuous luxuries. Palace revolutions were all their internal politics seemed to offer" (p. 231).
- Africans were too technologically primitive to achieve anything civilizationally worthy as is attested by their animal-like closeness with nature. To quote him: "In Africa man adapted himself to nature. The hunter felt part of the ecosystem, not outside of it looking in with wonder, and definitely not above it and superior.... The most evocative symbol of this ecological oneness may be the honeyguides (*Indicator* spp), birds commensal with man. They fly, chattering loudly, ahead of bands of hunters, leading them a quarter of a mile or more to the tree hives of wild bees and feeding on the wax after the men have broken open the hives and taken the honey" (p. 154).
- The African environment was simply not conducive to progress: "The defects of the environment did indeed strike so close to the heart of economic life that it is not clear what indigenous developments were possible. All told, there was no development of the African economy to set alongside that of Europe in the Middle Ages and later" (p. 156).
- A common denominator of "oriental philosophies" has been "the emphasis on emotions, values, and cosmologies and the relative absence of the empirical enquiry and criticism of the Graeco-Judaeo-Christian tradition" (note, though, that he ends his sentence with one of the many contradictions that suffuses his entire work "though this Western tradition is in fact partly of Arab origin" (p. 161).

One could go on ad nauseam. Moreover, it is not just simply the crass and essentially racist value judgments that laces Jones's entire polemical work, but his patent disregard for historical facts that would put even a first-year undergraduate to shame that leaves one wondering how the manuscript made it past the editors in the first place. Take, for instance, his assertion that trade in Asia was primitive with no potential for economic growth because he thinks it comprised only "luxuries... [such as] "miscellaneous garnerings of the natural world from kingfisher feathers through precious stones to drugs no modern pharmacopoeia would own" "Many of these items," he further asserts, "were little more than biological junk and the growth potential of such a trade was slim." So, now, that explains why people like Columbus, Dias, Vasco da Gama, and other Europeans were rushing to the East (or tried to do so) the moment they learned how to cross the oceans—it was to get junk! The level of ignorance he betrays through such statements is indeed stupendous.[7]

Anyhow, to move on: while the economic and social transformations of the sixteenth, seventeenth, and eighteenth centuries that preceded the rise of European *technicalism* are familiar to even schoolchildren (such as: the bourgeois revolutions toward the end of the sixteenth-century—of which the 1688 Glorious Revolution in England is an epitome—that allowed the ascendant mercantile and protocapitalist classes to seize effective state power from the traditional monarchal-led landed aristocracies; the bourgeois engineered erosion of the feudal order; and toward the end of the eighteenth-century the industrial transformation itself), Eurocentric historians fail to explain *why* some of these developments occurred in Europe *decisively* and not elsewhere *in a like manner*, other than to fall back on that hoary Western canon of European exceptionalism.[8]

Yet, the fundamental truth is this: that if one were to cast one's historical gaze back to the eighth-century when the Muslims arrived in Europe one has no difficulty whatsoever in categorically stating that there was nothing that one could read in the entrails of Europe then—comparatively backward as it was in almost all ways—that pointed to anything that could predict its eventual rise to global hegemony. What is more, even after fast forwarding 700 years, to arrive in the fifteenth-century, a different reading would still not have been forthcoming. In other words, dear reader, after you have ploughed through Appendix I there should be no difficulty in accepting the fact that at the point in time when Columbus left Europe in what would eventually prove to be a portentous journey for the entire planet, the cultures of many developing *parts* of the Afro-Eurasian ecumene outside the European peninsula were *no less* rational, achievement-oriented, materialistic, predatory, belligerent, ambitious, scientific, capitalistic, technologically innovative, urbanized, capable of ocean navigation, and so on, than were the cultures of developing *parts* of Europe of the period (nor should it be difficult to accept that the opposites of these qualities, for that matter, existed at comparable levels of magnitude in both areas of the world).[9] In fact, on the contrary, in some respects they were more advanced than those of Europe.

Now, of course, it is true that when one considers where Europe was some 700 years earlier (at the time of the Islamic invasion), the rapidity of the European cultural advance is nothing short of miraculous! No, this is not in the least a hint, even remotely, of the much-vaunted "European miracle." Because, remember, this progress, as was shown in Appendix I, was not achieved by the Europeans independently; they did not do it alone (on the basis of their own intellectual uniqueness, inventiveness, rationality, etc.) that the Eurocentrists are so fond of arguing. Rather, it was an outcome of nothing less than a *dialectical* interplay between European cultures and the Islamic and other cultures of the Afro-Eurasian ecumene. Hodgson, for instance, is adamant that one must cast ones historiographical gaze across the history of the *entire* ecumene, for, as he explains, "most of the more immediately formative elements that led to the Transmutation, both material and moral, had come to the Occident, earlier or later, from other regions," (p. 197). In other words, as he puts it: "[w]ithout the cumulative history of the whole of Afro-Eurasian ecumene, of which the Occident had been an integral part, the Western Transmutation would be almost unthinkable" (p. 198). Or in the words of Frank (1998: 4): "Europe did not pull itself up by its own economic bootstraps, and certainly not thanks to any kind of European exceptionalism of rationality, institutions, entrepreneurship, technology, geniality, in a word—of race."

Yet, one is still not closer to an answer—other than to accept as axiomatic (unless one continues to insist on being a pseudo-historian) the fact that the elucidation of any

such major transmutation of global import that took *centuries in the making in a small corner of the world that had never known isolation in most (if not all) of its entire history,* must rest on a multivariate transgeographic explanation. Ergo, taking the cue from Hodgson, and building on his work (recall that his work appeared three decades ago and much research has been done in this area since then), the tentative answer—and that, whether one likes it or not, is all that it can ever be, given the magnitude and complexity of the phenomenon at hand—is this: that it was a *conjuncture of fortuitously propitious historical factors* (see Chapter 1 for an explanation of this concept)—analogous in mechanism to that which accompanied, say, the demise of the Greek civilization and the ascendance of the Roman, or the demise of the Roman Empire and the ascendance of the Islamic. Now, a detailed exegesis of these factors will take one much too far from the subject at hand (higher education in Arabic Africa), therefore one must do with the briefest delineation of the broadest parameters: of which the inadvertent arrival by Columbus in the Americas will hold pride of place in the account that will now be unfolded.[10]

Before going further, however, it is necessary to confront a related problem that if not dealt with right away will threaten the cogency of what follows. It is a problem on which much ink has been expended by many scholars and it arises out of the history of science. It will be recalled from the discussion on the provenance of the modern university (in the preceding Appendix) that in the period immediately preceding the early modern era—namely, during the medieval era—the most advanced civilization in scientific (and other) terms was the Islamic civilization. Yet, by the seventeenth-century it is very clear that Europe had taken over, in unmistakably decisive terms, from Islam, the baton of scientific advancement. For the most part it would be true to say, without much exaggeration, that by this point Islam had no counterparts to such leading lights of Western scientific achievement as Copernicus, Brahe, Kepler, Galileo, and Newton (much in the same way that in the preceding centuries, going as far back as the eighth-century, Europe had no counterparts to such luminaries of Islamic scientific achievement as al-Khwarazmi, Ibn al-Haitham, Ibn Sina, al Biruni, Ibn Rushd, and Nasir al-Din al-Tusi). The question that appears to logically ensue in the minds of historians of science is this: Why? Why this reversal? What is more, the seeming profoundness of the question is highlighted by the fact that, as shown in that same discussion, not only was one dealing with "science in the real sense of the word," and not "protoscience" to quote the *Dictionary of the Middle Ages* (vol. 11, p. 88), but also because the Muslims and the Europeans were both albeit at different points in time, inheritors of the same Hellenic scientific tradition. Underlying this question, of course, which is why it is being raised here, is the corollary assumption (albeit a false one as will be shown by this appendix) that modernity—especially as symbolized by the industrial transformation—bypassed the Islamic world *because of the deceleration of its scientific achievement*.

The history of the historiographical treatment of this question is summarized by Cohen (1994), Huff (1993), and Iqbal (2002), among others (as a prelude to their own attempts to grapple with the same question. However, one need not be detained here by the specifics of the answers to this grand question *a la* Needham (recall that he had raised a similar question in respect to Chinese science [Needham 1954: 4])—they range widely, albeit almost all undergirded by Eurocentrism, depending upon who is providing the answer: from the tyrannical and corrupt nature of the Ottoman Empire to the knowledge ceilings imposed by Islamic theocracy; from the racial inferiority of the Arabs to the retrogressive character of Eastern feudalism; from lack of institutionalization

of scientific research to obstacles placed by theological orthodoxy; from arrogance characteristic of a once advanced civilization to legalistic impediments; and so on—*nor should one be concerned with their validity*. Rather, what is necessary to point out is that the very question itself is illegitimate because it rests on two assumptions that are both patently false: one, that Western hegemonic domination of the world that commenced at the beginning of the nineteenth-century was rooted in science and technology; and two that scientific and/or technological progress exists independently of the social and material conditions of society. The veracity of the foregoing point will become obvious as one moves on with the discussion.

THE COLUMBIAN FACTOR

Writing a little over 200 years ago—specifically in the same year that the new nation of United States of America declared its independence from the British crown over the question of the status of Native Americans and their lands that had been precipitated by the Royal Proclamation of 1763—the Scottish economist, Adam Smith, would observe in his now classic manifesto of capitalism, *The Wealth of Nations*: "The discovery of America, and that of a passage to the East Indies by the Cape of Good Hope, are the two greatest and most important events recorded in the history of mankind. Their consequences have already been very great: but in the short period of between two and three centuries that has elapsed since these discoveries were made, it is impossible that the whole extent of their consequences can have been seen. What benefits, or what misfortunes to mankind may hereafter result from those great events, no human wisdom can foresee."

Yet, in the next breath Smith would further note: "To the natives, however, both of the East and West Indies, all the commercial benefits which can have resulted from those events have been sunk and lost in the dreadful misfortunes which they have occasioned…. At the particular time when these discoveries were made, the superiority of force happened to be so great on the side of the Europeans, that they were enabled to commit with impunity every sort of injustice in those remote countries." Smith, an eternal optimist, however, would further write: "Hereafter, perhaps, the natives of those countries may grow stronger, or those of Europe may grow weaker, and the inhabitants of all the different quarters of the world may arrive at that equality of courage and force which, by inspiring mutual fear, can alone overawe the injustice of independent nations into some sort of respect for the rights of one another" (1961 [1776], Vol. 2: 141).

As we look back over the past 200 years since he made these observations we now know what happened: the equality of nations never did materialize. On the contrary, those events, most specifically the first, that of 1492 (without which the second event would have been almost meaningless), set in motion forces that would lead to the decisive movement of the loci of capitalism from the eastern end of the Afro-Eurasian ecumene to the western end, the European peninsula, as a result of the simultaneous quickening of the pace of capitalist development within Western Europe, and the European undermining of capitalism elsewhere in the ecumene. We still continue to live today with the fallout from this development that 1492 brought about (and which for want of a better term may be labeled the *Columbian factor*. Lest, however, one may be accused here of a touch of melodrama in portraying the historical significance of 1492 thusly

(and note that it is a significance that understandably receives scant attention from Eurocentrists), it is necessary to elaborate on this matter further.

"In 1492, Columbus sailed the ocean blue." While almost all Westerners learn this fact as schoolchildren, few of them today (that includes academics) are even remotely conscious of how significant that year is from the perspective of the historical trajectory followed by Europe vis-à-vis the rest of the world.[11] For, contrary to established Western historical canon on the subject, prior to this event there was nothing in the historical antecedents of Europe that spoke to the *certainty* of the emergence of Hodgson's technicalism and the consequent Western global hegemony that was to follow, especially in the centuries after 1800. After all, one need not be reminded here that the Columbian project (the quest for an Atlantic sea route to the East) was itself born in a crucible of historical events in which Islam and the East had no small part to play—as was indicated in the preceding appendix.[12]

Now, it is not the Columbian project *in of itself*, however, that is of importance in explaining the rise of Western global hegemony in the nineteenth-century, but rather it is that conjuncture of fortuitously propitious historical factors—both contingent factors (in the sense of being outside human agency) and conjunctural (of human agency, but not in itself purposive)—and of which the Columbian project was a part that is of signal importance. After all, recall that during the reign of emperor Yong-Le (see blow) the Chinese had already visited the America's decades before in what were truly "voyages of *exploration"* that included the circumnavigation of the planet years before even Magellan undertook his.[13] What are these factors, then, that together help to elevate the Columbian project to a special pride of place in any credible account of the rise of Europe? Going by Blaut (1993 and 2000), Frank (1998), and Pomeranz (2000), among others, the following are the most salient: [14]

First, was the bi-dimensional issue of geography. To explain, it is not uncommon for many among the Western media these days to refer to the Atlantic as "the pond" in that typical proprietary flourish so characteristic of Westerners (as if the Atlantic does not belong to Africans as well—compare also with the use of the term America [itself a misnomer since Columbia should have been the preferred name, if one insists on a European appellation] to refer only to the United States). Leaving aside the arrogance that belies such language, the use of the term pond is not entirely without basis in geography in that if one were to compare distances between the Americas and Asia (India, China, etc.) with those between Europe and the Americas the Atlantic does become a pond. To get to the point, it is the geographic proximity of the Americas to Europe that gave it a commercial advantage that would far surpass anything that others in the Afro-Eurasian ecumene had ever enjoyed hitherto in their thousands of years of commercial relations with each other—dating back to the time of the Egyptian (and perhaps even Babylonian) civilizations—and which, as mentioned in the preceding appendix, also included long-distance, cross-ocean voyaging (albeit restricted to the Mediterranean and Indian Ocean basins). Yes, of course, the Chinese were not unfamiliar with the Americas, having ventured upon it before Columbus, but regular relations with the Americas across the vast oceanic distances was a different proposition altogether!

The other dimension of geography has to do with the maritime technology of the period that everyone in the Afro-Eurasian ecumene shared: namely, its reliance on wind power. The winds were not favorable for any one attempting to sail to the Euro-American ecumene from the Indian Ocean region, whereas the chance arrival by Italian and Iberian sailors in the Atlantic archipelago (the Canaries, the Madeiras, and the

Azores) in the thirteenth and fourteenth centuries—which they would later colonize—allowed Columbus to have access to knowledge of the existence of the circular Atlantic trade winds. Without these winds Columbus and other Europeans who followed him would never have made it to the Euro-American ecumene.[15] While it is true that Columbus was an "accident" (not only because he had originally not set out to look for the Americas, but also because of the mutiny on his ships—which if it had succeeded would have scuttled the project), the key point here is that it was an accident *waiting to happen*, given the geographic proximity of the Americas to Europe.[16] The lure of the East was of such duration and intensity, especially in the Western Mediterranean littoral, that if not Columbus, then some other maritime entrepreneur from Europe would have stumbled across the Americas sooner or later (recall John Cabot's project, for instance).[17]

But what about the Africans, specifically West Africans? After all, they also had access to the pond too, and therefore were also geographically close to the Americas (remember that Columbus's launching pad for his trip to the Americas were the Canary Islands off the coast of West Africa). The potential was never realized by them because any one with knowledge of even a modicum of African history knows that the commercial interests of the West Africans, as Blaut (1993) points out, had historically always flowed in the opposite direction, toward the hinterland and beyond, to the northeast, because their trade was tied in with the trade of the Mediterranean and Asia (traversing of course a different type of ocean, the ocean of sand).

The celebration of Columbus Day every year in the United States (and this brings us to the second contingent factor) is a Eurocentrist celebration par excellence. Why? Because for the original citizens of the Euro-American ecumene, the Native Americans, Columbus Day is in reality nothing more than a celebration of the subjection of their peoples to biological weapons of mass destruction (diseases) that were responsible for very quickly laying their people and their civilizations prostrate before the first European colonizers. It is true that the Europeans had superior military technology (though, initially, they only had a slight edge over the Native Americans given the state of medieval armament technology in Europe at that time) to assist them in their first steps of predation, but recall that the Native Americans were numerous enough and organized enough to resist this predation—had it not been for the diseases of the Afro-Eurasian ecumene (e.g., small pox, measles, cholera, typhoid, etc.), to which they had no immunity, that the Europeans brought with them (albeit inadvertently). One will never know exactly what the population numbers of the Native Americans were when the Europeans first arrived on their doorstep, but one horrible fact is incontrovertible: within a space of a mere 100 years, millions upon millions were wiped out by the diseases (as well as, a little later, enslavement)—so much so, that some ethnic groups were completely erased from the face of the earth. In other words, then, it was the lack of immunity among Native Americans to the diseases that the Europeans brought with them that allowed Europe to colonize the Americas *as rapidly and as completely* as it did.[18]

The third contingent factor was climate. Most of the Euro-American ecumene has tropical and subtropical climate. Imagine, however, if the climate of the entire ecumene had been identical to that of North America, north of the Canadian border. It is very doubtful that the commercial advantages that accrued to the Europeans (relative to others in the Afro-Asian ecumene) would have been sufficiently large to permit the Europeans to forge ahead of the rest. In other words, it is climate that allowed the establishment of plantation agriculture where commodities like sugar (and later tobacco and cotton) would have far-reaching economic implications for Europe.

The fourth contingent factor was the presence of critically important minerals, beginning with precious metals (and then, as European economic development progressed in subsequent centuries, to include oil, bauxite, etc.). Had the landmass of the Euro-American ecumene been bereft of these minerals—especially precious metals—it is unlikely that 1492 would have played as critical a role in the hegemonic development of Europe as it did, as will be shown in a moment.

In addition to these factors, there were also a number of highly significant *conjunctural* factors; those that are particularly worthy of mention are these five: One, was the decision by the Chinese some time early in the fourteenth-century to adopt silver as the basis for their currency. Two, was the defeat of the Muslims during the First Crusade that allowed the Latins access to the technology of sugar production.[19] Three, was the overarching predatory Christian worldview that Columbus, and others who came after him, carried with them from Europe as they set out on their oceanic voyages in the fifteenth-century, and onward. Given the immense political and economic importance of this Christian ideological worldview in shaping those initial encounters between the Europeans and the original citizens of the Euro-American ecumene in which not only the entire ecumene, lock, stock, and barrel was completely and permanently hijacked for the exclusive economic benefit of Europe, but that the magnitude of this benefit was directly proportional to the depth of the predation (the brutalization and extermination of the Native Americans, the enslavement of the Africans, the looting of their natural resources, the wholesale and permanent alienation of their lands by settlers, etc.), necessitates a somewhat lengthy exegesis into the genesis of this worldview.[20] The conclusion to this appendix has been assigned this task.

A fourth conjunctural factor was the arrival in Europe of gunpowder and guns from the East through the agency of either the Muslims or the Mongols or both.[21] While Blaut (1993) is correct in noting that one cannot ascribe too much historical importance to the relative superiority of any side's military technology among adversaries because it does not take long for one side to acquire it (by hook or by crook) from the other side as well, in the specific context of 1492, however, the superior military technology of the Europeans was decisive in their *first encounters* with the Native Americans. Why? Because it allowed the Europeans to establish the initial beachhead to permit other forces (such as diseases) to takeover. A similar example emerges from considering the earliest Portuguese forays into the Indian Ocean basin on the heels of the rounding of the Cape by Bartolomeu Diaz in 1488. Without their cannons they could not have established commercial dominance *so quickly* given that in those first ensuing commercial encounters they had little to offer to the Asians by way of commodities; the gold and silver would come some decades later.[22]

The matter of superior military technology becomes even more significant, of course, in the later periods of European colonization of the world. Take the example of Africa in the nineteenth-century: by this time European military technology had advanced so greatly under the aegis of the industrial transformations, that it was clearly beyond anything that the Africans could have brought out into the battlefield—ergo, the fate of the Africans was sealed.[23] Obviously, it wasn't just the Africans who were made to taste the power of the rapidly evolving military technology in Europe, as Messrs Archer, Ferris, Herwig, and Travers (2002), for example, document in their chapter "The West Conquers the World." Taking a leaf from Blaut (1993), however, a cautionary note must be sounded before one is tempted to mindlessly run with this factor to the exclusion of all others (remember, it is a conjunctural factor—meaning it is required, but it is

not sufficient by itself). Therefore, Archer and his colleagues' observation, while certainly true that "[b]etween 1757 and 1914 the West took over the world…. British conquered India, Russians campaigned to Istanbul, European armies dominated east Asia and seized southeast Asia, central Asia, and almost all of Africa, and the United States and Canada annexed North America" (pp. 440, 448), their account of how this happened must be taken with a large dose of salt.[24]

In 1368, a mendicant Buddhist monk of peasant origin, by the name of Hong-wu, would establish what historians now refer to as the Ming dynasty—and this brings us to the fifth conjunctural factor.[25] Of particular interest here is the third emperor in this dynasty, Yong-Le. He would undertake a number of major economic and political projects during his reign; among them a revival of the imperial tradition of Genghis Khan's famous grandson Kublai Khan (the ruler of the entire Mongol Empire, including China, whose unification was one of his major accomplishments) to project China's power beyond its borders, even into the Indian Ocean basin—recall, for instance, Kublai Khan's ill-fated attempts to invade Japan; and twice no less, in 1274 and 1281. The most well-known of these efforts to date with respect to the Indian Ocean region was the dispatch of huge Chinese fleets under the command of Cheng Ho, the Chinese Muslim general, to show the Chinese flag to the various potentates and in the process institute among them at least a nominal form of vassalage.

Given the might of the Chinese naval power that these expeditions placed on display (although outright military aggression was never on their agenda—since deference rather than territorial conquest appeared to be their chief goal—they were, as Finlay 1995 reminds us, "armed to the teeth"), almost all the territories and kingdoms that Cheng Ho visited (over a total of seven expeditions were undertaken: in 1405, 1407, 1408, 1413, 1416, 1421, and 1431) agreed to send envoys to China with tribute; even Japan fell into line for a while. At the same time, these expeditions also undertook to suppress piracy, which China viewed as an affront to the orderly business of securing and maintaining its overlordship. By the time of the penultimate Ming expedition to India in 1417 and the last to East Africa and the Persian Gulf in 1431 (see Chang 1995, for details of these expeditions), it was clear to everyone within the entire Indian Ocean region as to who indeed was the naval superpower. If there were any doubts in this regard, then a fleet on one's doorstep of about 300 ships (some equipped with bombards and the largest of the ships could boast 3000-tons capacity), with some 28,000 heavily armed men, had miraculous powers of concentrating the mind.[26] (See Finlay [1995] on details of how some recalcitrants were put in their place.)

Now, what is of capital significance for our purposes of all this is that with the death of Yong-Le in 1424, the Ming dynasty withdrew itself from the Indian Ocean (it would authorize only one more expedition, the one in 1431) for a number of reasons—but all internal to Chinese politics. The implications of this major historical turn of events from the perspective of the European foray into the Indian Ocean, inaugurated by the Portuguese more than three decades later, should be self-evident; however, if one is still uncertain it is well described by Finlay: "A precondition for da Gama's voyage marking an epochal turning-point was the prior retreat of the Chinese navy from the Indian Ocean, an unwitting withdrawal from a contest for world dominion." With some exaggeration he goes on to say: "[m]uch of world history may be said to revolve around this Chinese retreat; and Western advance" (p. 96). Still, to some extent he is correct; for, this fact is incontestable: that insofar as the eventual European domination of Indian Ocean commerce was *among* the critically instrumental factors in the rise of Europe, then surely

the Chinese did a great service to the rise of global European imperialism; for, one cannot envisage the Portuguese maritime swagger (punctuated as it was with military aggression and gratuitous barbaric cruelty) in the Indian Ocean had the Chinese been around when they first arrived.[27]

Even while placing before you this set of contingent and conjunctural factors, it ought to be firmly stressed here that to say that without the colonization and settlement of the Euro-American ecumene, Europe would not have achieved the kind of economic progress that eventually underwrote its post–*1800* global hegemony is not in any sense whatsoever to belittle the significance of whatever major economic, political and social transformations that were going on in Europe prior to 1492. *One must be absolutely and resolutely emphatic about this point*. Rather, the argument here is that relative to other areas in the Afro-Eurasian ecumene, there was nothing going on in Europe (Western Europe, to be precise) prior to 1800, *that was so unique* that the triumph of European industrial capitalism was preordained as Eurocentrists are so fond of arguing. In fact, as Pomeranz (2000) and others have pointed out, in many sectors, other societies in the ecumene were ahead of Europe (e.g., in agronomy, land management, irrigation, textiles, ceramics, iron and steel, medicine, ship-building, etc.) even as late as the onset of the industrial transformation'.

As he explains regarding agriculture, for instance: "[t]ake away the enormous amounts of extra land that Europe gained across the Atlantic (through luck, smallpox, and violence, as well as navigational and commercial skills) and it is easy to imagine Europe's marked technological backwardness in the largest sector of eighteenth-century economies having a significance as great as whatever advantages it had in other sectors" (p. 45). He then concludes: "The point to emphasize… is that non-European societies retained significant technological advantages in many areas even in the late eighteenth-century, and it was not inevitable that they would turn out to seem relatively unimportant in the long-run…. Nor should we assume that these areas of non-European advantage were merely the lingering effects of once great, but now stagnant traditions" (p. 47). Yet, even *before* 1492, there was nothing extraordinary going on in Europe relative to the rest of the Afro-Eurasian ecumene as Janet Abu-Lughod's (1989) path-breaking work has shown; in fact the opposite was probably true: As Fernandez-Armesto (1995: xiv–xv) observes: "The most dynamic, the most powerful and, from the point of view of imperial potential, the most promising states on the eve of the 'age of expansion,' were all outside Latin Christendom. …[T]he most conspicuous cases of expansion would have been those of Muscovy and the Ottoman Empire."[28]

To leave the matter here, however, would render the foregoing somewhat hollow; because one needs to explain precisely how Europe was economically advantaged *decisively* (the key word here is decisive) by its brutal colonization and settlement of the Euro-American ecumene. While space precludes a thorough exegesis, two examples of the kinds of enterprises that proved of great determinative value to Europe should suffice: the production of cane sugar and the mining of precious metals (gold and silver).[29]

SUGAR AND PRECIOUS METALS

The present-day ubiquity of sugar is of such magnitude that very few in the West—even academics—are remotely aware that the source of this amazingly protean substance, the sugarcane (saccharum officinarum), is of Eastern provenance, having been

brought to the Mediterranean region by the Muslims as part of that great Islamic East-West technology and knowledge transfer described in the preceding appendix.[30] Europe acquired the technology of sugar production through two avenues: first, through Latin contacts with Muslims during the various periods of Muslim rule in places such as Spain, Portugal, Sicily and Cyprus; and second, as a consequence of the Crusades. However, it appears that for much of Europe the latter avenue turned out to be of greater import. Verlinden (1995), in documenting the route of diffusion of this technology across the Atlantic, notes that the Latins inherited sugarcane plantations with their colonization of Palestine from the Muslims following the defeat of the latter during the First Crusade (1096–1102). Soon, the Latins (principally the Italians) were exporting sugar to the West in significantly increasing quantities.

Toward the end of the thirteenth-century, however, the Latins experienced a reversal of fortunes in Palestine that in time would prove to be permanent; consequently, sugar exports from Palestine to the West slowed down to a trickle as the exports were redirected by the Muslims to their traditional markets in the East. Given that by this point the Latin trade in sugar had become so highly lucrative for its participants, it was a matter of time as alternative export sources were established. Consequently, by the early fifteenth-century, the primary loci of sugar production for export to the West had been decisively moved toward the western end of the Mediterranean basin, becoming localized in places such as Cyprus, Crete, Sicily, Spain, and Portugal. At around the same time, with the Iberian colonization of the Atlantic archipelago, sugar production expanded geographically—through the agency of, as before, primarily Italian capital—to what came to be known as the *sugar islands* (the habited Canaries, colonized by the Spanish in about 1404 [leading to the eventual genocidal extermination of its inhabitants, the Guanches, a Berber people]; the uninhabited Madeiras, colonized by the Portuguese in 1421; and the uninhabited Azores, colonized by the Portuguese in 1432). The Portuguese also established sugarcane plantations on the island of Sao Tome off the coast of West Africa, which they colonized in the 1480s; it would eventually become the world's largest producer of sugar, until its eclipse by Brazilian sugar exports in the seventeenth-century.

As the century wore on, the movement of the sugar technology further westward into the Atlantic continued, this time thanks to Columbus (recall that not only he had married into a Madeiran family—his wife Felipa Perestrelo y Moniz was the daughter of the governor of one of the islands, Porto Santo—but had lived in the Madeiras for about three years, 1480–83). Shortly after Columbus had arrived in the Caribbean it had became clear to him that the spices he so desperately sought were not available, and neither was gold—at least in the quantities he desired (as a result of arrogance-inspired ignorance, he never made it to the mainland of South America). A different type of "gold," however, was promised by the wet tropical climate of the islands. Having spent some time in the service of the Iberians in the sugar islands earlier in his naval career, he was aware of the technology of sugar production and the climatic/agronomic requirements for growing the cane. Consequently, on his second voyage (1493) he brought with him the sugarcane cuttings and thereby introduced to the Euro-American ecumene for the first time the sugarcane (together with the technology of sugar production).

In tracing this highly abbreviated history of sugar production, what is of utmost relevance here is this: that given the agronomic specifics of this crop, it was very conducive to the plantation technique of production.[31] Two facts about this production need to be highlighted here: first, is that in the context of the medieval era, sugar production

constituted among the earliest agro-industries (marrying both agriculture and industry, and therefore requiring large capital investments) and second, it was quickly determined by the plantation owners that the most ideal labor for this agro-industry was the use of unpaid labor, that is slave labor (it is telling that to this day, extremely low-paid, often highly exploited, manual labor remains the principal motor of sugarcane cultivation and harvest throughout the world—including in the United States).[32] It is not surprising, then, that the production of sugar would quickly become the principal factor in motivating the flow of enslaved Africans to the Americas and would remain in the early years of European colonization the biggest consumer of such labor.

That sugar and its related products (molasses and rum) would achieve enormous economic significance in what historians have dubbed as the "triangular" trade of the Atlantic should not be of any surprise; sugar had become ever-increasingly important to the European consumer as a result of two mutually reinforcing but seemingly contradictory factors: increasing demand, accompanied by increasing supply at falling prices.[33] The accelerating demand was the result of its use as a sweetener for such nonalcoholic, mildly addictive bitter beverages as tea, coffee, and cocoa. Consumption rose in ever-larger quantities within the European populace (these beverages were not only family and work safe, but especially for the poor, as Pomeranz 2000 points out, sugar provided much needed additional calories cheaply); while the falling prices was explained by the expanded use of the unpaid labor of the enslaved.[34]

Side by side with this "white gold" (that sugar had indeed become for the European mercantile capitalists), the Euro-American ecumene also became a major source of another equally important commodity: precious metals. Now, most school children in the West are familiar with the romanticized exploits of such sixteenth-century English swashbuckling buccaneers as Sir Francis Drake (c. 1540–96) and Sir John Hawkins (1532–95) subjecting Spanish ships, returning from the Americas leaden with treasure, to piracy on the high seas. But, of course, they are usually never told how these treasures, principally gold and silver, were obtained and what their significance was for Europe. They are not told that, in a sense, it was armed robbery that pitted one group of robbers against another: the English (and others) looting the Spanish and the Spanish robbing the Native Americans. However, what is of capital interest here is that regardless of how the precious metals arrived in Europe, and who took of possession of it, its impact on the overall European economy would prove to be profound, as will be indicated in a moment.

For a number of reasons (aesthetic, utilitarian, relative scarcity, availability in pure forms in nature, etc.) both gold and silver have been considered precious metals almost throughout the world from antiquity to the present. Gold and silver ornaments have been found, for example, in Egyptian royal tombs going as far back as 4000 B.C. For centuries, one of the major sources of gold for Europe had been Africa. However, the chief drawback there was that it passed through the intermediary hands of their hated enemies, the Muslims. It is not surprising, then, that the quest for gold was one of the chief motivations of Columbus's voyage. When Columbus arrived in Hispaniola he did find some gold (he saw the Tainos, a subgroup of the Arawak, wearing gold ornaments). However, had he managed to make it to the mainland of South America he would have realized that is where the relatively large deposits of gold and silver—most especially silver—were to be found. The Spanish soon established silver mines—using extremely brutalized Native American slave labor—in the sixteenth-century in Mexico, Bolivia, and Peru; thusly arose the annual precious metals (bullion and coin) galleon runs across

the Atlantic to which European buccaneers were attracted like moths to a candle. (In any tallies of the quantity of precious metals imports into Europe from the Euro-American ecumene, one must also, therefore, consider not only the official figures, but estimates of contraband as well.) One is reminded here of the fact that, according to Barrett (1990), some 85% of the world's silver, and 70% of the gold supply, during the three centuries leading up to 1800 came from mines in the Euro-American ecumene. (There is the saying that "money does not grow on trees." Yet, in a sense, for the Europeans, it did after 1492.)

What did Europe do with its precious metals, most especially the unending supply of silver? One can turn to an economist best placed to provide us with an answer because he witnessed first hand what became of the metals: Adam Smith. This is what he observed: "the precious metals are a commodity which it always has been, and still continues to be, extremely advantageous to carry from Europe to India. There is scarce any commodity which brings a better price there; or which, in proportion to the quantity of labor and commodities which it costs in Europe, will purchase or command a greater quantity of labor and commodities in India." Notice also, however, what he says specifically about the importance of silver: "It is more advantageous too to carry silver thither than gold; because in China, and the greater part of the other markets of India, the proportion between fine silver and fine gold is but ten, or at most twelve, to one; whereas in Europe it is as fourteen of fifteen to one." Not surprisingly, then, he continues: "In the cargoes, therefore, of the greater part of European ships which sail to India, silver has generally been one of the most valuable articles. It is the most valuable article in the Acapulco ships which sail to Manilla [sic]. The silver of the new continent seems in this manner to be one of the principle commodities by which the commerce between the two extremities of the old one is carried on, and it is by means of it, in a great measure, that those distant parts of the world are connected with one another" (1961 [1776], vol. 1: 229–30).

In a nutshell, then, from the fifteenth-century onward, as enslaved Native Americans were worked to death (to be joined later, especially in Brazil, by enslaved Africans) in the mines of South America, Europe got into the lucrative business of re-exporting a substantial portion of the cheaply produced precious metals to the East in the form of bullion and coinage.[35] Why did the East import such large quantities of bullion and coinage? One answer has to do specifically with China. Beginning in the early fifteenth-century, China, which up to that point was arguably the largest economic entity in the world (and threatens to become so once again), had begun to transform its currency toward a silver standard and with a silver-based coinage—see Pomeranz 2000, for reasons. Under the circumstances, silver became more important in China than even gold itself, especially since China produced very little of its own silver.

It is thought that perhaps as much as half of the American silver was eventually absorbed by continental Asia during the period 1450 to 1800.[36] There was, in addition, another factor at work, well described by Pacey (1991: 68): "One other problem facing Europeans in Asia was that their trade was chronically out of balance, because there were very few goods manufactured in Europe which Asians wanted to buy. European products were of inferior quality, or irrelevant to Asian needs. Guns were certainly in demand, but muskets and cannons manufactured in the Islamic countries or Thailand were often of good quality. Thus almost everything which Europeans bought in India or China had to be paid for with gold or silver, often in the form of coin." In other words, given the primitive state of European manufacturing industry prior to the industrial

transformation, there was in reality, little else of value that the Europeans could export to the Asian markets. On the other hand, the European ships came back laden with treasures of incredible profit-maximizing value: from gold to spices to silk to porcelain.

Having established these four commodities—sugar, slaves, gold, and silver—as *examples* (one could easily add other commodities to the mix: cotton, tobacco, timber, etc.) illustrating how critically important the Euro-American ecumene would become for the economies of Western Europe, it remains to briefly delineate precisely how Europe was economically and decisively advantaged relative to the rest of the Afro-Eurasian ecumene during the nearly 300 years (1492 to 1800) leading up to the Western European industrial transformation. Before proceeding to do so, it is important to emphasize that any explanation of the rise of Europe and the relative fall of the rest of the great economies of the Afro-Eurasian ecumene must be understood as occurring in a *global* world economy in which all were participants, including of course those of the Euro-American ecumene.

The first and most obvious economic benefit was, not surprisingly, the enormous profits that were generated directly from activities such as the following: the production and/or sale within Europe of the various American commodities of sugar, precious metals, molasses, rum, tobacco, cotton, furs, and so on (plus, remember, since most of these commodities were produced at rates far below the normal costs of production by using brutalized and unpaid forced labor, these profits were greatly magnified beyond the "usual" levels); the trade in enslaved Africans in the Euro-American ecumene, together with the manufacture of products necessary for the maintenance of this evil trade (from ships to armaments to commodities for barter in Africa—cloth, utensils, guns, rum, etc.); and the geographic expansion of European markets across the Atlantic occasioned by the need to produce armaments, ships, various manufactures that went into the direct upkeep of the plantation economy (from machinery to cloth for the enslaved), and products for the maintenance of the settler economies as a whole (recall that in the early years these economies were in essence producers of primary goods for export—in the tradition of the present-day PQD countries—and therefore most of their manufactures had to be imported).[37] To be sure, relative to the entire GDP of Western Europe these profits were not immense; however, such a comparison misses the point. *They were substantive enough to decisively accelerate the structural transformation of Western Europe* necessary to underwrite its transition to industrial capitalism, as will be shown momentarily.

Second, although the comparatively marginal European economies had very little to offer the great economies of the Afro-Eurasian ecumene (such as those of the various empires in China and the Islamic world: Ch'ing (1644–1912), Ming (1368–1644), Mughal (1526–1748), Omani (1698–1856), Ottoman (1400s–1800s), Safavid (1502–1736), etc.) prior to the nineteenth-century, as just noted, the capital generated from the Euro-American ecumene allowed Europe to become a participant in these other economies where even greater profits and economic benefits were to be derived, through activities such as: the unending export of precious metals bullion and coinage *as a commodity* to Asia for arbitrage; the sale of Asian imports (spices, silk, etc.) within Europe made possible by stimulating Asian production for export to Europe through infusion of European precious metals (this meant that prices of imports remained relatively stable for the European importer); the re-export of Asian imports to the markets of the Americas and Africa; and the trade in Asian commodities within the Indian Ocean basin itself as the European ships plied from one country to another (here they began taking over

the trading activities of the original Asian entrepreneurs through a combination of armed force and higher purchasing power facilitated by possession of precious metals currency).

Third, the infusion of precious metals from the Euro-American ecumene (as well as profits from overseas trade, of course) allowed a general investment-induced stimulation of the economies of Europe (the Keynesian multiplier effect) toward accelerated, internally oriented, economic growth based on such developments as expanding internal markets, increase in consumption, and so on. At the same time, the imports of Asian luxury commodities (silk, porcelain, arts and crafts, etc.) stimulated import-substitution industries within Europe, which in turn spawned industries based on attendant upstream economic inputs and downstream economic outputs.

The totality of these benefits garnered over the course of some 300 years after 1492 (and made possible by 1492) put Europe firmly on a path that the rest of the developed parts of the Afro-Eurasian ecumene eventually found impossible to follow, thereby guaranteeing their subordination to the imperialism of a part of the world that millennia before was a barbaric irrelevance in terms of world history. The precise mechanisms involved in this transformation of the global balance of power included the following:

First, the geographic extension of the European economy across the Atlantic allowed Europeans to escape an ecological bottleneck that their Asian counterparts faced *and could not escape*: the shortage of land (in the face of population expansion, increased per capita consumption, etc.) to provide for the four critical Malthusian necessities that, especially in the era of the preindustrial transformation, were so intimately tied in with terra firma: food, energy, clothing, and housing. The Euro-American ecumene provided Europe with not only such *land-dependent* products as sugar, cotton, tobacco, grain, timber, meat, wool, etc.), but also the potato (which generated far more calories per acre than did any other European food crop), and as Pomeranz (2000) points out, natural fertilizer (guano) to restore its lands. To give an example of the benefits of these imports from the perspective of land conservation in Europe, consider the role of sugar: in 1800, in the United Kingdom, according to calculations by Pomeranz (on the basis of data derived from Mintz 1985), the quantities of calories replaced by sugar consumption for that one-year would have required an output from English farms with an acreage that would have totaled 1,300,000 acres—assume the farms to have been of average productivity (p. 275).[38] Mention must also be made here of another very important food source: fish from the rich North Atlantic fisheries (first reported on in Europe in 1498 by John Cabot), which, in terms of quantities, was unmatched by any available in the Mediterranean and the Indian Ocean basin—given the relative virginity of these fisheries (as well as the specifics of that particular marine environment). Land-saving was also, of course, greatly enhanced by the simple device of the export of surplus populations for settlement in the colonies (the added benefit of which was that they assisted in the expansion of European markets, as just noted).

Second, as Chaudhuri (1995: 308–309) reminds us: "For nearly 800 years before Vasco da Gama landed in Calicut, Europe was connected with the ancient civilizations of the Indian Ocean through a great chain of transcontinental trade. It began in the ports of southern China, in Hangchow, Chuanchou, and Canton, passed through the Sunda and Malacca straits in Southeast Asia, touched on the Coromandel, Malabar, and Gujarat before finally reaching the commercial turn-tables of Aden, Hormuz, Cairo, Alexandria, Aleppo and Beirut."[39] However, the massive infusion of precious metals currency in the Indian Ocean basin, where money was principally in the form gold and silver

coinage, allowed the European traders to commandeer this trade for their exclusive benefit by undercutting their Asian rivals in two significant ways: One, as the European merchants increased their commercial activities in the Afro-Eurasian ecumene in the sixteenth-century and onward, they soon discovered that they were now in a position to permanently outbid their local counterparts because they could offer much higher prices to producers.

Two, by connecting Europe directly with their long-distance voyaging caravels and galleons to East Africa and Asia, they disrupted the economic logic of the centuries old finely balanced "emporia trading" (where large urbanized commercial trading centers were chain linked through trade in both luxury commodities that changed many hands and bulk commodities that involved fewer intermediaries) that had governed the Indian Ocean basin for centuries, thereby, again, marginalizing their Asian rivals (see Chaudhuri [1985] for more on this). Moreover, even the Muslim merchants of the Middle East were not spared the slow-but-sure spiraling decay of their economic fortunes (though according to Issawi,1995, the decay was already underway as a result of processes brought about by the *Reconquista* and the Crusades), arising from the massive deflection of their centuries-old traditional trade between the East and the West that they had executed as part of their role as commercial intermediaries—as well as the loss of European markets for commodities that the Middle East itself had produced for centuries (such as sugar and coffee, for example).[40]

The net result was the relentless downward spiral of the economic power of the local Afro-Asian mercantile capitalists with the simultaneous upward spiral of the economic power of the European capitalists. Ergo, if there was any possibility of an emergent, economically powerful, *indigenous* mercantile and protocapitalist class usurping power from the traditional ruling dynasties, by the end of the nineteenth-century it was no longer in the cards. Instead, as economic power slipped into the hands of the Europeans by the end of the eighteenth-century, it was a matter of time before the full coercive force of the European state was eventually harnessed to ensure the complete monopoly of this economic power vis-à-vis not only the indigenous capitalists, but also other competing European capitalists.[41] (Consider this stark reality: by the end of the nineteenth-century, except for one or two areas, there was virtually no part of the entire planet left free of European suzerainty—even the Ottoman Empire was on its last legs.)

Third, on the other hand, the dramatic expansion in both numerical terms and in terms of economic prowess, of the emergent European mercantile and protocapitalist classes, facilitated by 1492, eventually allowed them (from around 1700 onward) to effectively depose the traditional landed aristocracies and takeover the reigns of state within Europe—especially Western Europe—which thereby greatly enhanced the conditions for the breakdown of the feudal order and the development of capitalist institutions.[42] Further, this also meant that, henceforth, the resources of the state (which, do not forget, included the constant and large infusion of precious metals from the Euro-American ecumene) were not only available for the purposes of internal pro-capitalist policies and programs, but, equally importantly, for the purposes of overseas colonization and the execution of the resultant European interstate competition (which sometimes took the form of internecine warfare). The latter was effected through both direct means (militarized and unmilitarized official state "diplomacy"), as well as indirectly through the various armed monopoly trading corporations, such as the Dutch East India Company and the British East India Company. This development, needless to say, did not occur in the rest of the Afro-Eurasian ecumene.

Fourth, even as Africa, the Caribbean, and South America were forcibly drawn into the Western European economic system, whatever economic development they would experience would propel them on to a path that would eventually culminate in *underdevelopment*. To take the example of Africa, while it is true that much research still awaits to be done by relevant specialists, the broad parameters of the subject are, as of this writing, sufficiently congealed, so that only a racist inspired myopia would permit the denial of the critical role played by the Atlantic slave trade in the *current* horrendous economic predicament of the continent; for not only was it instrumental in creating the conditions that produced the European imperialism of the nineteenth-century in the first place, as just shown, but in losing tens of millions of its inhabitants to that ignominious enterprise it experienced a permanent disruption of its historical progression to such an extent as to eternally encumber it with structures that would subserviently tie its economic fate to that of its former imperial masters—even long after the nominal political fetters had been dissolved.

The mechanisms that were involved were many; those that readily come to mind include (in no particular order): the demographic imbalance, created by the massive and systematic skimming off of the most productive component of the population, deprived African societies of reservoirs of creative and productive energy; armed predation through generalized warfare put a break on peaceful economic activities including legitimate long-distance trade; the negative population growth drastically eroded whatever forces that were underway of social differentiation, urbanization, the division of labor, agricultural development, and so on (without which economic progress is impossible); the flooding of cheap manufactures from Europe and elsewhere (in exchange for captives) undermined whatever indigenous industries that existed (e.g., textiles and metalware manufacture); the development of militarized elites distorted societal priorities in terms of social, political and economic development; and some African societies engaged in the external slave trade also began to institute internal slave-based production activities, which were of course inimical to the development of balanced economies.[43]

Fifth, with the end of the more than two-decade-long fratricidal Napoleonic Wars (Napoleon was defeated at Waterloo on June 18, 1815)—which had a salutary effect on industrialization as it moved apace with that dynamic "fusion" of coal, steam, and mechanization so familiar to every school child—Europe was strategically poised militarily and economically, relative to others in the Afro-Eurasian ecumene, to commence a massive worldwide project of colonization and settlement under the aegis of a permutation, at various levels of strength (depending upon time and place), of capitalist interests (who sought raw materials and markets), nationalist religious interests (nationalist Christian missionaries looking to widen the domains of a fragmented nationalist oriented Christendom) and nationalist secular interests (motivated by intra-European state competition for global influence and advantages).

As this project got underway, Europe was in a position to make use of even greater magnitudes of coerced *land and labor-dependent* natural resources (from minerals to agricultural outputs) from its new and old colonial empires (and which simultaneously continued to provide it with markets—often forcibly commandeered, as in the legendary case of British India—for its manufactures). At the same time, Europe's, by now, large handicraft industrial sector (the protocapitalist sector) began to undergo Dickensian proletarianization on a massive scale. Here, relative to others, Europe had a distinct advantage: for, not only was it spared the need to raid the agricultural sector for this new industrial workforce, but as Pomeranz (2000) points out, access to land and labor else-

where outside Europe meant that Europe was exempted from the necessity of extensively encumbering its own labor force with the task of exploiting scarce land in an ecologically optimal (hence labor intensive) manner—as in Asia. Compare the circumstances of the Asians in this regard: to generate an industrial labor force of a proportionally equivalent magnitude, they would have had to go into the agricultural sector as well, but in the process lower agricultural production—and they could have ill afforded that.

Sixth, once large areas of the Afro-Eurasian ecumene outside the European peninsula had become entangled in the web of Western European colonialism as the 1800s progressed, with the dawn of the twentieth-century their fate was more or less permanently sealed, both economically and militarily. They would be coerced into that classic dead-end subordinate economic position that one is all too familiar with today: net importers of manufactures *(and food staples)* and exporters of primary commodities—thereby their economies being almost immutably tethered to those of a new expanded European ecumene (to be understood here to mean Europe proper and its former settler colonies in North America, Australia, etc.). In other words, *under*development would be their lot where genuine industrial transformation would bypass them—and in the process, of course, the standards of living between those of expanded Europe and the rest of the Afro-Eurasian ecumene would diverge permanently by leaps and bounds—only Japan (and China to some extent) would be spared this fate (having escaped European colonization at a critical moment in its history). In military terms, expanded Europe would use all of its resources toward the production of weapons of ever-increasing sophistication and lethality that could never be matched by the colonized. In other words, the processes of underdevelopment that were initiated after 1492, were now reinforced with even greater severity.

Clearly, then, the so-called European miracle was in reality not so much a miracle as a conjuncture of fortuitously propitious historical factors arising out of 1492, which allowed Europe to forge a path of "capital-intensive, energy-intensive, land-gobbling" economic development, instead of taking the other path that the rest of the Afro-Eurasian ecumene had been fated to pursue: one of a "'protoindustrial cul de sac, in which even with steadily increasing labor inputs, the spread of best known production practices, and a growing commercialization making possible an ever-more efficient division of labor, production was just barely staying ahead of population growth" (Pomeranz 2000: 207). Even Adam Smith was not unaware of the transformations taking place around him wrought by the fallout from 1492:

> In the mean time one of the principal effects of those discoveries [1492, etc.] has been to raise the mercantile system to a degree of splendor and glory which it could never have otherwise attained to. *It is the object of that system to enrich a great nation rather by trade and manufactures than by the improvement and cultivation of land, rather by the industry of the towns than by that of the country.* But, in consequence of those discoveries, the commercial towns of Europe, instead of being the manufacturers and carriers for but a very small part of the world (that part of Europe which is washed by the Atlantic ocean, and the countries which lie around the Baltic and Mediterranean seas), have now become the manufacturers for the numerous and thriving cultivators of America, and the carriers, and in some respects the manufacturers too, for almost all the different nations of Asia, Africa and America. Two new worlds have been opened to their industry, each of them much greater and more extensive than the old one (1961 [1776], vol. 2: 141–142. Emphasis added).

Moreover, remember that even 1492 itself did not come about as a result of yet another European "miracle," but rather it was an outgrowth of developments in the Afro-Eurasian ecumene as a whole (which included Europe of course) during the preceding 800 years or so in which the hand of Islam looms large, as shown in the preceding appendix.

To hammer home the central thesis of the foregoing, consider this thought-experiment: interchange in 1492, but only in ethnic terms, the populations of Asia with those of Africa, and the populations of the Americas with those of Europe, leaving everything else, in terms of history, the same. The world we would be living in today would still be the same structurally, except the personnel (in ethnic terms) would be different. Ethnicity has nothing to do with civilization (however one seeks to define the word). Yet the entire edifice of Eurocentric ideology that the vast majority of Europeans and their descendants subscribe to, either openly or subconsciously, is built on a foundation that is the obverse of this truism.

CONCLUSION: TYING UP LOOSE ENDS

There are three loose ends that need to be tied up as we conclude this appendix: one has to do with the *Ethiopia/Japan anomaly*; the second concerns Islam, science, and industrial transformation; and the third is about the significance of the Western Christian ideological worldview relative to 1492.

To begin with, so far, this appendix has concentrated primarily on explicating the absolutely critical role of external forces in explaining the political and economic demise of the Afro-Asian ecumene in the wake of 1492, as a much needed corrective to explanations rooted in the ideology of Eurocentrist exceptionalism that generally holds sway (even today) among Western academics in explaining this demise. However, there is the danger of going too far in the other direction; that is, neglecting completely the role of internal factors. After all, common sense alone tells us that the rise and fall of civilizations, empires, nations, and so on, are a function of a *dialectical* interplay of both internal and external factors.

The Ethiopia/Japan Anomaly

Beyond common sense, however, the importance of also considering internal factors is forced upon us by a problem that we came across in Chapters 2 and 5 and which was referred to as the Ethiopia/Japan anomaly. Specifically, the problem arose in the course of explaining the divergent histories of Japan and Ethiopia (despite the significant similarities in some key aspects of their historical trajectories, chief among them being their escape from European colonization). In fact, to highlight the importance of this matter, we can go so far as to say that a cosmic observer in, say, the fourth-century C.E. (when the Aksumite Kingdom was at its apogee), comparing the sociopolitical and economic circumstances of the two countries, would have been forgiven if he/she was to have pronounced the Ethiopians as the ones most likely to achieve the kind of economic development that the Japanese have experienced to date; for in the fourth-century Japan was still in its formative stages as a coherent national political and economic entity.

One answer that emerges from the literature faults the Ethiopians, for not being politically astute; both Marcus (1975) and Kebede (1997), for example, are of this opinion. Concentrating on the reigns of Tewedros II and Menelik II in the later nineteenth-century (which roughly cover the same period in which the Meiji reforms were underway in Japan), they conclude that, in the words of Kebede, "the failure of Ethiopian modernization [was due] more to the lack of political determination than to the inadequacy of the objective reality." That is, he continues, "[d]ue to a subjective error, the failure was caused not so much by the inappropriateness of the objective conditions as by a faltering political will" (p. 639). Levine (1997), on the other hand, suggests that despite the historical similarities between the two countries, there were also profound differences and that is where one should find the answer; the differences he points to include factors stemming from geography, level of urbanization, ethnic homogeneity, domestic peace, monetary currency, political structures and so on. In sum, he argues that "in Japan, unlike Ethiopia, an extensive commercial class and a disciplined work force were securely in place when the two countries faced a need to modernize in the course of the nineteenth-century" (p. 667).

In comparing the two explanations, Levine's at first glance is more convincing; for those of the other two really boils down to suggesting that the Japanese were simply more intelligent than the Ethiopians (a variant of Orientalism where Asians are held to be superior to Africans and others, but not Europeans). Levine's, however, also has limitations, stemming primarily from his isolation of Ethiopia from the rest of the African continent. That is to say, that what ever explanation one comes up with regarding the fate of Ethiopia, it must also be recognized that it is one that has been shared by much of the rest of the continent. In other words, the issue really is whether or not Ethiopia was colonized or whether or not the Ethiopians possessed foresight, their historical trajectory was not going to be that much different from that of the rest of the continent (including Liberia—which also did not experience European colonialism in the classic sense). Moreover, the variables he points to in explaining Ethiopia's disadvantages are more of a Eurocentrist variety (Weberian), rooted in the subjective more so than in the objective—for example, religious values that emphasized (or deemphasized) individualism, the work ethic, entrepreneurship, and so on. In other words, Levine's explanation for the Ethiopia/Japan anomaly is merely a sophisticated variant of the other two.

To explain Ethiopia's divergent fate we must place it back into Africa, which then forces us to consider two sets of dialectically interrelated factors. One set is external and these we have now looked at length; they all hinge on the rise of Europe on the back of 1492 (the Columbian factor). The other is internal. Before going on to look at the internal factors it is important to stress that their significance lie only in relation to the Columbian factor; that is, without that external factor, the internal factors would have ceased, over time, to be obstacles to the development of the African ecumene. What then were these internal factors that placed Africa at a disadvantage in relation to a surgent post–1492 Europe—and in relation to Asia as well? (In bringing in Asia, the argument here is that while both Africa and Asia were victimized by the post–1492 phenomenon, Africa [compared to Asia] was less well placed to defend itself against this victimization over the long-term; thereby emerging more economically brutalized than Asia—hence the difference in the current circumstances of the two different poles of the Afro-Asian ecumene.)

To get at the answer to this question it will help to rephrase it in another way: Why is it that even the most advanced African kingdoms, possessing complex and advanced

social and political systems involving a considerable degree of labor specialization, were not able to evolve further to a stage where significant surplus production and capital accumulation would have created the potential for the emergence of a modern capitalist economic system? The immediate answer that most will be tempted to reach for, forgetting that there is an issue of temporality behind the question, is this: when *close* and *direct* contact took place between Africans and Europeans, it occurred within the context of European imperialism (taking the form, at the formal level, of the infamous Scramble for Africa); the outcome of this was "the collision of two heterogenous modes of production: capitalist and African, and the overthrow of one by another" (Coquery-Vidrovitch 1985: 114). This answer misses the point. While one agrees that the appearance of colonialism halted and deflected the relatively logical economic evolution of African societies, the question remains: Why is it that in the long period, spanning thousands of years, intervening between the establishment of first trading contacts among Africans and those from the rest of the Afro-Eurasian ecumene, and the eventual destruction of the African structures by European imperialism, the more advanced African societies did not generate technological and other advances *on a meaningful scale*, nor take up and internalize elements of externally mediated technologies, economics, cultures, and so on (to which it had access through long-distance trade), and thereby evolve a socioeconomic system that would have been better able to weather the depredations of European imperialism (or in the specific case of Ethiopia allow it to have the potential to take the Meiji Japan route)?

The answer has to do with a particular economic configuration that characterized the precapitalist African economic system that developed in Africa over hundreds of years, long before the arrival of the first European on the continent. Moreover, it is a configuration that in broadest terms was particularly applicable, *in varying degrees* of course, to much of Africa (especially in the pre-Islamic era, and to a considerable degree even in the Islamic era, though perhaps to a lesser extent in Islamic North Africa) and it was marked by a uniquely distinctive feature: the relative (the key word here is relative) impermeability between the spheres of production and exchange—incredibly strange though that this may appear at first blush. In other words, even advanced African societies were characterized by an economic system that did not allow for surplus production in a manner that could facilitate substantive economic progress; for, whatever surplus production there was, it was one that: (1) took place outside the village-level economic system (sometimes referred as the *lineage mode of production* by the "articulationists"); and (2) was aimed at long-distance trade to obtain exotic goods (consumption goods as opposed to capital goods; hence involving parasitic exploitation of resources such as slave-raiding, gold-mining and elephant-hunting [ivory]). The nature of the trade contact between Africa and the rest of the world, therefore, for a long period of time—coming all the way to the colonial era—was one that involved, essentially, luxury goods (exotic or prestige goods).[44] To elaborate, let's begin by considering the village-level economy.

The local market where villagers exchanged goods (locally produced) did not represent an economic institution mediating the realization of surplus for those marketing the goods, but rather it was "a multifunctional institution—social, religious and political" (Coquery-Vidrovitch 1985). The market constituted, in the main, a congregation of villagers who were related to each other via social, economic, and political ties. Thus here, in other words, was a situation where although the village community possessed a marketplace, in their relations with each other they did not as a general rule subscribe to the

rules of market-exchange. While the presence of a marketplace does point to the presence of some surplus in the village subsistence economy, this surplus was minimal in volume, relative to the volume of production. And given that there was little incentive to effect substantial increases in production for surplus, the level of sophistication of technology demanded by the village subsistence economy remained at a very low level, typified, for instance, by the absence of even such elementary forms of agricultural technology as the plough. This low level of technological sophistication further meant that the implements of production (that is, the means of production) were accessible to all who needed them; and thereby further ensuring that no one group could monopolize ownership of the implements at the expense of another.

Side by side with the local village subsistence economy, a broad economy existed based on *long-distance* trade (and war to further facilitate this trade).That is to say, this was an economy dominated by the sphere of *exchange* (and thereby lending specificity to the African economic system). This sphere of exchange had a number of unique characteristics; including:

(1) The commodities involved in the long-distance trade, and here consideration is being restricted to the trade originating from the coasts, and not derived from production in the village economy; for not only was the surplus not large enough to meet the requirements of the trade, but there was little demand for the products of the village economy. The commodities were "produced" in an economic system largely external to the village economy; and the "production" took the form of not so much as production in the usual (manufacturing) sense of the word, but as extraction—for example, mining (gold and copper); hunting (ivory); and warring (slaves).

(2) The growth in the long-distance trade was often accompanied by the development of large bureaucratic systems (with strong military content)—usually because of the need to provide security for the traders. As a result, there arose centralized kingdoms with a sovereign at the head to oversee the maintenance of stability and security. Hymer (1970: 42–43), explaining this development, points to the dialectic that was operative between long-distance trade and the growth of the centralized bureaucratic systems:

> Without a strong state, long-distance trade is continuously in danger of predatory attacks by armed robbers. A military group, able to maintain peace and security in a given area, can ensure the safety of traders and then tax them accordingly. This symbiotic relationship between the military and the merchants has a dynamic which can lead to the formation of larger and larger trading empires. The more effective the political and military organization is, the wider an area it can encompass, the greater the trade it can stimulate, the greater the taxes it can collect, and hence the greater an area it can pacify.

This development of centralized kingdoms, however, was essentially a *political* development, rather than an *economic* one—signifying fundamental changes in the economic system. The economic basis of these kingdoms, in other words, was not the village-subsistence economy, but rather the *extractive and parasitic* economy of external trade, warfare, and hunting. Consequently, an important aspect of the structural position of the sovereign was that given the tenuous nature of the economic base of the kingdom, the power and position of the sovereign could suffer demise at any time that the long-distance trade passing through his kingdom was deflected away from the area under his jurisdiction to that of another sovereign or authority (for whatever reason: internal instability, competition from a neighboring group, and so on—compare the demise of the

Axumite kingdom with the rise of Islam and the latter's domination of trade in the Red Sea region mentioned in Chapter 2).

(3) The surplus generated from the long-distance trading activities was largely destined for the chiefs and kings, who however, either hoarded or redistributed whatever surplus that could not be consumed. They did not and could not use the surplus for investment (and thereby stimulate production) because no mechanism existed that could allow this, given the absence of organic linkages between the two economic spheres (of production and exchange). As Coquery-Vidrovitch (1985: 101) explains: "the sovereign's power was closely tied up with a specific economic formula: absolute control over a large sector of trade not integrated into local trade and a massive exchange of products rather than true trade, since the king was not looking for profit so much as ways to obtain certain merchandise from far off lands—weapons (basic to his power and his supply of slaves), textiles, alcohol, and various trade merchandise (la pacotille)." It is precisely because of this accessibility to luxury commodities generated virtually entirely within the sphere of exchange that the sovereign never felt inclined to intervene in the sphere of production (that is in the village subsistence economy).

It follows from the foregoing that the most important factor at play in sustaining the long-distance trade was not *demand* but *effective supply* (which depended not so much on production, but in Wallerstein's words (1976: 32) on "the politico-technological ability of the long-distance traders to transport the material." In this circumstance, there were two consequences: first, that no incentives existed in modifying the production process since production was not linked directly to demand variations; and second, the trade was not so much a question of transfer of surplus, but simply "a mutual windfall" as Wallerstein puts it.

To sum up, then, on the eve of the establishment of European colonial rule in Africa, the political economy of most of the continent—could be described as one dominated by a unique feature: *the absence of a meaningful level of articulation between the sphere of production and the sphere of exchange (at the territorial level)*. That is, it was characterized by, on one hand, village-based subsistence production involving limited exchange of goods at the local level, and on the other, the primacy of long-distance trade involving in many instances links with coastal trade on both the Atlantic and the Mediterranean/Indian Ocean seaboards. Ergo, despite the fact that Africa was firmly tied in into the international economic system, the economies of most of its societies were not based on capitalist relations of production that could have taken advantage of economic changes elsewhere in the global system—such as in Europe.

Why did Africa come to possess such an economic system? Any number of factors may be suggested for consideration, but the most plausible one may be that of a vast, natural, resource-rich environment with an abundance of products that others outside Africa hungered for (and of course continue to do so to this day) against the backdrop of a relatively low population-to-environment ratio. However, contrary to Eurocentrist perceptions, Africa was not mired in stasis; that is, in time, African societies could have evolved past this configuration, as some had already begun to do (for instance in parts of Islamic Africa) to acquire the more typical characteristics of societies dominated by the capitalist mode of production. The opportunity for such a development, however, did not arise in Africa (including in Ethiopia), thanks to the arrival, as a direct result of the Columbian factor, of the Atlantic slave trade and later colonialism (with its distorted forms of capitalism).

Those familiar with the literature will immediately spot the source of the line of reasoning pursued in the foregoing paragraphs: the so-called *articulated modes of production* theory that was first advanced in the late 1970s and the early 1980s in response to the work of the world systems and dependency theorists such as Immanuel Wallerstein and Andre Gunder Frank, by, primarily, French neo-Marxists (the articulationists).[45] As they will recall, the theory had provoked much commotion, mainly due to the failure on the part of the critics to see the theory as nothing more than a heuristic device (and also as a result, perhaps, of a knee-jerk reaction in the positivist circles against the theory because of its Marxist lineage).[46] Representative of the rancor was the debate, for example, in the pages of a special issue of the *Canadian Journal of African Studies*.[47] For our purposes it is not necessary to go into the arcane details of the controversy generated by the theory, constituting as it is the not so atypical controversies that have marked, over the decades, the effort to comprehend the extremely difficult circumstances of the Afro-Eurasian ecumene in the post–1492 era of world history (e.g., Afrocentrism, Eurocentrism, Orientalism, Asiatic mode of production theory, lineage mode of production theory, modernization theory, Hamitic theory, dependency theory, world systems theory, and so on).[48] It will suffice to simply state this: that until we have a better alternative explanation, *but one that does not impugn the intellect of the peoples of the African ecumene*, the one presented here that relies on a dyadic consideration of the external factor (the Columbian factor) and the internal factor (the unique precapitalist African economic system) will have to do to explain why whatever Mennelik II may have wished for his people, or however much a genius he may have been, the "Meiji option" was not in the cards. (Compare also the fate of Egypt under Muhammed Ali in this regard, discussed in Chapter 3.) By the middle of the nineteenth-century, the rulers of Ethiopia (and Liberia), whether astute or feckless, would not have been able to save their country from the economic fate that befell most of the rest of the continent: dependency and underdevelopment.

Islam, Science and the Industrial Transformation

It should be, by now, obvious that the "rise of Europe" did not take place on the back of its scientific achievement. European scientific progress, especially one that would assist it toward *solidifying* its global hegemony was a phenomenon primarily of the period that *followed* long after the onset of industrial transformation. Recall that almost all major advancements that one associates with European modernity today were

breakthroughs of the nineteenth and twentieth centuries (and what is more, owed less directly to scientists *as inventors* than to entrepreneurs): the Bessemer converter, rail transportation, the internal combustion engine, the breech-loading magazine rifle, the machine gun, mechanical flight, the automobile, the light bulb, the phonograph, the telegraph and radio, cinema, and so on. However, more importantly (for present purposes), during the three centuries preceding the commencement of industrial transformation, European scientific achievement was of marginal importance in that it was not a harbinger of Europe's eventual global supremacy. The industrial transformation (in terms of the flying shuttle, the spinning jenny, the cotton gin, the steam engine, etc.), in other words, was not an outgrowth of scientific advancement (had that been the case it is Italy, the hearth of European renaissance, that would have experienced the industrial transformation first, not Britain).

In fact, it would not be an exaggeration to say that the period when industrial transformation was underway was when technology led science, rather than the other way around. What is more, in the absence of 1492, these advancements would have been meaningless—assuming that they had been forthcoming. Without the backdrop of 1492, it is unlikely that major industrial transformations would have emerged at all. Even though the following truism is obvious to the point of banality, it bears repeating for the benefit of technological determinists (like White 1964): "necessity is the mother of all inventions."[49] Or to put the matter differently: science and technology does not exist independently of the material conditions of society. The 1492 factor helped to create the socioeconomic matrix in Western Europe that demanded technological innovations (see Blaut [1993], Frank [1998], and Pomeranz [2000] for a discussion of this fact). What this also implies is that even if Islamic scientific achievements had kept pace with those in Europe or remained ahead, it would not have ipso facto translated into an Islamic industrial transformation.

Notwithstanding the foregoing, however, one may still ask why Islam experienced a dramatic deceleration in scientific achievement relative to Europe. The question surfaces time and again whenever the subject of Islam and science is discussed, and there is a good reason why. For, as Sabra (1988: 88) explains: "It is precisely the high quality and sophisticated content of Islamic science that give poignancy to the problem of decline. The question is not why," he continues, "the efforts of Islamic scientists did not produce the scientific revolution (probably a meaningless question), but why their work declined and eventually ceased to develop after the impressive flowering of the earlier centuries." This question, he further observes, is "forced upon us by the fact that what we have in the extant works of Arabic scientists is not protoscience but science in the proper sense of the word." There are two possible explanations one can offer in response: one was the arrival of the Mongol catastrophe (first mentioned in the preceding paragraph), and the other was the equally devastating scourge of the bubonic plague that historians call the "black death" (and which itself, it has been suggested, was a consequence of the Mongol catastrophe).[50]

Of these two events, one in the thirteenth and the other in the fourteenth-century, that in a sense, broke the back of the Islamic civilization and transformed it in a very different direction from the one that had prevailed during the classical period, the Mongol catastrophe suggests itself as the most significant; for, the characterization of the Mongol onslaught, by Roberts (1997: 364), in these terms is certainly apt: "they blew up like a hurricane to terrify half a dozen civilizations, slaughtered and destroyed on a scale the twentieth-century alone has emulated, and then disappeared almost as suddenly

as they came." In other words: it is not simply that the scale of the devastation wrought, or the depth of the barbarity (neither Atilla the Hun nor the Vikings could have held up a candle to the Mongols), or the magnitude of the geographic terrain affected (from the outskirts of Vienna in the West to Peking in the East, from Lake Baikal in the North to the Indus and the Bramaputra in the South) was incomparable to anything that had occurred up to that point, but their deep disdain for civilization and its accoutrements (characteristic of most nomadic people) ensured that both the Islamic and the Chinese civilizations would suffer major setbacks, but most especially the former.[51]

It is true that in the end the conquerors not only became one with the conquered when some of their descendants converted to Islam (especially those of the Golden Horde) and even more remarkably the Turks too, who in time had become the majority willing partners in the Mongol empire building—in the classic case of "if you can't beat them, join them"—would also convert; eventually giving rise to three new Islamic empires, the Ottoman (Eastern Europe and the Middle East), the Safavid (Persia) and the Mogul (India), the damage it appears had been done. Certainly, Islam would never be able to regain its glory of the classical period and the torch of science would pass into the hands of their enemies: the Christians of Europe.

The Christian Worldview and 1492

Before we proceed, it will be instructive to introduce at this point some quotes familiar to all who know the details of what we have already seen as one of the most important events in the annals of modern human history.

> They do not bear arms nor do they know them, for I showed them swords, and out of ignorance they took by the edge and cut themselves....They ought to make good and clever servants, for I see that they very quickly say all that I have said to them.... Our lord being pleased, I will take six of them from here to your highnesses at the time of my departure, so that they may learn to speak.... These people are very gentle (p. 48). [If] your highnesses should so command, all of them can be brought to Castile or be kept captive on their own island, for with fifty men you will keep them all in subjugation and make them do anything you wish (p. 50).
>
> [We put up a large cross] as a sign that your highnesses consider the land your own, and, most important, as the emblem of our Lord Jesus Christ and in honor of Christianity (p. 86).
>
> Your highnesses should believe that these lands are good and fertile... And you should believe that this island and all of the others are, thereby, as much yours as Castile is, for nothing is lacking here but a foothold and to command the natives to do whatever you might wish for.... They have no weapons, and they are all naked and have no aptitude for arms... and so they are good for being given commands and being made to till, to plant, and to do everything else that may be necessary (p. 91).

The point of these quotes, then? They speak to this: As one goes through the absolutely fascinating volume six of the remarkable *Repertorium Columbianum, A Synoptic Edition of the Log of Columbus's First Voyage* (edited by Francesca Lardicci and published in 1999), among the several themes that jump out at the reader (for example, the shamefully relentless maniacal quest for gold; the constant amazement at how peaceful and hospitable the Taino were; the fascination with the absence of much body clothing on the Taino; the obsessively forced reading by Columbus into everything he came across as an indication that they had arrived in the Far East [India, Japan and China];

and the wonderment at the lush and unusual vegetation), is one that is of much relevance here: the almost nonchalant assumption of ownership in the spirit of "I found it first, so it is mine!" As Adam Smith, writing more than 200 years ago, would observe: "In consequence of the representations of Columbus, the council of Castille determined to take possession of countries of which the inhabitants were plainly incapable of defending themselves. The pious purpose of converting them to Christianity sanctified the injustice of the project." ("But the hope of finding treasures of gold there," he further points out, "was the sole motive which prompted him to undertake it" [1961 (1776)], vol. 2: 72.)

It appeared to have mattered little to Columbus and his men that the ownership they were establishing was over other human beings and their rightful domain and neither it appears (with the exception of perhaps a few at a later time) were their Christian consciences troubled in the least bit by, to quote Smith again, "the injustice of coveting the possession of a country whose harmless natives, far from having ever injured the people of Europe, had received the first adventurers with every mark of kindness and respect."(p. 102)[52] In other words, they were with great impunity violating that "sacred" law, *the natural law of prior claim*.[53]

The project of ownership commenced almost as soon as Columbus set sail and the process of actualizing it with the moment he and his men stumbled upon the Tainos of the Bahama Islands in 1492 and set foot on dry land with the renaming of the islands that they visited (as if their residents didn't have their own names for their islands), and then proceeded to the promulgation of Spanish dominion over the islands under Spanish law in a language that the inhabitants did not understand, literally and figuratively; the capture and transportation to Spain of some of the inhabitants; and so on. In other words, the Columbus project was also a racist project in that the peoples he encountered were considered but just one more exotica in the Edenesque landscape of the mysterious and fascinating flora and fauna; ultimately to be possessed and exploited for the purposes of self-aggrandizement.

Now, the question that emerges here is this: Where did such unabashed European arrogance regarding other peoples and their territories come from? To the Europeans like Columbus, the Tainos were not human beings, they were property; but not only that, what is of critical importance to observe here, is that they had been dehumanized long before the actual encounter was forced on them. How? When the Europeans left Europe on their journeys of exploitation in the fifteenth-century (and thereafter) they were carrying with them not only weapons of mass destruction for the time period (to use a term currently in vogue)—guns, cannons and diseases—but also an ideological worldview that was thoroughly imbued with a virulent form of ethnocentrism. One that saw other human beings that they came across as a legitimate target for murder, enslavement and dispossession of their lands. Recall too, that unlike today, for Western Europeans of the fifteenth, sixteenth, seventeenth, and eighteenth centuries, religion was not just a very, but an extremely important part of their daily lives.

How then did this highly malevolent European worldview originate? One response would be to say that it was simply capitalist greed. However, that would be too simplistic an answer, even though that was the basic motive force behind that fateful voyage. To Columbus and his backers, his project was not an evil or an unholy undertaking (religiously or otherwise); on the contrary, it was also a "Christian" project (see, for example, Watts 1995). After all, like other people of his day, Christian piety was an integral part of his person. It is the contention here that it was born out of the development of a

Western European ethnocentrification of Christianity (or more simply put, Westernization of Christianity); that is a Christianity that no matter its Eastern provenance, was now thoroughly laced with Western European ethnocentrism.[54] In essence, what this meant is that at the most basic experiential-level for most ordinary Western European Christians, Christ had been plucked out of the Middle East, shorn of his Semitic ethnic heritage, and reincarnated as a European-born savior—as is so well attested by Christian iconography to this day.

The Westernization of Christianity itself, however, in turn, rested on three principal factors: the development of the East-West schism (also referred to as the *Schism of 1054*), the mythologization of the Curse of Ham, and the launching of the Crusades against the Muslims. The second factor, the Biblical Curse of Ham, where the descendents of the three sons of Noah, (Japhet, Shem and Ham) were, through mythological trickery, imbued with a spiritually and materially corrupting racial hierarchy, has already been described at some length in Chapter 2—so it need not detain us here further. As for the first factor, it is not necessary to go into the whyfors and wherefores of the schism other than to note that it entailed political rivalry between the two major centers of Christianity: Rome and Constantinople. The rivalry itself was an outcome of an evolving papal monarchy in Western Europe seeking to define the realm of its domain, Christendom, and which found a doctrinal basis for it—leading eventually to the separation of the two geographic wings of the Church and mutual excommunications of their pontiffs in 1054—namely, whether the Holy Ghost issued just from the Father (Byzantine belief) or from both the Father and the Son (Roman Catholic belief). It may be noted in parenthesis that in historical terms, the year 1054 should be considered as nominal rather than strictly factual; that is, its a historiographical device of convenience; for, phenomenon of this kind tend to be part of a long-term process that cannot be pinned down to a single date. One is not surprised therefore, when Runciman (1955) convincingly shows that, in terms of permanence, the real cause of the East-West schism were the Crusades because they introduced a powerful political factor (control of the symbolically important Holy Land) into the rivalry that could not be as easily dealt with as would have been possible with respect to mere doctrinal difference over the nature of the Holy Ghost. As he pithily puts it: "The Crusaders brought not peace but a sword; and the sword was to sever Christendom" (p. 101).

What is of importance here is the consequence of this rift for others over the long-term: it rendered true Christianity in the eyes of Westerners as essentially the Christianity as promulgated by the Western Church for they came to view the eastern Orthodox Church, in time, as a church of heretics. That the eastern Christians were also ethnically and linguistically different (Greeks, Syrians, etc.) was not coincidental in the evolution and cementing of this perception. Under the circumstances, it is not surprising that the eastern Christians that the Crusaders encountered were sometimes victimized by them just as much as the Muslims were. Courbages and Fargues (1997: 47), point out that it was not unusual for the Crusaders to slaughter the eastern Christians as well because they appeared to them to look like Muslims in terms of their dress and appearance (and plus, of course, they spoke a different language). They further note that for both political and economic reasons the eastern Christians were quickly reduced to the same juridical inferior status as that of the remaining Muslims and Jews, and they suffered "the supreme humiliation," of having the Church of the Holy Sepulchre wrested from their stewardship; the Latin Christians would now be in charge of the church.

In fact, Daniel (1989a: 6), goes further by noting that: "As soon as the pilgrims left the Latin world, and long before they met a [Muslim], they came into conflict with cultures, different from their own, and an inflexible Latin cultural intolerance remained with most of them throughout the crusading period." He continues: "From the beginning, it was implicit in Urban's decision to preach the crusade at all, in his choice of Clermont, and in the way he was understood in the West, that the crusade in the East should be an expansion of Western European society." In fact, as the Crusading project matured, the culturally rooted mutual antagonism between the Easterners and the Westerners, where each thought that the other was guilty of un-Christian and perfidious behavior, reached such heights that some ecclesiastical leaders in the West even talked about launching a holy war against the Byzantines themselves! (especially after the failure of the Second Crusade). Runciman (1955: 128) describes the situation well: "It began to shock the West that the precious relics kept at Constantinople should be in the hands of such un-Christian owners. It was after the Second Crusade that the ordinary Westerner began to regard the East Christian as being something less than a fellow Christian."

However, it wasn't simply the matter of the disastrous failure of the Second Crusade (the blame for which, quite unfairly, was laid by the Franks at the door of the Byzantines), but the problem went even much deeper, as just noted; Runciman himself alludes to it: "They had set out to rescue Western Christendom, but when they came to the land of the East Christians they found it strange and unwelcoming. The language was incomprehensible, the great cities unfamiliar and alarming. The Churches looked different; the priests with their black beards and buns and black robes were quite unlike any Christian priests they had seen before…. [and so on]" (p. 80). The Byzantines, for their part, saw the Franks, perhaps justifiably, as nothing less than an uncultured, thieving, insolent and blood thirsty rabble that had arrogated to itself the Crusading project. Any notion of even nominally submitting to the authority of the papacy was unthinkable. "How could they possibly allow their great and holy Church to submit itself to the domination of a bishop belonging to such a people" (p. 128). Courbages and Fargues (1997: 53) go so far as to suggest that the degree of mutual animosity between the Easterners and the Westerners was such that the Eastern Christians (and Jews too, of course) may have collaborated with the Muslims when, under Saladin, the Muslims retook Jerusalem in 1187. In the end, the Latin Christians could not be held back; under papal approval (Pope Innocent III, to be recanted by him later), and instigated by the greed of the Venetians, the Fourth Crusader Army entered Constantinople, on April 13, 1204, to unleash a three-day orgy of bloodshed, looting and destruction of the Byzantine capital.[55] This event stands out as among the clearest examples of the depth of intolerance exhibited by the Christian ignorantsia from the West toward other ethnicities, even those who were fellow Christians!

Against the backdrop of such history, is it any wonder then that in centuries to come, Westerners would regard Christians of other races (blacks, Latinos, Native Americans, etc.) as not worthy of full equality—racially or spiritually—even though the missionary effort to seek their conversion was actively pursued. How else can one explain the collusion of the European clergy with the racial segregation of the peoples they converted, including their enslavement and exploitation? So blinded were the Westerners by their ethnocentrism that they saw no contradiction in this regard—and notwithstanding the fact that Christ himself was not a Western European, but an Easterner, a Semite of Palestinian Jewish descent. (One may legitimately conjecture here that had the Crusad-

ers come across Christ himself, they would have probably killed him too in their disbelief at his appearance.) Like the second factor, the third factor, too, rested on yet another Western perversion of Biblical teachings: "thou shalt not kill," was now converted into "thou shalt kill so you may attain the Kingdom of Heaven." Thusly were the struggles of the emerging *papal monarchy* (this apt term is borrowed from Mastnak [2002: 130], implying "a universal Christian society under the supreme rule of the papacy") with the Muslims on one hand, and, this is important to emphasize, *with the temporal powers within Western Europe itself, on the other*, over the definition of the internal (political) and external (geographic) boundaries of Christendom, now acquire a violent expression: the launching of the Crusades.[56]

Before proceeding further, one is forced to preface what follows with this observation: centuries of derisory glance-backs at the medieval period by European historians in general (hence once upon a time the label the Dark Ages) have left their mark—the lack of full appreciation among them of the magnitude of the impact of the Crusades on the development of Western European institutions and psyche, even long after the last Crusader had put down his sword. Yet, as Brundage (1997: 251), for example, has pointed out, without the Crusades, Europe would not have evolved in the manner it did; for, "the incorporation of processes, systems and ideas that originated in medieval attempts to reconquer the Holy Land," he explains, "remained part of European life for centuries after crusading had ceased." Consequently, in establishing the importance of the Crusades for the development of Western European thinking regarding other peoples down the centuries, coming all the way to the present, one must be forewarned against the temptation to dismiss it from the historical calculus.[57]

To move on, by the time Pope Urban II had launched the First Crusade with his sermon on Thursday, November 27, 1095, the papacy had over the course of nearly three centuries following the arrival of the Muslims in Europe in the eighth-century, slowly developed the notion that the entire planet was potentially a Christian realm to be headed by a papal monarchy and that to bring this into fruition was the objective of a Christian *just war* to be waged against any one who stood in the way of this project, and in which violence, plunder, enslavement, and so on, was now deemed as morally permissible for Christians. The first step in the creation of this global Christian realm, which notice was a religious, political, and economic project intertwined together, was the eradication of Islam from Europe and the Middle East, and later from the Afro-Asian land mass as well, and the second was to simultaneously work toward ensuring the subservience of the European princes and monarchies to papal authority—the Crusades had the potential to achieve both. However, the latter objective was part of a dyadic goal: the Crusading project would not only be a papal controlled mechanism for temporal authorities to acquire legitimacy ("you are either with us or you are against us," to borrow the current phrase in vogue—and notice—involving essentially the same protagonists, Westerners and Muslims, even after almost 1,000 years), but it would also help to achieve at one and the same time peace among the warring factions within Europe itself, without which the authority of the papal monarchy would be greatly undermined. (Under the circumstances, it is not surprising then, as Mastnak [2002] points out, that the "liberation" of the Holy Land in the later stages of the Crusades became of secondary importance to the broader goal of expanding ad infinitum the borders of Christendom.)

To effect such a grandiose project there was the very "small" problem of how to convince a superstitious, highly parochial, illiterate, and ignorant peasantry (and the nobility was not too far behind either in these terms) to abandon their fields and villages

and journey hundreds of miles to a foreign land—in an age where there were no trains, planes, cars or bicycles, to do battle with the infidel; and what is more, at one's own expense! As it turned out, in this regard, the papacy need not have been too overly concerned; the response from the European populace went beyond its wildest dreams. The question is, Why?[58] In a time when religion was of such great importance to people's daily lives, where piety was universal, that is it was as much the preserve of the laity as of the clergy, four factors appear to have been highly significant in underwriting the magnitude of this positive response: one, was the promise of religious deliverance through penance, martyrdom and the forgiveness of one's sins (see Maier [2000], and Riley-Smith [1997]); two, was the promise of adventure, booty, and so on; three, was the notion that the Crusades were an extension of the effort to bring universal peace to Christendom (*pax Dei* and *treuga Dei*, that is, the "Peace of God" and the "Truce of God")—itself a project undertaken by the papacy as a device to keep an increasingly upsurgent secular authority at bay (Mastnak 2002); and four, was the propaganda-driven systematic vilification of Islam and the demonization of the Muslims (without which of course the other three factors become irrelevant). It is the fourth factor that is of interest here. Initially, Mastnak suggests, the general view of Muslims held by Christians, at least until the eleventh-century, was that they were one among a number of other Christian enemies (Jews, Magyars, Norsemen, Slavs, etc.); with the launching of the Crusades however, their perceptions changed dramatically: the Muslims were now the chosen enemy. How was this change in attitudes effected? He explains:

> In practical life, ignorance is often a powerful argument. The fact that Latin Christians knew nothing (or next to nothing) about Islam did not prevent them from making Muslims the enemy of Christianity and Christendom…. Urban II raised to new heights the hostility toward the Muslims that had hitherto been dormant in the Latin West. Without the elaboration of this enemy image, the new holy war, the crusade, was unimaginable. Whereas from the Carolingian times onward, holy wars had been fought against infidels in general, the crusade was at its inception the war of Christendom against the Muslims, "animated by a generalized hatred of Islam" (p. 115—see also Vitkus 1999).

It is instructive to note that even the fact that for centuries Christian pilgrims had been allowed to visit the Muslim-held Jerusalem (except for a brief atypical period under al-Hakim) and to travel through Muslim lands unmolested, or the fact of the ubiquitous Levantine trade involving Christian and Muslim (and Jewish) merchants, appeared to have had no mitigating effect on the anti-Muslim hysteria that would now be whipped up by the papacy.[59] The truth is that at the time when the First Crusade was launched, Mastnak (2002: 118) points out, the Muslims were at peace with Western Europe, and that the Eastern Christians who lived among them were, notwithstanding Urban II's propaganda, going about their business as they had always done under Muslim rule. "They continued to live as a subject minority population, protected by Islamic law, paying taxes, and having a measure of freedom of worship" (p. 118–119—see also Courbages and Fargues 1997). (After all, recall from Chapter 2 that the acceptance of the diversity of faiths, ethnicities and cultures was built into the genesis of the Islamic civilization.)

Moreover, given that the Crusades were a response to primarily internal Western European developments and not to anything that the Muslims were doing, to the Christian patriots it would have mattered little had they known that the Muslims on their side re-

garded them relatively benignly as the *People of the Book*—that is as adherents of a religion that was regarded as legitimate, so much so that even in the hereafter, the Muslim heaven was not barred to them. Neither would have their Christian patriotic fervor weakened in the least had they known that Muslims revered Christ as among a long line of prophets (Abraham, Moses, and so on—with Prophet Muhammed being the last); or that the God of the Christians (and the Jews) was the same God that the Muslims worshipped; or that Jerusalem was sacrosanct to the Muslims (and to the Jews) too, or that the Muslims, even when the Crusades were in full swing, did not see the invading hostile Christians as part of a global war of Christianity versus Islam (Hillenbrand 1999)—much to their own detriment as they would find out centuries later (for, as Daniel 1989a: 38, points out "there is a clear continuous line from the crusades to the aggressive imperialism of the Western European powers in the Levant and North Africa in the nineteenth-century"); and so on. Had they known all this it would not have mattered: for, the view that was now adopted in Western Europe under papal propaganda was not only that Islam should be eradicated from the face of the earth, but that its believers were beyond redemption; so much so that even an attempt at their conversion was considered futile.

Daniel (1989b: 77) in his exegesis on the character and mechanics of the ecclesiastical engineered and managed Crusade propaganda describes admirably the context from which such thinking arose: "To establish that a whole religion, society, lex, was in every respect the reverse or denial of European society was immensely helpful in creating a mental as well as a physical frontier. It was the best war propaganda in that it made the enemy the proper recipients of treatment unworthy of humanity in ordinary conditions." He continues: "The evil alleged of Islam made the rules of the crusade, or of the just war, emotionally acceptable. All war is more effective if it is fought with hatred and if the humanity of the enemy is minimized." Not surprisingly, throughout the Crusading project, but most especially in the early phases, missionary work among the Muslims was rarely part of the papal calculus.[60] On the contrary, there arose says Mastnak (2002: 126), a new kind of love: a Christian love that was exclusive to Western European Christians and therefore one that did not include those who were of other faiths (or even other Christians if they were of a different ethnicity). Consequently, "[t]he new exclusivity of Christian love—love that inspired the use of violence—opened the gate for the crusader's shocking brutality toward the Muslims" (p. 126). But it went even beyond this; as Mastnak explains:

> A disciplinary force within the Christian family, love turned into the annihilation of those outside the family. The power of that love was expressed in the fullness of hatred…. The destruction of paganism, the eradication of infidel peoples, became logical and necessary. Ideally, Christian holy war was genocidal, the ultimate victory in that war was genocide, and the peace achieved was the peace of the cemetery: perpetual peace (pax perpetua)—"for the dead do not fight any longer." Integration of the infidel into Christian society, which perceived itself as a manifestation of the absolute, was inconceivable. "In Christendom, there is no place for non-Christians" (pp. 126–127).

Against this religious ideological background, is it any surprise at all that when both ordinary and elite Europeans first made contact with other peoples outside Western Europe on a global scale from the fifteenth-century onward, it occurred in the context of European greed, but underwritten by a hate and distrust developed over the centuries of peoples of other faiths and ethnicities?[61] It is from this perspective that one must view

the behavior of the first Europeans who set out across the oceans in search of riches (and notice the coincidence of timing: it occurred on the heels of the Crusades, of which the last was when the province of Granada in Spain, the remaining Muslim stronghold, was overrun by the Spanish Christians). In making this point, it is not to detract in any way from the fact that the European seaborne ventures were primarily economic projects, but that the ecclesiastical imprimatur on these projects also rendered them religious exercises in which all Western Christians were enjoined to participate. The path to the kingdom of heaven, therefore, also lay through the plunder and murder of others in far off lands (and in one's backyard too—reference here is to the pogroms). As Mastnak (2002: 346) points out: "As an ideal and as a movement, the Crusades had a deep, crucial influence on the formation of Western civilization, shaping culture, ideas, and institutions."

Consequently, is it any surprise that when the first conquistadors arrived in the Americas (at whose hands, in an unimaginable, relentless orgy of bloodbath, entire civilizations and peoples would disappear within the short period of a lifetime or two) they did so accompanied by crusader iconography, as Brundage (1997: 260) observes. "Thus both the intellectual and institutional foundations of European expansion in the sixteenth-century," he further continues, "rested squarely on the medieval crusades, which provided their rationale and much of their structure." Imperialism, regardless of the forms it took, was not just an economic phenomenon, it was also an ideological phenomenon in which a Westernized Christianity played a prominent role. Yet, sadly, this is not all: the Westernization of Christianity laid the groundwork for the ecclesiastical acceptance of racism, slavery and exploitation, *even when the victims were Christians*, so long as the Christians were of a different ethnicity. This was most graphically demonstrated when Westernized Christianity was introduced in European colonies in Africa, in the Americas and in Australasia. This Christianity proved no barrier to the mass enslavement of Africans and Native Americans—their eventual conversion to Christianity notwithstanding; and a Western European God accepted, apparently without so much as a dissenting murmur, even racially segregated worship.

To return now to the discussion that opened this chapter: so it was that the descendants of those who had thwarted the westward European advance of Islam, in the eighth-century in France, arrived about 1,000 years later under the leadership of Napoleon Bonaparte, in 1798, in Egypt to inaugurate a different future for North Africa (and the rest of the African continent).[62] Yes, it is true that France was not the first European power to succeed in imposing its will on a North African country, even if only temporarily. Recall that Portugal had captured the Moroccan city of Ceuta in 1415. That, however, was a different time period because the relative political and economic strength of the North Africans had not yet diverged greatly from that of their enemies; the Portuguese would be decisively defeated at the Battle of the Three Kings by Moroccan forces in 1578.

Two hundred or so years later, however, times had changed, for Western Europe had had time to draw succor from 1492 and qualitatively transform itself. The era of modern Western imperialism underwritten by an emergent industrial capitalism had now begun. That this was a new era is most clearly highlighted by the fact that in the preceding 300 years or so, even as Africa had been buffeted by the winds of predation unleashed by the Atlantic slave trade, it had largely retained its political autonomy (with the exception of one or two European intrusions on the continent, such as at the southern tip); yet a mere 100 years or so after Napoleon, virtually the entire continent had been carved up by Western European powers.

NOTES

1. Lest there are doubts as to the relevance of this appendix—one can almost hear the words: It is all very interesting, but is it really relevant?—it should be further pointed out that the importance of explaining (in contrast to describing) the arrival of European imperialism in Africa also stems from consideration of two other kindred issues: one, the necessity to bring awareness of this subject to those in the West today who, motivated by good intentions, would like to assist in the revival of the sorry fortunes of higher education in Africa. The history of aid relations between Africa and the West is replete with examples of good intentions gone awry because of the subtle and sometimes not so subtle "we-know-better-than-you-what-is-good-for-you" arrogance that has often tainted these relations. It is an arrogance that is underwritten by a Eurocentric reading of world history, to which this appendix aims to provide a corrective. Two, to allow these same people to gain at least a modicum of understanding of the historical basis of the awful economic predicament that faces much of Africa today (in terms of national development) and from which the fate of African higher education cannot be separated. While it is true, of course, that to place the blame for this predicament entirely at the door of Western imperial history—specifically the post–Columbian portion of history that saw the eventual hijacking of the African historical trajectory by the West—and thereby absolve Africans of any complicity in this predicament would be a gross distortion of the truth; the fact still remains, however, that sentiments such as the following that continue to be espoused by many Westerners and articulated here by that doyen of unrepentant Western arrogance, the U.S. American economist P. T. Bauer, is nothing more than confabulation of the truth: Beginning with some lines from W. B. Yeats ("Come, fix upon me that accusing eye. I thirst for accusation."), he goes on to unfold such drivel as this: "Acceptance of emphatic routine allegations that the West is responsible for Third World poverty reflects and reinforces Western feelings of guilt.... Yet the allegations can be shown to be without foundation. They are readily accepted because the Western public has little first-hand knowledge of the Third World, and because of widespread feelings of guilt. The West has never had it so good, and has never felt so bad about it" (1981: 66). In other words, pseudointellectuals like Bauer ignorantly refuse to accept the fact that the same structuration of the post–Columbian Atlantic economic system that decisively propelled Western Europe to modernity also simultaneously placed Africa in the straitjacket of underdevelopment (not to be mistaken with undevelopment) and dependence.

2. The word *transformation* (e.g., "industrial transformation") is to be preferred to the more common usage of *revolution* (e.g., "agricultural revolution") when referring to the major changes in agricultural and industrial technology that began to appear and cumulatively accelerate as the seventeenth-century wore on. A revolution is always suggestive of a quick, decisive, and wholesale break with the past; yet no such break can be clearly identified in the history of Western Europe where these revolutions are first said to have occurred. Adoption of new technologies is always a haphazard process and takes place over considerable lengths of time (and sometimes only transiently). Even more importantly, however, technological change does not occur in a vacuum; it is always part of not only wider socioeconomic and political historical processes, but it occurs on the back of existing technology. That is, even within the so-called industrial revolution there was historical continuity. In other words, the terms industrial revolution or agricultural revolution signify ahistorical categories; hence they are nothing more than a historian's figment of imagination. (See also Cameron [1994], for a review of the historiographical treatment of this issue.)

Note also that if the process of technological change that Europe experienced, as it moved toward the era of industrial capitalism, is viewed in this manner then it also takes care of one of the red herrings that Eurocentrists are often obsessed with and expressed in the question: Why did the industrial revolution take place in Europe? (Underlying this question, of course, are the usual myths associated with the notion that this was something very uniquely European that Europe experienced and which the rest of the world did not and could not.) Technological change is an ongo-

ing process, but most importantly: manufacturers will adopt new technologies if and when it suits them. (This simple logic appears to escape Eurocentrists. There is, in truth, no evidence to support the bizarre Eurocentric notion of fortuitous autonomous technological change in Europe giving rise to production for the market; yet, as Inikori's work [2002], for example, reminds us, there is plenty of evidence proving the logical, that is the opposite.) This phenomenon was not unique to Europe; it existed throughout the Afro-Eurasian ecumene wherever products were manufactured for the market. After all, as was indicated in the preceding appendix, there was a time when the East was far ahead technologically than the West—the presence of such industries as sugar manufacture, paper making, high-quality steel manufacture, ceramics, sericulture, cotton textiles, and so on, long before Europe acquired them provides ample testimony. (How come then one does not talk about an industrial revolution in the East?)

In other words, if 1492 had not taken place then one can confidently assert that Europe (specifically Western Europe) would not have experienced the level of industrial transformation that it underwent. (Conversely, had the rest of the Afro-Eurasian ecumene experienced the same economic opportunities that 1492 created, then they too would have experienced the same kind of industrial transformation.) The need to produce for expanding internal and external markets which, note, included the pursuit of the economic strategy of import substitution on a very large-scale (the cotton textile industry in England being a classic case—and recall too that there was a time when Europeans did not even know what cotton was, a fact that in itself speaks volumes for the low level of economic development in Europe prior to 1492) led manufacturers to innovate when new technologies became available through their own efforts or those of others. However, this was always contingent upon their realization that it was in their economic interest to do so, meaning whether they saw the need to over come whatever bottlenecks they may have been facing—e.g., an inferior quality product, high wage labor, high energy costs, low production-runs, and so on—in outsmarting the domestic (within Europe), as well as international (outside Europe), competition. (See Pomeranz [2000]. For more on the role of the import substitution industrialization strategy in the industrial transformation of Europe see Inikori [2002].) *But this can hardly qualify as a uniquely European response that took place at a unique time in world history.* On the contrary, this is a response that is intrinsic to the logic of any manufacturing activity aimed at the market, without regard to time and place.

3. In fact on this point it is worth noting, albeit on the basis of anecdotal evidence, that no one from outside the West who has had the experience of interacting for a sufficient length of time with Westerners (regardless of who they are in terms of their multiple social locations: working class/middle class, male/female, liberal/conservative, student/teacher, Marxist/non-Marxist, young/old, clergy/laity, progressive/nonprogressive, academic/nonacademic, politician/nonpolitician, and so on (including those who profess to be anti-racists) can avoid noticing an ideological perspective—sometimes expressed blatantly, but more often, in the world of the twenty-first century, expressed innocently and unselfconsciously in the subtlest of ways—shared by almost all of them with few exceptions (of which there are, but remember: exceptions only prove the rule), a self-confident arrogance characterized by a "we are more intelligent than you, better than you, more civilized than you" superiority complex vis-à-vis those who are not Westerners by origin; that is, those who are, from their perspective, not "whites" or Europeans. In part this attitude is a result of growing up in a racist society, but in part it is also an outcome of being taught misguided, simplistic and plainly false histories (symbolized in the United States, for instance, by the institution of the two public holidays, Columbus Day and Thanksgiving Day). This is not a new phenomenon by any means given that it has roots that go back to the Crusades; it is its persistence in this day and age that elicits notice. Under the circumstances, is it any wonder at all, then, that such arrogance has also seeped into Western scholarship (with rare exception) on almost all matters relating to the world outside the West, including explaining the genesis of the current Western hegemonic domination of the planet.

4. Writing more than three decades ago, Hodgson (1993: 86), would respond to this kind of

shallow history thusly: "All attempts that I have yet seen to invoke premodern seminal traits in the Occident can be shown to fail under close historical analysis, once other societies begin to be known as intimately as the Occident. This applies also to the great master, Max Weber, who tried to show that the Occident inherited a unique combination of rationality and activism. [Yet] …most of the traits, rational or activist, by which he sought to set off the Occident either are found in strength elsewhere also; or else, so far as they are unique (and all cultural traits are unique to a degree), they do not bear the weight of being denominated as so uniquely 'rational' as he would make them." As he goes on to specifically address Weber's views on Western law and theology, he points out that that Weber "partly mistook certain sorts of formalism for rationality, and partly simply did not know the extent among Muslims, for instance, of a probing rational drive."

5. Note that the concept of *Eurocentrism*, as Amin (1989) has pointed out, embodies two senses: one signifies values (in the form of racism, bigotry, prejudices, etc.), while the other refers to a presumed empirical reality (embodied in the notion of European exceptionalism or historical priority as constituting a historical actuality). While it is possible that not all Eurocentrists are guilty of subscribing to the concept in both senses in that theoretically one can believe in the empiricism of European exceptionalism without holding any racist prejudices, it is difficult to imagine that the two can be separated in practice because subscription to the first is bound to seduce one into subscription to the other. In other words, to believe in the myth of European exceptionalism and simultaneously believe in the equality and dignity of all human beings does not appear to be a viable project in practice; certainly those from outside the West who interact with Westerners generally, going by anecdotal evidence, see this to be the case. Additionally: it may also be pointed out (as Blaut [1993] does) that Eurocentrism does not refer to a love of things European, but of believing that things European are inherently superior to things elsewhere; for example, to be a lover of European cuisine does not in of itself make one a Eurocentric, but on the other hand the belief that European cuisine is superior to that of others, does.

6. Like many of their contemporaries, these men were not immune from racist views of other peoples outside the West, and depending on whose writing one is considering, they saw people outside the West as mentally inferior, civilizationally backward, irrational, in need of Western tutelage and aid, and so on. See for example, Jung (1964), Piaget (1971) and Weber (1967, and 1998). Even Marx, no matter how indisputably brilliant he was in his analysis of the development of capitalism within Europe, when it came to considering the historical trajectories of societies outside Europe, was unable to break out of the Eurocentric cocoon of ignorance that many scholars of his day had fashioned for themselves. Here, for example, is how he portrayed the economies of Asia: "[I]n most of the Asiatic landforms, the comprehensive unity standing above all these little communities [villages] appears as the higher proprietor or as the sole proprietor; the real communities hence only as hereditary possessors…. The surplus product—which is, incidentally, determined by law in consequence of the real appropriation through labor—thereby automatically belongs to this highest unity. Amidst oriental despotism and the propertylessness which seems legally to exist there, this clan or communal property exists in fact as the foundation, created mostly by a combination of manufactures and agriculture within the small commune…. A part of their surplus labor belongs to the higher community, which exists ultimately as a person, and this surplus labor takes the form of tribute, and so on, as well as of common labor for the exaltation of the unity, partly of the real despot, partly of the imagined clan-being, the god" (Marx 1973: 472–473). This exceedingly stereotyped and naive portrayal of the highly complex and diverse economies of Asia as essentially mired in stasis (unlike in the West) was characteristic of Marx's episodic writings generally about societies outside Europe; and the damage was done: generations of Marxist and Marxist-inspired scholars would labor under the yoke of Marxian Eurocentrism. As for Hegel (Marx's mentor in spirit), his views have already been mentioned in Appendix I. (See also Dalal [1988] on Jung; and Bailey and Llobera [1981], Chandra [1981], Hindess and Hirst [1975], and Avineri [1968] on Marx.)

Note: given their unquestioningly significant scholarly contributions to some areas of

knowledge, in categorizing people like Marx, Weber, and so on, as racists, creates some discomfort among even those enlightened academics who would normally have no difficulty in calling a mango a mango when grappling with sensitive topics; so Blaut (1993: 65), for example, has sought to minimize their racism by referring to it as "moderate racism" (in contrast to what he calls "classical racism"). This is a specious distinction (in the order of moderately pregnant) because the so-called moderate racism is always pregnant with the potential to degenerate into classical racism under appropriate circumstances (classic examples of this phenomenon are to be found in the histories of Nazi Germany, apartheid South Africa, the Jim Crow South (in the United States) and in modern-day Serbia, Israel, and so on. (Here is a thought-experiment: Would these Western luminaries of the past—or even those of the present—ever have deigned to invite black scholars into their homes to break bread with them [and thereby acknowledge their humanity]?) Furthermore, today examples of this process in the West can be seen whenever issues such as immigration, affirmative action, terrorism, and so on, surface to the forefront of public discourse. In this regard see, for example, Bonilla-Silva's work (2003).

7. For an excellent rebuttal of Jones see Blaut (2000); other counter-Eurocentric sources mentioned in this chapter are also pertinent at a more general level (such as Frank 1998—interestingly, he makes no reference to Blaut's either work, 1993 or 2000.)

8. The core elements of the canon of Western exceptionalism (of which the work of people like Jones is emblematic) are generally familiar to almost all at some basic level, both to Westerners and the rest of the world alike, given that when woven together they emerge as that almost universally accepted Western ideology, the ideology of Western modernity—which asserts that the West is not only superior to the rest of the world in every way, *but it is entitled to exercise hegemony over the planet* since it alone is authentically modern because modernity is a trait that is part of the genetic makeup of the Westerner (though, of course, it is not, these days, always expressed thusly)—and they need only be recapped here briefly in their various permutations of (a) plain factual untruths, (b) factual distortions, (c) ahistoricism, (d) contradictions, (e) ideologically driven ignorance, (f) technological determinism, (g) hypocrisy, (h) erroneous mirror-projections of images of the present on to the past, (i) environmental determinism, (j) confusion between cause and symptom, and so on, to name some of the ethnocentrically driven acrobatic moves against empirical truth:

- Europeans (specifically the "white race") have superior biological qualities that sets them apart from other human beings: they are, compared to everybody else, more intelligent, courageous, creative, enterprising, freedom-loving, adventurous, and so on. (At one point in history, it may be noted, such a view was generally reserved for Western Europeans alone, not all Europeans). This is why Europe was the first to achieve modernity (while the rest of the world could only be coaxed into imitation; or, if necessary, forced into imitation through the benevolent agency of colonialism and imperialism—the white man's burden.).
- It is only Europeans who possess the true religion, Christianity; consequently, not only are they the chosen recipient's of God's blessings (as expressed in the trappings of modernity), but they have a duty to provide guidance to the rest of the world—by force if necessary.
- Unlike everybody else, Europeans are inherently highly rational beings and that is why they were able to invent modernity.
- The superior inventiveness of the European mind led to critical autonomous technological advances in the Middle Ages that set the stage for Europe's passage to modernity and global dominance.
- The Asian ruling classes were too fond of luxuries; therefore they were unable to amass their surpluses for investment, instead consuming them in an orgy of sumptuous living.
- The nuclear family, with marriages based on romantic love, are uniquely European social inventions which helped to propel Europe toward modernity.

- The Chinese did come up with some important technological inventions, but they didn't have the requisite intelligence to exploit these inventions in the manner that the Europeans were able to do.
- The Asians, unlike Europeans, had an irrational love for precious metals, and so instead of using it for economic development they simply sat on it (the infamous "hoarding" thesis).
- Europeans, unlike the peoples of the Afro-Asian ecumene (for example), are less prone to sexual over-indulgence and therefore, historically, they were able to avoid "Malthusian disasters" that supposedly flow from over-population. (Paradoxically, massive population expansion within Europe is also cited as a positive aspect of European history that accounts for its rise.)
- Only Europe had a genuine aristocracy, others did not; therefore only Europe had a class of people capable of shepherding it to modernity.
- The Muslims may have possessed some science, but it was all borrowed science (they couldn't have had the intelligence to create any new science).
- In complete contrast to Europe, tropical areas (such as Africa or India) are inherently inimical to civilizational progress because their natural environments are highly disease prone, agriculturally infertile, endemically liable to natural disasters, mentally debilitating and lethargy inducing (because of the heat), unchallenging in terms of imagination and creativity (because of the abundant natural food supply available through hunting and gathering), transportationally handicapped (because of unnavigable rivers), and so on.
- Asians were inherently despotic, traditional, irrational, superstitious, and civilizationally stagnant in part because that is their character, and in part because of living in arid regions that required large oppressive state bureaucracies to manage water supply through irrigation (the infamous theory of the "hydraulic society" and its consequence: "Oriental despotism.")
- If other parts of the world are poorer and destitute relative to the West then it is entirely their fault, for their condition has nothing to do with the West (consequently no Westerner need really lose any sleep over the matter). On the contrary, they should be thankful that if it wasn't for the West who brought them all the benefits of modernity, their condition would be even worse than it is today.
- European colonialism and imperialism was (and is) a positive force on the planet because it brought democracy, freedom and economic progress (modernity) to the entire planet. (That imperialism by its very nature is undemocratic is an issue that is sidestepped here. The corollary of this view is that if any country seeks to advance and prosper today, then its only recourse is to imitate Western cultural and economic attributes; failure to do so is to court poverty and underdevelopment. The fact that the Western consumerist lifestyle rests on immense waste and the highly disproportionate, relative to population, unjust consumption of the world's resources—not to mention such factors as environmental destruction, pollution, near slave-like exploitation of labor, and so on—is in terms of this view not a matter worthy of attention.)

It should be noted that those parts of this listing that relate specifically to Asian societies form a subconstruct of Eurocentrism called *Orientalism*. (Orientalists study, admire, and may even have a grudging respect for Asian civilizations, but it is always from the viewpoint that in the last analysis they are inferior to Western civilization.) This list is based on a number of sources, of which the following stand out for mention: Anderson (1979); Bauer (1981); Baechler, Hall, and Mann (1988); Blum (1978); Brenner (1997); Cipolla (1996); Diamond (1997); Hagen (1964); Hall (1985); Huntington (1924); Landes (1988); Levy-Bruhl (1985); Macfarlane (1978); Mann (1986, and 1993); Moore (1966); Wittfogel (1957); and White (1964). See also, of course, Jones (2003). For sources specifically dealing with Orientalism the classic is of course the 1978 work of the same title by the late Professor Edward Said. On this latter subject see also Halliday (1993); Hussain, Olson, and Qureshi (1984); Macfie (2000); Prakash (1995); Rahme (1999); Rodinson

(2002); and Said and Paul (1988).

It must be emphasized here that the foregoing summary of the constitutive elements of the Western canon on Western exceptionalism is not always subscribed to by all in their entirety, of course. However, even in this day and age most (but not all) Westerners accept most of the elements—at the very minimum at the subterranean levels of the psyche, but which find tangible behavioral expression the moment they interact with people who are not Westerners. (Note: the interaction need not necessarily always be of a direct kind, that is in person; it can also be indirect, effected through such inert mechanisms as the media and the scholarly enterprise or simply conversational discourse among themselves.) What is more, even those scholars who appear to have a much greater sensitivity to the achievements of others outside the West and whose work is organically rooted in global comparative analyses are unable to resist the seduction of mirroring the present on to the past (meaning the current planetary domination by the West is simply a reflection of a historically determined destiny); two obvious representatives of such fallacious thinking are Braudel (1981–83) and Wallerstein (1974–89).

For works that critique the Eurocentric perspective on world history, then Blaut (1993, and 2000) is a good place to begin; his brilliant debunking project on Western exceptionalism, titled *The Colonizer's Model of the World*, brings together in one place the core elements of the Western exceptionalist canon for much-needed critical scrutiny. (It should be pointed out that, sadly, his project is incomplete and will remain so given his untimely death in the same year that the second of his projected three volumes was published.) Blaut of course is not alone among the debunkers, the reader may also wish to look at the work of such others as: Abu-Lughod (1989); Amin (1989); Bernal (1987 1991, and 2001); Frank (1998); Goody (1996); Hodgson (1993); Inikori (2002); Inikori and Engerman (1992); Needham, et al. (1954–to Present); Pohl (1990); Pomeranz (2000); and Wigen and Martin (1997). Mention must also be made here of a great resource edited by Russell-Wood (1995–2000) titled *An Expanding World: The European Impact on World History, 1450–1800*, published in 31 volumes. (Note: the title of the series is somewhat misleading; it may give the impression that it is a Eurocentric work, but it is not.)

The term "protocapitalism" refers to the capitalism that emerged in the Afro-Eurasian ecumene as an extension of mercantile capitalism, but as a precursor of industrial capitalism; the time period when this form of capitalism was dominant is very roughly fifteenth through eighteenth centuries (see Blaut 1993).

9. This issue, to drill home the point, can be presented in another way: all human progress, in the civilizational sense, ultimately rests either on structural factors (both contingent and conjunctural) or ideational factors. If one accepts the former then it becomes easy to explain, for example, the rise and fall of civilizations and empires throughout history (including the collapse of the British and the Russian empires not too long ago). Moreover, one can enlist the support of science here in that it is now an incontrovertibly established scientific fact that there is no fraction of humanity (whatever the social structural criteria for the division: ethnicity, sex, age, class, etc.) that holds a monopoly over intelligence and talent. If, on the other hand, one privileges the latter, then one must be content with ethnocentrically driven historiography unsupported by evidence, other than fantastical conjectures. Yes, yes… of course, ideas do matter; but only when placed within the context of structures. (This applies even to religious ideas—at the end of the day the metaphysical and the transcendental are still rooted in the material; for, how else it can it be as long as human beings remain human, that is biological entities.)

10. In according considerable significance to Columbus to the account that follows should not in any way take away from the fact that he was not the first to arrive in the Americas from the Afro-Eurasian ecumene; others had preceded him; there were the Vikings, for instance, then there were the Chinese for another (see Menzies 2003 about the latter.) However, the difference is that Columbus was the first to arrive with a particular worldview (to be elaborated in the course of the pages to follow).

11. While it may be true, as Berman (1989) for example argues and amply demonstrates, that

the desire by human beings to find out what lies on the other side is universal and therefore in this sense the Columbian voyage was not singular. However, the fact is that in dispensing to this voyage a pride of place in the annals of human history, one is recognizing that there was something unique about this and other similar Italian/Iberian voyages of the fifteenth-century: a concerted, deliberate and systematic effort involving the blessing of the church and the resources of the state to seek out new routes across the oceans to lands in the East—which for Western Europe (specifically the Italians and the Iberians) were not entirely terra incognita—for one basic and overriding purpose: capital accumulation. (In this regard, the fact that it was this specific group, is in itself telling: in terms of commercial relations with the East through the agency of the Muslims, no other group of Europeans up to that point could have boasted a comparable history.) In other words, these were not chance adventures, unlike most of the voyages of centuries past.

12. The number of books that have been published on the life of Columbus and his project can fill a small library. For a comprehensive overview the following sources considered together, however, should suffice: Bedini (1992); Blaut (1992); Stannard (1992); Viola and Margolis (1992); and Yewell, Dodge and DeSirey (1992). Mention of course should also be made here of the volume edited by Lardicci (1999), as well as others, in the multivolume series, *Repertorium Columbianum* (and whose general editor is Geoffrey Symcox).

13. See the fascinating account by Menzies (2003) of the voyages of Hong Bao, Zhou Man, Zho Wen, and others that led them to places as far away from China as the America's and eventually even leading to their circumnavigation of the world. Of these voyages, of course, the one's by Cheng Ho are the most well-known (in relative terms). (See also McNeil [2005])

14. It ought to be noted that given the nature of the subject—its complexity—it should not be surprising that there will be some disagreement among these three, for example, over the relative saliency of the different factors; that is, privileging this or that factor in explaining the importance of 1492. For our purposes, the key point of significance is that they all agree on the centrality of the Columbian project, at least, in explaining the global rise of Europe after 1800.

15. The term *Euro-American ecumene* is coined here, for want of a better term, to signify the historically specific Europeanized Americas that emerged after 1492 with the permanent colonization by Europe of, initially, the Caribbean basin islands, Central America, and South America, and a century and a half or so later, North America. Note that this term may still have relevance today, but it would have a slightly different connotation: that of an *expanded Europe* (in all senses: geographic, political, linguistic, cultural and economic—despite the existence within the ecumene of politically sovereign states) and involving the addition of Australia and New Zealand on one hand and the subtraction of the southern portion of the Americas on the other (leaving only North America). In labeling this revised version of the Euro-American ecumene as an expanded Europe, is to testify to its possession of a sufficient unity of political-economic and cultural identity as to mark it out from the rest of the planet—plus at this present point in time it is further identified by the fact that it continues to enjoy hegemonic preeminence in global affairs relative to most of the world, except, perhaps, China.

16. That the project was an accident is of course attested to even to this day in the continued use of the delusional vocabulary of Columbus even by Native Americans who continue to call themselves "Indians."

17. Remember also the doomed voyage of the Vivaldi brothers some 200 years before Columbus. The two brothers, Ugolino and Vadino, who, like Columbus, were from Genoa and like him were driven by the same motivations, had set out in 1291 to seek a sea route to the East across the Atlantic. They never returned; it is presumed that they perished. Lopez (1995: 306) makes the intriguing suggestion that the voyage of the brothers achieved such legendary status in medieval Italy that it prompted no less a personage than Dante himself to immortalize it, by idealizing them through the character of Ulysses (the hero of Homer's Odyssey) in the first canticle, *The Inferno*, of his monumental Christian epic poem, *The Divine Comedy*. This suggestion is not as far-fetched as it may seem if one considers that not only was Dante unfamiliar with Homer (he neither knew

Greek nor were translations of Homer available in Western Europe in his time), but there is no clear indication in classical literature of how Ulysses met his death. Ulysses makes his appearance in canto 26 of the *Inferno* by way of a monologue, the first part of which reads thusly:

> Therefore, I set out on the open sea
> with but one ship and that small company
> of those who never had deserted me.
>
> I saw as far as Spain, far as Morocco,
> along both shores; I saw Sardinia
> and saw the other islands that sea bathes.
>
> And I and my companions were already
> old and slow, when we approached the narrows
> where Hercules set up his boundary stones
>
> that men might heed and never reach beyond:
> upon my right, I had gone past Seville,
> and on the left, already passed Ceuta.
>
> "Brothers," I said, "O you, who having crossed
> a hundred thousand dangers, reach the west,
> to this brief waking-time that still is left
>
> unto your senses, you must not deny
> experience of that which lies beyond
> the sun, and of the world that is unpeopled."
>
> Consider well the seed that gave you birth:
> "you were not made to live your lives as brutes,
> but to be followers of worth and knowledge."

(From the translation by Allen Mandelbaum and available on the internet as part of the Dante Digital project of the Institute of Learning Technologies of Columbia University. For more on the brothers' voyage see also the entry in Bedini 1992.)

18. For a discussion of the relationship between disease and demography following the critical year of 1492 among Native Americans see the entry under *disease and demography*, by Douglas B. Ubelaker in Bedini (1992). McNeill (1977), Kiple and Beck (1997), and Stannard (1992) are also relevant on this subject.

19. Unless specified otherwise, all references to sugar in this chapter is to sugar produced from sugarcane.

20. Sources that examine the less romantic side of the European arrival in the Americas from the perspective of Native Americans include Gallay (2003); Gentry and Grinde (1994); Stannard (1992); Yewell, Dodge, and DeSirey (1992), and Wright (1992).

21. Gunpowder, also known as *black powder*, is not a naturally occurring substance; it is a human manufactured chemical product comprising roughly 75% potassium nitrate (saltpeter), 15% charcoal, and 10% sulfur. Although it is unlikely that we will ever know with a 100% exactitude to whom the ignominious honor of inventing this awful substance that would claim, over the centuries, the lives of thousands of millions of human beings should be assigned, it is quite likely that it was invented either by the Chinese or the Muslims (in Persia) or both—perhaps as a byproduct of their pursuit of alchemy—though the general consensus favors the Chinese. Moreover, the sup-

posed reference by the Muslims themselves to an incendiary substance by the name of *Chinese Snow*, has also been taken to mean that gunpowder must have originated in China (where it was certainly known no later than C.E. 900). On the other hand, however, Chinese Snow was a reference not to gunpowder itself, but to the main ingredient, saltpeter, which is white in color and which, it appears, was relatively abundant in China (Saunders 1971: 199; however, his discussion of this topic in general from the vantage point of today is a little dated.)

If it was the Muslims who first invented gunpowder then one may conjecture here that gunpowder and weapons based on it may have first diffused to China and from there diffused to the West via the Mongols. (One may recall here the common Mongol practice of shanghaiing into their service the talented craftsmen of a defeated population while the rest, including women and children, were brutally put to the sword.) Whatever the case may be, we are on slightly more firmer ground when it comes to tracing the invention of lethal devices based on gunpowder, guns, and their precursors. According to Pacey (1991: 47), among the earliest instances of Europeans being subjected to weapons based on gunpowder, it appears, was during the Crusades when the Muslims spread considerable terror among the Latin forces with these weapons in 1249. However, Pacey states that these gunpowder-based weapons (incendiary devices, grenade like devices, fire-lances, etc.), most likely invented jointly—in the sense of one reciprocally improving on the invention of the other—by the Chinese and the Muslims, were not exactly a gun technology. A gun in the strictest sense of the word must not only have the three standard elements, a barrel, a projectile, and an incendiary substance, but they must be linked by a process that involves an explosion within the barrel. The Chinese and/or the Muslims were apparently the original inventors of such a device based on gunpowder; and Pacey suggests that these highly primitive guns (which were characteristically bottle shaped) diffused to the West sometime toward the end of the thirteenth-century, possibly via the Mongols when they were ruling southern Russia. By the early fourteenth-century, this primitive gun technology was now fairly widespread within the Islamic empire (including Spain and North Africa). However, by the time Columbus left Europe nearly two centuries later, it is clear that the Europeans had the edge in the technology of gunnery: they had moved the technology along in the direction of cannons and smooth bore muzzle-loading weapons: pistols and muskets. (See also Archer, Ferris, Herwig, and Travers [2002].)

22. The Portuguese, under Vasco da Gama, first made contact with India in 1498; yet just a decade or so later they had captured the Indian port of Goa (in 1510) and the equally important commercial port of Malacca on the Malayan peninsula (in 1511). Portuguese gunnery (together with, some might say, their barbaric cruelty) was decisive in these predatory exercises because viewed purely from the perspective of naval military power they had more or less stepped into a vacuum in light of the Chinese imperial withdrawal in 1435 with the death of Cheng Ho.

23. Even the celebrated Zulu victory over British forces at the Battle of Isandhlwana in 1879 (January 22–23) was based more on tactics than on Zulu weaponry (which included almost no guns). This fact clearly comes out when one remembers that the remaining British troops stationed at their military base at nearby Rorke's Drift, numbering a mere 120 men, were able to rebuff a Zulu attack that involved perhaps 2,000 warriors. In the end of course the British defeated the Zulu decisively two months later at the Battle of Kambula (March 28–29) with minimal casualties, whereas the Zulu forces suffered huge losses. (The colonization of the Zulu homeland by the British would be completed with the capture of the Zulu capital, Ulundi, a few months later in July.) For more on this particular historical event see Floca (1974), Furneaux (1963) and Knight (1995); for accounts of other post 1492 imperial military onslaughts by the West on the rest of the planet the following should suffice: Alavi (1995), Bayly (1989), De Moor and Wesseling (1989), Headrick (1982), Packenham (1991), Parker (1996), and Peers (1995, 1997).

24. They state: "This, the greatest conquest in history, had many sources, but one was the most fundamental of them all: Western armies crushed the others, making imperialism so cheap that minor causes sparked great conquests. Ultimately, the greatest cause of imperialism was not profound political and economic factors but simply the military ease with which it could be accomplished.

European armies were superior in technology, tactics, and organization *because for centuries their states had regularly fought major wars against each other*" (p. 440; emphasis added). Leaving aside the fact that even the most cursory perusal of world history indicates that, sadly, very sadly, Europeans alone did not hold a monopoly over fratricidal aggression in the preimperialist era, to ascribe the eventual successful overlay of the European imperialist order upon the planet, as the industrial transformation got underway, to European bloodthirstiness is being somewhat overly simplistic; however, it is most certainly indicative of a succumbency to that ever-present temptation that is the bane of all military historians: technological determinism (and in this case Eurocentric technological determinism). Military technology alone—especially in the prenuclear era of European imperialism—cannot explain everything.

Yes, superior military technology was important, but political and economic opportunity was equally important (as a careful analysis of the evidence in their own text indicates). In fact, one cannot even discount such cultural factors as chivalry, where the use of the gun was considered cowardly because a true soldier fights at close quarters (p. 462). However, even more significant perhaps, was the economic factor on the battlefield: European wealth itself that allowed the European imperialists to recruit indigenous soldiers from competing sides, in a given territory, in the classic power-play of "divide, conquer and rule." Prior to 1800, as Marshall (1995: 43) explains: "The military resources of an industrialized Europe had not yet been directed against Asia. This was not to happen until iron-clad ships, rifles and new artillery made their appearance in the mid-nineteenth-century. Until then, European technological advantages were marginal ones, such as greater standardization of equipment. To a large extent Europeans were making war with the resources of Asia: Asian soldiers paid for by Asian taxation." To give one example: one cannot satisfactorily explain how a handful of British soldiers (numbering just a few thousand) could have conquered and held in subjection for about 200 years a continent as large, as heavily populated, and as technologically advanced (at the time when the British first made their appearance on the continent's doorstep) as India, unless one also takes into consideration such political and social factors as deep internal rivalries among kingdoms and states, profound religiously motivated enmities, and the presence of the caste system that rendered the Brahmin ruling caste a groveling "yes Sahib," feet-kissing puppet of the British (and who, as time wore on, achieved a deep sense of psychic inferiority complex vis-à-vis all Westerners and which to this day it has yet to dispose of).

25. Chinese name variations of prominent personages stem from the practice of acquiring new names, such as with the acquisition of new positions (e.g., on becoming an emperor); or with the establishment of new dynasties; and so on. Moreover, the existence of two forms of romanization of Chinese names, Wade-Giles and the newer Pinyin does not help matters. For the present account, the following name/spelling variations (based mainly but not only on *Encyclopedia Brittanica* 2004 edition) are relevant:

Genghis Khan (c. 1162–1227): also spelled Ching-gis, Chingis, Jenghiz, and so on. Also known as Temüjin (Temuchin). He established the dynasty that his grandson, Kublai Khan, later proclaimed as the Yuan dynasty (1206–1368—also known as the Mongol dynasty) and of which Kublai Khan would be the first emperor.

Kublai Khan (1215–94): also spelled Khubilai, or Kubla Hung-wu (1328–1398): also spelled Hongwu—also known as Kao-ti, T'ai Tsu, and Chu Yuan-chang (Zhu Yuanzhang).

Cheng Ho (1371–1435): also spelled Zheng He Also known as Ma San-pao, Ma Ho, San Bao. His family claimed that they were descendants of an early Mongol governor of Yunnan and a descendant of King Muhammed of Bukhara. The family name Ma came from the Chinese rendition of Muhammed.

Yung-lo (1360–1424; third emperor of the Ming dynasty from 1402–1424): also spelled Yonglo—also known as Ch'eng Tsu, T'ai Tsung, Wen Ti, and Chu Ti [Zhu Di].

26. To fully appreciate the might of the naval power these expeditions represented for the time period, consider this comparison by Finlay (1995): The Portuguese Army that attacked Morocco and captured Ceuta in 1415 numbered about 12,000; the fall of the Muslim province of Granada in 1492 had been achieved with 20,000 men, while the French invasion of Italy in 1494 under Charles VIII had involved about 28,000 soldiers. The usual number that made up a field army in the early sixteenth-century in Europe ranged roughly from 25,000 to 30,000 men—vide, Philip II's Spanish Armada, for example, that was sent to invade England in 1588, it had aboard a total of about 29,500 soldiers. As for the size of the European ships, they were absolutely no match for the Chinese ones: the largest of Vasco da Gama's ships, for example, could only displace 300 tons at the most and carry 170 men (versus 600 men for Cheng Ho's 3,000-ton ships). Even in the case of the Spanish Armada, the size of their ships were wanting: the largest had a capacity of only 1,294 tons. Clearly then, as Finlay, concludes, the Ming Indian Ocean expeditions "were the largest long-distance enterprises before the modern age, dwarfing anything that the most powerful European state could produce" (p. 95).

27. For more on the Cheng Ho expedition, besides Finlay, see Chang (1995) and Filesi (1972).

28. While his reference to Muscovy makes sense considering the rapidity and magnitude of its expansion to give rise to an enormous empire, his mention of the Ottoman Empire may cause some surprise given the Timurian (Tamerlane to Westerners) juggernaut it had suffered in early 1400s. However, as he explains, the empire did recover: "The Ottomans ruled the most powerful empire in a civilization which seemed coiled for long-range expansion. If the sudden and dramatic expansion of Christendom in the sixteenth-century had not intervened to grab historians attention, the late medieval out-thrust of Islam would be acknowledged for what it was: recovery of pace and power comparable to those of Islam's unprecedented success in the century after the death of Muhammad" (p. xv).

29. The ensuing discussion in the rest of this chapter, ideally, should be accompanied by quantitative data (e.g., on demographic changes, population flows, magnitude of the Atlantic slave trade, production levels, growth differentials, quantities of commodities traded, etc.)—notwithstanding its inherently tentative nature given the historical time period under discussion here—to illustrate some of the points made. However, since space does not permit inclusion of such data, especially in a chapter that is already overstretched in terms of relevance to the subject of this work, you are advised dear reader to, instead, consult the following sources: Abu-Lughod (1989); Acemoglu, Johnson, and Robinson (2002); Barrett (1990); Blaut (1993); Chaudhuri (1995); Dols (1977); Frank (1998); Inikori (2002); Inikori and Engerman (1992); McNeill (1977); Mintz (1985); Pomeranz (2000); and Richards (1983).

30. Hill and Hassan (1986) state that the sugarcane arrived in Islamic Persia from India and therefrom it spread into the rest of the Islamic empire, including North Africa and Palestine. Their work further describes how the sugar was actually produced during the Islamic era. They tellingly note that given the agro-industrial character of sugar production it was always, from the very beginning, an enterprise beyond that of the individual farmer or artisan. Little wonder then that sugarcane was among the earliest plantation crops. For a general history of the importance of sugar to humankind and the role of the Muslims among others in this history see the fascinating study of confectionary by Richardson (2002).

31. Some basic facts about sugar, the import of which will become clear soon enough: For biological reasons not yet fully clear to science, all primates, humans and nonhumans, instinctually love the sweet taste; there are it appears no exceptions. For thousands of years the chief sources of this taste for all primates has been fruits, honey, some tubers, and sap from certain plant and tree species. However, somewhere along the way humans figured out other natural sources, but based on cultivation. The king of these cultivated sources is sugarcane, a grass—that is, a relative of both the bamboo, corn, and rice, for example. It has been suggested that the domestication of the sugarcane first took place in Oceania, specifically New Guinea around 8000 B.C.E. (Mintz 1985: 19). The cultivation of sugarcane would then spread over the course of thousands of years to Asia.

However, while the consumption of sugarcane as a dessert "fruit" may have a long history behind it, the production of sugar from the cane is, it would appear, of relatively recent undertaking in human history. It is in India, perhaps as early as 800–700 B.C.E. (Mazumdar 1998: 13), where the technique of crystallizing sugar from the sap of the sugarcane, it is thought, would be first invented. From there the technique would spread to other parts of Asia, including China and Persia. From Persia, as already noted, the Muslims would move the technology westward; and it is only after they had arrived in Europe in the eighth-century, Mintz explains, that Europe came to know and consume sugar—albeit in very limited proportions on account of scarcity and price.

Sugarcane, like other such other grasses as rice, has very specific agriculturally onerous requirements: it must be grown in quantity to produce an appreciable amount of the end product; its cultivation requires rich soils, plentiful supply of water, high temperatures characteristic of the subtropics/tropics and back-breaking intensive manual labor at all stages: planting (propagation is through cuttings), weeding, harvesting (which must be accomplished on time and quickly once the cane is ripe), and processing (the window of opportunity to begin the processing of sugarcane into sugar is usually counted in hours once the cane has been harvested). Now although manufactured sugar is not a basic food requirement, unlike rice, for instance, and therefore it is a luxury commodity that humans can easily do without, given its great versatility (it can be used as a preservative too for example), societies that can afford sugar have found it impossible to do without it. For Europeans, for instance, the universalization of a number of other luxury commodities in the realm of confectionary and the bitter beverages (tea, coffee, and cocoa) would transform sugar almost into a staple. (Note: beet sugar, the other major form of commercial sugar, does not acquire importance in Europe until the twentieth-century—the technology for producing it was invented in the preceding century.)

32. Prior to the fifteenth-century, that is before sugar production spread to the *sugar islands*, the slaves came primarily from within Europe and the Mediterranean region itself: Slavs, Latins, Arabs, Spaniards, Italians, North Africans, and so on, appear to have all been represented as slave labor at one point or another in the preceding nearly 600–700-year history of cane-sugar production; for, who enslaved whom depended on who was in power at any given moment. Recall that all the three major religions of Europe and the Mediterranean region, Judaism, Christianity, and Islam, had historically sanctioned slavery—given the unfortunate omnipresence of this awful institution in almost all societies going all the way back to antiquity throughout the entire length and breadth of the Afro-Eurasian ecumene; from Ireland to China, from Scandinavia to southern Africa. (The association of race with slavery, needless to say, was of a later ideological manufacture.)

It should also be pointed out here that even though the Muslims had continued the thousands of years old practice of exporting the enslaved from Africa into the rest of the Afro-Eurasian ecumene, the commonly known fact of the association of African slave labor with sugar production in the Atlantic does not begin in earnest, however, until after the Portuguese had established a direct sea route to the West African coast in the mid–1400s.The Portuguese initially took enslaved Africans to meet labor needs in the Iberian and western Mediterranean regions and the Atlantic archipelago, and only later, especially after the Native American population had been decimated, did they (together with other European nations of course) began transshipping them across the Atlantic in ever-increasing numbers as sugar production expanded in the Euro-American ecumene—beginning first, in terms of significant exports to Europe, in Brazil and later expanding to the Antilles.

33. On the profitability of sugar, even Adam Smith was moved to write: "It is commonly said that a sugar planter expects that the rum and the molasses should defray the whole expense of his cultivation, and that his sugar should be all clear profit. If this be true… it is as if a corn farmer expected to defray the expense of his cultivation with the chaff and the straw, and that the grains should be all clear profit" (1961 [1776], vol. 1: 175).

34. The first triangle involved the export of manufactures from Europe to Africa, the shipment of enslaved Africans to the Caribbean and South America, and finally on the third side of the trian-

gle the export of sugar, rum, precious metals, and other products to Europe. After the settlement of North America the first triangle was expanded to also include North America and an additional triangle emerged: enslaved Africans were taken to the Caribbean from Africa, from the Caribbean sugar and molasses were exported to the North American colonies. The colonies in turn exported rum and other barter commodities to Africa. Then of course there were the direct trade routes between Europe and the Americas (including the Caribbean) where European manufactures were exchanged for primary commodities from the Americas. Those European nations who came to dominate these various trade routes across the Atlantic became, of course, enormously wealthy; to say therefore that the initial accumulation of European investible surplus was achieved on the backs of generations of unpaid African labor (sometimes referred to as the *Williams thesis* because it was first advanced by Eric Williams in 1944) is not entirely farfetched; there is some validity to it. See the sympathetic discussion of the Williams (1944) thesis by Blaut (1993), Frank (1998), Inikori (2002) and Pomeranz (2000). Of course, as Inikori (2002) convincingly demonstrates, the contribution of the enslaved Africans to the development of Western Europe can be best appreciated if viewed from the perspective of the overall function of the slave trade as one of the principal motors of the entire post–1492 economic system of the Euro-American ecumene, and without which the economic system may never have arisen in its specific *1492* form. Besides Inikori, for a useful account of the genesis and import of the Atlantic slave trade generally, the following sources taken together are helpful: Inikori and Engerman (1992), Mariner's Museum (2002), Miller (1988), Northrup (2002b), Postma (2003), and Thornton (1992). For a general discussion of the specifics of cane-sugar production and its role in world history, the following are of singular relevance: Deerr (1949–50), Dunn (1973), Galloway (1989), MacInnis (2002), Mazumdar (1998), Mintz (1985), and Taylor (1978).

35. Interestingly, according to Davidson (1995: 211–12), some of the gold was also sent to Africa to purchase slaves.

36. See Barrett (1990), and Frank (1998), for various estimates of figures on the magnitude of precious metal flows around the world from the West to the East. See also Flynn and Giraldez (1997) and Richards (1983) for a general overview of the role of bullion and coinage in the post–1492 emerging global economy.

37. One ought to also mention here the transfer of the surplus of the Afro-Asian ecumene to Europe through the agency of ocean piracy. Christian piety of the period notwithstanding, accompanying the arrival of European trading ships in the Indian and Pacific oceans, were the freebooters and privateers; in other words, the thugs of the sea: the pirates. With no power able to throw an effective security blanket over the emerging sea lanes of the world, for many centuries both state and privately sponsored European ships of prey plied the oceans, raking in loot of Afro-Asian (as well as Euro-American) provenance. It appears that the Portuguese led the way, beginning with their activities in the western end of the Mediterranean in the mid-fifteenth-century (see Newitt [1995]). However, it is in the Atlantic (ships from the newly emerging economies of the Euro-American ecumene were targets as already indicated) and in the Indian and Pacific ocean regions where rich pickings were to be had. The Portuguese would be not be alone in their dastardly activities (remember that piracy also usually entailed the wholesale murder of the looted ship's crew); others would quickly follow: Dutch, English, French, Spanish, Scandinavians, and so on, and as the centuries progressed Euro-Americans would join in too. (In fact, Scammell [1995] points out that the origins of the Indian Ocean to Atlantic trade is to be found in sea piracy.) Given the inherent nature of the activity, it is impossible to determine the quantity of surplus that was drained by Europeans from the Afro-Asian ecumene through this avenue, but Scammell (see also Perotin-Dumont,1991), clearly shows that it was of a sufficient magnitude as to make a perceptible difference to the local economies of a number of European countries, including the new eastern seaboard colonies of North America. (For more on piracy generally during the period under purview, see also Galvin [1999], Kris [1998], and Peterson [1975].)

38. Pomeranz also suggests that another very important benefit that the Europeans got from

their tropical colonies in the Americas and elsewhere was critically important ecological knowledge; that is, by observing the rapidly changing interrelationships, often of a negative consequence, between climate and land use that only a tropical environment could facilitate, Europeans were able to apply lessons they derived from these observations to saving their own lands from further deterioration through deforestation, soil erosion, and so on. In other words, there is a dual benefit here: Europe not only benefited from experientially derived ecological knowledge, but it was also shielded from the negative consequences that the inadvertent acquisition of this knowledge entailed: the potential for massive land degradation that would have ensued within Europe itself in the absence of the demographic safety-valve that the forcible requisition from Native Americans of millions upon millions of acres of their land constituted. In support of this observation consider the comments of a Native American boy in a prize-winning essay for the *Wyoming-Farmer Stockman* (the editors of which had solicited from its readers submission of the best hundred-word essay on land erosion) in the early 1940s. "The picture," the boy wrote, referring to the photo of a desolate farmhouse on sand-swept barren land that the editors had published to go along with the essay competition, "show white man crazy." Writing in the same vein he continued: "Cut down trees. Make too big teepee. Plow land, water wash, wind blow soil. Grass gone, door [sic] gone, squaw gone. Whole place gone to hell. No pig, no corn, no pony." In contrast, he further writes: "Indian no plow land. Keep grass. Buffalo eat grass. Indian eat buffalo. Hide make plenty big teepee. Make moccasin. All time Indian eat. No work—no hitchhike. Ask no relief. No build dam. No give damn. White man heap crazy" (from Appendix H in Yewell, Dodge, and DeSirey 1992).

39. See also Sidebotham and Wendrich (2002), whose archeological work at Berenike (an abandoned but once, in antiquity, a well-known Egyptian port located on the Red Sea, close to the present day Sudanese border) has revealed an alternative and an equally important route to the famous Silk Road that allowed the Romans access to luxuries from the East. This was of course a sea route in which Berenike played a pivotal role, dating back at least as far as 1 C.E. until its demise (for as yet unknown reasons) around 500 C.E.They observe that the archeological artifacts found at the port indicate a three way trade between Roman Europe, Egypt and Sub-Saharan Africa, and India (the last was also a transit point for goods from further east). They have determined at least eleven different written languages in use at the port; hence speaking to its importance in both regional and international terms.

40. An interesting question that some historians have raised is why is it that the Portuguese were not challenged by the rulers of the Ottoman Empire when they (the Portuguese) first arrived in the Indian Ocean; for, after all, the Indian Ocean at that time was clearly a Muslim "pond." The underlying suggestion behind this question being that had they done so, then perhaps, the West would not have risen to eventually dominate even the House of Islam itself. Leaving aside the question of whether the emergence of the Euro-American ecumene would have been irrelevant to the historical trajectory of Europe (and the world) if the Muslims had prevented the Europeans from entering the Indian Ocean, the truth is that as long as the Europeans stayed away from the eastern Mediterranean, the Red Sea, and the Persian Gulf regions, the Ottomans were content to expend their energies elsewhere: specifically the expansion of their empire into other domains, from Egypt to the Balkans. In other words, this question is irrelevant because its assumptions are false. (See Hess [1995] for a full discussion of this issue.)

41. This point also explains why it was that while Europe thirsted for commodities of the Afro-Asian ecumene for centuries, throughout the history of West-East commercial relations indigenous capitalists of the Afro-Asian ecumene did not send their ships to Europe. For, by the time the ecumene began to express interest in imports of European manufactures toward the beginning of the nineteenth-century (that is by the time the European industrial transformation was underway) the power of its capitalist classes had waned considerably under pressure from their European competitors. This in turn had a political consequence—to take the example of Asia: "European armed ships and European fighting men came to Asia, even if in small quantities before the later eighteenth-century; there was no corresponding movement of ships and men from Asia to Europe, once

Turkish offensives had ceased. Thus Europe could export war to Asia, but Asia could not return the complement" (Marshall 1995: 51). The denouement of this circumstance is known to all: nearly 400 years after Columbus had stumbled upon the Taino, West-East ocean trade eventually transmuted into European imperial colonization of almost the entire ecumene in the nineteenth-century. (Note: a similar intriguing question of why it was that while the Africans controlled the Atlantic slave trade on their side [from the African interior to the coast], they were not part of the immensely lucrative triangular Atlantic trade, cannot be addressed here as it would widen an already extended focus of attention beyond the forbearance of the editors; however a hint has already been indicated with the discussion earlier of the Ethiopia/Japan anomaly.)

42. Interestingly, where the power of the landed aristocracy remained relatively intact (as a consequence initially of pre–1492 internal European factors), participation in the new economic opportunities opened up by 1492 proved not only to be ephemeral, but in the long-run inconsequential. The classic example here is that of Portugal and Spain (see Acemoglu, Johnson, and Robinson [2002], for more on this.)

43. For more on the impact of the Atlantic slave trade on Africa itself, see Curtin (1975), Davidson (1980); DeCorse (2001); Inikori (1982, 1992); Inikori and Engerman (1992); Law (1991); Rodney (1981, 1982); and Thornton (1999).

44. Here one ought to define precisely what is meant by *luxury goods*. Specifically, the definition must go beyond simply pointing to the trade-goods of beads, cloth, guns, ivory, and so on, as luxury commodities (merely because a minority within society, such as the kings and their courtiers, were involved in their consumption); it must link these goods directly to the production process within an economic system. Pierro Sraffa defines luxury products in the context of an economic system thus:

Luxury products have no part in the determination of the system. Their role is purely passive. If an invention were to reduce by half the quantity of each of the means of production which are required to produce a unit of a "luxury" commodity of this type, the commodity itself would be halved in price, but there would be no further consequences.

What has just been said of the passive role of luxury goods can be readily extended to such "luxuries" as are merely used in their own reproduction either directly (e.g., race horses) or indirectly (e.g., ostriches and ostrich-eggs) or merely for the production of other luxuries.
The criterion is whether a commodity enters (no matter whether directly or indirectly) into the production of all commodities (from Wallerstein, 1976: 31).

45. To be more specific, while the theory can trace its intellectual heritage to the work of Marx in his various writings (e.g., *Preface to the Critique of Political Economy; The Communist Manifesto*; and *Grundrisse*) as well as Lenin's early writings on Russian capitalism, and of course Trotsky's *History of the Russian Revolution* with its thesis, the *Law of Uneven and Combined Development*, in terms of its more immediate origins the theory come out of the work of French anthropologists working within the Althusserian structuralist tradition. They included Dupre and Rey, van Binsbergen, Coquery-Vidrovitch, and Geschiere.

Their formulation of the articulated modes of production theory it must be stressed was not a Marxist theory in its orthodox sense—given that it was a response to the inadequacy of Marx's treatment of precapitalist social formations specifically, and the situation of PQD countries generally. To be sure, Marx's work abounds with methodological pointers, but nowhere in his writings does the precapitalist mode receive anywhere near the kind of treatment that he gave the capitalist of mode of production. As Meillassoux, one of the more well-known precursors of the theory, emphatically states:

Marx's approach to the study of precapitalist formations is mainly centered around the demonstra-

tion of the historicity of capitalism. His foremost purpose is to show that capitalism is a product of history, that it was preceded by other types of economic formations and that it is bound to give way, in turn, to a different one. But while Capital is thorough investigation into the mechanisms and laws of capitalist development, Marx's approach to precapitalist formations is a relatively superficial one. Let us emphasize that this contribution is, among Marx's works, the least elaborated and probably the least "Marxist" (Meillassoux 1980: 192)

Marx's notion of the "Asiatic mode of production" mentioned in the preface to his *A Contribution to the Critique of Political Economy*, but not really described or analyzed, bears out Meillassoux's judgment. In other words, Marx, as Avineri (1969) also points out, fails to logically weave into his dialectical theory of history with its three principal modes of production (the ancient, feudal and capitalist), this "new" mode of production that he introduces for the first time—unlike the other three that he had already mentioned in the *Communist Manifesto*. The end result is that, in Avineri's words, "(d)espite the explicit dynamism of Marx's dialectical model, it seems to be an uneasy combination of two sets of disparate elements: a sophisticated, carefully worked out schema describing the historical dynamism of European societies, rather simple-mindedly grafted upon a dismissal of all non-European forms of society under the blanket designation of a mere geographic terminology of the 'Asiatic mode of production,' which appears static, unchanging, and totally non-dialectical" (pp. 5–6). Furthermore, as is well-known, Marx's study of the impact of capitalist countries on the development of PQD countries (in his period, via the agency of colonialism) is both sketchy and extremely weak. In fact his thoughts on the situation of PQD countries are generally to be found more among his newspaper articles—an excellent collection of these are to be found in Avineri (1969)—than in his major academic writings. Moreover, in a strange twist of irony, given the much fascination with Marxism among many intellectuals in PQD countries, many of these thoughts were very racist indeed.

Clearly Marx's materialist theory of economic development was relevant only to the experiences of the Western European nations, and in fact it appears that he himself was probably aware of this. He, for example, had warned readers of a Russian socialist journal, in a letter, not to "metamorphose my historical sketch of the genesis of capitalism in Western Europe into an historico-philosophic theory of the general path every people is fated to tread." Later in the same letter he hints at the geographical specificity of his major work, *Capital*: "The chapter on primitive accumulation does not pretend to do more than trace the path by which, in Western Europe, the capitalist order of economy emerged from the womb of the feudal order of society" (from Avineri 1969: 6). It is in response therefore, to this weakness in Marxist political economy, regarding the situation of PQD countries that the French neo-Marxist anthropologists emerged with their theory, the *Articulation of Modes of Production*.

Note: A situation of articulated mode of production exists when there is an interpenetration of the different modes, but yet each retains at the same time a sufficient degree of autonomy to render its identification possible. The articulation of the modes of production therefore is more than simply the co-occurrence of different modes of production in a given society (or *social formation* to be exact).

46. As Raatgever (1985: 26) reminds us, a mode of production is a theoretical construct that does not emerge out of direct empirical observations. Instead it "brings out, rather than abstracts, the fundamental inter-relationships that constitute reality." The mode of production, therefore, is a complex that is forged by means of theoretical reconstruction. This conception of the mode of production, it may be noted, differs fundamentally from the Stalinist/Marxist conception that sees the mode of production as an empirical rather than a theoretical construct (in the sense of a Weberian ideal-type), deducible from direct empirical observations.

The following vignette by Dale Johnson, in which he describes the proceedings of a panel (of the Congress of Americanists) meeting in Vancouver, Canada (in July 1979), to discuss the theory, provides a hint of the commotion that it generated among scholars:

The well-attended feature panel of the congress was scheduled from 9: 00 a.m. to noon. At 1: 00 p.m. we broke for lunch. An even larger crowd appeared for the afternoon dialogue. Discussion raged among the panelists, between members of the audience and the panelists, and within the audience, becoming ever more heated. At about 4: 00 p.m. an indignant person jumped onto his chair, denounced Andre Gunder Frank, and led a walkout of some of the audience. At 5: 00 p.m. I put down my now useless gavel and left (Johnson in Chilcote and Johnson 1983: 7).

47. To provide a flavor of the commotion, two or three quotes from the journal should do the trick:

The concept of modes of production was originally hailed with excessive enthusiasm; having now failed, like structuralism, to lead us into the Promised Land of total human self-understanding, it is now being widely abandoned, often with a sigh of relief. It is paradoxical that anthropology, proclaiming itself a science, should apparently proceed by a series of religious movements. (Macgaffey 1985: 51)

The mode of production concept helps identify the questions that must be considered in interpreting gaps in data; but the concept should not seduce us into so stretching our evidence as to disguise or completely fill them. Neither a comprehensive theoretical approach, nor a complete empirical record can reproduce the historical experience of an earlier social formation. But just as we do not discard empirical data because it does not completely reconstruct reality, we should not totally reject theoretical tools such as the mode of production concept because they have limitations. (Cordell 1985: 63)

The fashion for modes of production swept through African studies like a bush fire, which seems now to have burnt itself out. One can only breathe a sigh of relief at the disappearance of much of the jargon of the 1970s…. (Clarence-Smith 1985: 19)

48. In addition to the sources already mentioned, for more on the relations of production versus dependency/world systems theories, see Chilcote and Johnson (1983); Seddon (1978); van Binsbergen and Geschiere (1985); and Wolpe (1980).

49. As my primary school teacher, by no means fondly remembered, would frequently proclaim to his befuddled charges in his history lessons.

50. In what appears to be the first recorded case of germ warfare, historians state that the bubonic plague originated from the Genoese-frequented trading city of Kaffa on the Black Sea in 1346. In the preceding year a Kipchak Army in the service of the Golden Horde Mongols had commenced a siege of the unfortunate city, and the army's Mongol commander, observing that its numbers were rapidly beginning to thin with the rise of a horrendous pestilence among its ranks, instructed that diseased corpses be catapulted across the walls of the city in order to bring the siege to a speedier end. It was a matter of time before the flea-borne virus did its gruesome work along the trade routes that lead all the way into Europe and the Middle East. For more on the Black Death and its consequences, see Abu-Lughod (1989); Dols (1977); and McNeill (1977).

51. As a contemporaneous chronicler of Mongol history, the Muslim Persian, Ala-ad-Din Ata-Malik Juvaini, would bitterly record (even as he served his new masters): "[T]o-day the surface of the earth in general and the land of Khorasan in particular (which was the rising-place of felicities and charities, the location of desirable things and good works, the fount of learned men, the rendezvous of the accomplished, the spring-abode of the talented, the meadow of the wise, the thoroughfare of the proficient and the drinking-place of the ingenious—the pearl-raining words of the Prophet have a tradition on this subject: 'Knowledge is a tree which hath its roots in Mecca and

beareth its fruit in Khorasan')… to-day, I say, the earth hath been divested of the adornment of the presence of those clad in the gown of science and those decked in the jewels of learning and letters" (Juvaini 1997: 6). Besides Juvaini (specifically the 1997 edition), for more on the Mongols and their empires see Allsen (1987); Morgan (1986); Saunders (1971) and Paul Khan's adaptation of that official contemporaneous fact-plus-fantasy history of the Mongols titled *The Secret History of the Mongols* (Kahn 1984).

52. One may conjecture here that perhaps this very "kindness and respect" proved to be the undoing of many peoples in the end. In any case, it is certainly true that, to take the example of Africa (excluding Islamic Africa for obvious reasons), it was highly uncommon for Africans, as Stokes and Brown (1966: xxv) have observed, to approach the white man on their first meeting with "instinctual aggression." There are cases in African history, for instance, among the Nguni on the east coast of South Africa, where white survivors of shipwrecks were allowed to settle among the Africans to eventually become full members of the community. Survivors of Portuguese shipwrecks in 1554 (the *Sao Bento*) and 1635 (the *Nossa Senhora de Belem*) met some of these "Africanized whites," and were surprised to find that they would not join the Portuguese in their search for coastal settlements to the north to find ships to take them home (Wilson and Thompson 1969/1971 [Vol. 1]: 78–84, 233). In 1790, Jacob Van Reenen records meeting an old woman by the name of Bessie who was the daughter of a girl who had been shipwrecked with other whites many years earlier. The survivors settled among the Nguni to eventually give rise to a clan known to the present day as the Lungu. The girl herself had in time married the Mpondo chief Xwabiso (Wilson 1969: 233).

53. The *natural law of prior claim* (and *natural law),* which should be understood here in the Aristotelian sense, can be defined, thusly: those who are the first (original) residents of a territory, possess an inalienable right to that territory regardless of the claims of all others who come afterward. (It is a law that finds its echo in the modern concept of "citizenship by birth.") That is the reason why for, instance, no one would legitimately question the right of Africans to live in Africa, or the Chinese to live in China, or Indians in India, Europeans in Europe, and so on. Moreover, it is a law that can only be contravened on the basis of armed power and violence. The profound and sobering implications of this law can be deduced from the following thought-experiment: What if, tomorrow, Native Americans were to acquire the power sufficient to propel them to the headship (in all senses of the word, political, military, etc.) of the Americas? How would citizenship of the present descendents of all those who have migrated into the Americas over the centuries, literally at the point of the gun, be now defined? A taste of the answer—however repugnant it may be to all those who believe in the desirability of a multicultural democracy in that country, and anywhere else for that matter—is to be found today in the ongoing events in Zimbabwe (Will South Africa be next?) where the moral claims to citizenship by its white residents have been proven to have rested all along on armed political power that slipped out of their hands with independence in the 1980s. In other words, regardless of how one wishes to prevaricate on this matter: citizenship in lands that were colonized by Europeans, where the original inhabitants are still present, ultimately resides in monopoly over power, and not moral claims.

54. Among the hallmarks of this new *Westernized* Christianity with its racialized "us-versus-them" approach was, of course, a religious intolerance of frightening proportions and a legacy that would include events ranging from the bloody massacre of the inhabitants of Jerusalem by the Crusaders to the Spanish Inquisition, and from the pogroms against the Jews (beginning with the massacres in Latin Christendom with the commencement of the First Crusade and culminating in the mind-numbing horrors of the Hitlerite Holocaust) to what many Muslims (judging by news reports) perceive as the current "crusade" against Islam: in Afghanistan, Chechnya, Iran, Iraq, Palestine, the Philippines, and so on, in Bosnia about a decade ago, and the U.S.-led fight against "Islamic terrorism." See also Mastnak (2002: 347), and Munjee (2001) on this point.

55. It may be noted here that the sacking of Constantinople inaugurated a period of Latin rule (1204 to 1261) that all modern historians agree was one of absolute disaster for that city—marked

among other things by the barbarous looting of the city's vast art treasures of incalculable value; even the sacred Christian relics were not to be spared (the magnitude of the despoliation of the Christian churches could only have been matched by the barbarians of an earlier period, the Vikings.)

56. That the Crusades were aimed at a number of different perceived enemies of Christendom, and not just the Muslims alone, is indicated by the fact that by the time one arrives at the end of the thirteenth-century, crusades had been undertaken against "the Mongols, non-Christians peoples in the Baltic, heretics in Languedoc, Germany, Italy and the Balkans, Orthodox Christians in Greece, and the Hohenstaufen rulers and their supporters in Italy and Germany" (Maier 2000: 3). However, it would be true to say that war against the Muslims would remain the principal task of much of the Crusader project.

57. The importance of the Crusades in coloring perceptions, even today (after more than five centuries later), in the West—and in the East—cannot be underestimated. Many among both Christians and Muslims perceive the U.S.-led fight against "Islamic terrorism," for instance, as the modern replay of the Crusades. In the Islamic world especially, the conflagrations in Afghanistan, Chechnya, Iran, Iraq, Palestine, the Philippines, in Bosnia about a decade ago, and so on, are openly described as a global conflict between Christians and Muslims reminiscent of the Crusades. Consider, for example, the remarks of the Prime Minister of Malaysia in his address to the leaders of Islamic countries gathered for the tenth session of the Islamic Summit conference in Putrajaya, Malaysia, on October 16, 2003: "our detractors and enemies do not care whether we are true Muslims or not. To them we are all Muslims, followers of a religion and a Prophet whom they declare promotes terrorism, and we are all their sworn enemies....Today we, the whole Muslim ummah [global Muslim community] are treated with contempt and dishonor. Our religion is denigrated. Our holy places desecrated. Our countries are occupied. Our people starved and killed." He then goes on to invoke the memory of Muslim victories over the Crusaders, as a counter rallying point: "Remember Salah El Din [Saladin] and the way he fought against the so-called Crusaders, King Richard of England in particular." On the other side, consider the staunch defense by right-wing Christian zealots in the United States of a high-ranking U.S. military official when his remarks during a talk to a Christian prayer group, in June of 2003, sparked some public controversy because they appeared to suggest that the United States was engaged in a holy war against idol worshippers, the Islamic radicals. (The reference to idol worship by Muslims, it may be noted, is a very old Christian canard that was popular even in the time of the Crusades, and of course betrays a depth of ignorance of Islam—an uncompromisingly monotheistic religion—that is virtually bottomless.) Note too that recent allegations of the desecration of the Qur'an by U.S. soldiers have not helped matters (see news archives at www.bbc.com website). See also Mastnak (2002: 347), Munjee (2001) on this issue of the current relevance of the Crusades.

58. Daniel (1989b: 40) posits the same question in an interesting way: "The Gibbonian—and, indeed medieval—disillusion with the crusader's greed for land and booty has created a picture of them as rogues cynically exploiting religious sentiment to their profit. For us the interesting question is the reverse. How did the rogues come to be imbued with either the appearance or the reality of religious motivation?"

59. Even some of the leading lights of Latin Europe would play their part in the anti-Islamic propaganda over the course of the Crusading project, in one form or another; they would include Peter the Vulnerable, St. Francis of Assisi, Roger Bacon, St. Thomas Aquinas, Ramon Lull, Dante Alighieri, and so on (see Mastnak [2002], and Tolan [2002] for more on this issue).

60. Kedar (1984), suggests that the general absence of mission as an objective of the Crusades, especially in the early years of the project, is to be explained by the perception that the Muslims were implacably intolerant of Christian missionary work (ergo only the Christian sword could pave the way for it). While this perception was probably quite true, in reading Kedar one is unable to find sufficient evidence to disprove the fact that the primary goal of the Crusading project was crusade and not mission for reasons internal to the rise of the papal "monarchy." In other words,

what one finds in Kedar is evidence that there were mission exceptions to the rule of crusading (but then exceptions do not disprove the rule, they confirm it). The prime motive behind the Crusading project was never proselytism given its essential underlying political objectives. Consequently, given the need to dehumanize the Muslims by demonizing them, as a means of justifying the Crusading project and at the same time as a device to recruit the European peasantry and nobility to execute it, the objective of acquiring Christian converts among the Muslims would have hardly entered into the calculations of the papacy—regardless of whether it was feasible or not. How else can one explain, for example, the great rejoicing by the Crusaders at their handiwork when they finally breached the walls of Jerusalem on Friday, July 15, 1099: the almost total and merciless slaughter of thousands upon thousands of its inhabitants, including children. See France (1997) for a chilling account of the capture of Jerusalem. Consider this thought—experiment: supposing that the Muslims had permitted missionary work, Would the Crusading project then have become irrelevant to the papal objective of erecting a papal monarchy?

61. For a dissenting view, albeit an unconvincing one, on some of the points raised here regarding the Crusades, see the concluding chapter of Richard (1999) whose bias in favor of the Crusader project is betrayed by lines like: "a liturgical feast was instituted in the breviary of the Holy Sepulcher to commemorate the capture of Jerusalem. *And the whole historical literature born of the crusade, like the epic, ends with this wonderful event*" (p. 67; emphasis added).

62. Perhaps there is some thing to the notion of a 1,000-year life cycle of civilizations.