just across the Arno River, a bit off the well-trodden Florentine tourist track, you'll find the church of Santa Maria del Carmine. Enter, make a left and then another quick left, and you are in the Brancacci Chapel, surrounded by the frescoes of Masolino and Masaccio. The first fresco on the left is Masaccio's evocation of Adam and Eve being expelled from the garden. And it is here that the Renaissance begins: Instead of having the two-dimensional otherworldliness of medieval paintings, Masaccio's Adam and Eve look like real human beings. Their slumping postures and downcast faces express real emotion. Portrayed in three dimensions, with their feet solidly on the ground, Masaccio's figures herald a new era of human promise and potentiality.

To appreciate this new era, and to get the most from our study of Leonardo da Vinci, we must first gain some insight into the preceding period. In *A World Lit Only by Fire: The Medieval Mind and the Renaissance*, William Manchester claims that pre-Renaissance Europe was characterized by "a mélange of incessant warfare, corruption, lawlessness, obsession with strange myths, and an almost impenetrable mindlessness." Describing the period from the fall of the Western Roman Empire to the dawn of the Renaissance, Manchester writes, "In all that time nothing of real consequence had either improved or declined. Except for the introduction of water wheels in the 800s and windmills in the 1100s, there had been no inventions of significance. No startling new ideas had appeared, no new territories outside Europe had been explored. Everything was as it had been for as long as the oldest European could remember. The center of the

Masaccio's "expulsion" is an ironic theme for what may be the first true Renaissance painting. Both Michelangelo and Leonardo spent many hours studying it. Leonardo commented, "Masaccio showed by the perfection of his work how those who are inspired by a model other than nature, a mistress above all masters, are laboring in vain."
Ptolemaic universe was the known world—Europe with the Holy Land and North Africa on its fringes. The sun moved round it every day. Heaven was above the immovable Earth, somewhere in the overarching sky; hell seethed far beneath their feet. Kings ruled at the pleasure of the Almighty; all others did what they were told to do.... The church was indivisible, the afterlife a certainty; all knowledge was already known. And nothing would ever change."

The word Renaissance comes from the combination of the French verb *renaître*, meaning "to revive," and the noun *naissance*, meaning birth. The Italians call it Rinascimento. After centuries of serfdom and superstition, the ideal of human power and potentiality was reborn. The revival of this classical ideal was presaged by Giotto, initiated by Brunelleschi, Alberti, and Masaccio, and reached full expression through Leonardo, Michelangelo, and Raphael. This dramatic transformation of worldview from the medieval era went hand in hand with a number of discoveries, innovations, and inventions, including:

- The printing press—Made knowledge available to vast numbers of people beyond the clergy and ruling elites. In 1456 there were fewer than sixty extant copies of Gutenberg's bible, the first book printed in Europe. By the turn of the century there were over fifteen million printed books in circulation.
- The pencil and inexpensive paper—Made writing, note-taking, and therefore the recording of learning accessible to the common citizen.
- The astrolabe, the magnetic compass, and the large sailing ship—Resulted in a tremendous expansion of ocean traffic, international trade, and exchange of information. As Columbus and Magellan proved that the world is not flat, much of traditional wisdom was rendered flat.
- The long-range cannon—Although catapults, mangonels, and small cannons were in use for many years, they were not able to breach fortress walls. The powerful long-range cannon was pioneered by a Hungarian engineer named Urban in the mid-1400s. As the new technology spread, the feudal fortress, and therefore feudalism, soon lost its impregnability. The stage was set for the birth of the modern nation-state.
- The mechanical clock—Stimulated commerce by allowing people to experience time as a controllable commodity. In the Middle Ages people had no concept of time as we understand it. The vast majority of people didn't know what year it was or even what century they lived in.

Many of these innovations and most of the great art masterpieces of the period were fueled by the entrepreneurial spirit, the spreading desire for consumer goods, and a rush to capital. In Worldly Goods: A New History of the Renaissance, Lisa Jardine shows, with magnificent illustrations and incisive, detailed text, how the cultural and intellectual transformations of the Renaissance were driven by expanding capitalism. She suggests that "those impulses which today we disparage as 'consumerism'" were present in the Renaissance mind-set that produced the works and advances we treasure today. Even commercialism played a role: "A painter's reputation rested on his ability to arouse commercial interest in his works of art, not on some intrinsic criteria of intellectual worth."

Still, the question remains why the Renaissance took place when it did. For one thousand years prior, European accomplishments in the realms of science and exploration were negligible. Throughout the Middle Ages, the vast majority of human intellectual energy and effort was diverted to questions of doctrinal minutiae and "holy" war. Instead of exploring new lands, innovations, and ideas, the best minds engaged in debates on how many angels could fit on the head of...
a pin, and the church rarely hesitated to torture anyone who questioned its dogma. This, of course, put something of a damper on independent thinking.

The seminal event that led to the Renaissance, my colleague Raymond Keene and I believe, occurred in the fourteenth century when the Black Death swept through Europe. Almost one half of the population was destroyed in a rapid and hideous fashion. Priests, bishops, nobles, and knights died in the same proportion as peasants, scurfs, harlots, and tradesmen. Devotion, piety, and loyalty to the church provided no protection, shaking the faith of people from all walks of life. Moreover, wealthy families had their ranks thinned almost overnight, concentrating wealth in the hands of the lucky survivors. While they would previously have spent this wealth on the church, the wealthy began to hedge their bets after the plague and began to invest in independent scholarship. In what was at first an almost imperceptibly subtle shift of consciousness, answers were sought outside of prayer and dogma. Surging intellectual energy, dammed for a millennium in ecclesiastical reservoirs, began to flow through the pietas-inspired breach.

Five hundred years after the Renaissance, at a time when nations and corporations rival the church in their claims to people’s loyalties, the world is experiencing an even more dramatic expansion of knowledge, capitalism, and interconnection. Air travel—the fulfillment of one of Da Vinci’s dreams and prophecies—telephones, radio, television, motion pictures, facsimile machines, personal computers, and now the Internet combine to weave an increasingly complex web of global information exchange. Revolutionary advances in agriculture, automation, and medicine are taken for granted. We’ve landed men on the moon and machines on Mars, unleashed the power of the atom, deciphered the genetic code, and unlocked many of the secrets of the human brain. These dramatic developments in communication and technology stimulate the energies of capitalism and free society and the erosion of totalitarianism.

You can’t help but notice that change is accelerating. How these changes will affect you personally and professionally, nobody knows. But, like the thinkers at the end of the cataclysmic change caused by the Black Death, we owe it to ourselves to ask if we can afford to let the authorities of our time—whether church, government, or corporation—think for us.

It is safe to say, however, that accelerating change and increasing complexity multiply the value of intellectual capital. The individual’s ability to learn, adapt, and think, independently and creatively, is at a premium. During the Renaissance, individuals with a medieval mind-set were left behind. Now, in the Information Age, medieval- and industrial-era thinkers are threatened with extinction.

The Renaissance was inspired by the ideals of classical antiquity—awareness of human power and potentiality, and a passion for discovery—but it also transformed them to meet the challenges of the time. Now we can draw inspiration from Renaissance ideals, transforming them to meet our own challenges.

Perhaps, like many of my friends, you feel that your greatest challenge is living a balanced, fulfilling life in the face of increasing stress from every direction. As we noted, our medieval ancestors had no concept of time; we, on the other hand, are in danger of being controlled by the clock. In the Middle Ages, information was unavailable to the average person, and the few books that existed were in Latin, which was taught only to the elite. Now we are awash in an unprecedented, unrelenting overflow of data. In five hundred years we’ve moved from a world where everything was certain and nothing changed to a world where nothing seems certain and everything changes.

Accelerating change has inspired a never-before-seen burgeoning of interest in personal growth, soul awakening, and spiritual experience. The sheer availability of information about the world’s esoteric traditions has launched a tsunami of seeking. (A hundred years ago you would have had to have climbed a mountain in India to learn how to meditate; today you can take a course at the Y, download information from the Internet, or choose from hundreds of volumes at your local bookstore.) At
the same time, the information glut contributes to pervasive cynicism, fragmentation, and a sense of helplessness. We have more possibilities, more freedom, more options than any people who have ever lived. Yet there is more junk, more mediocrity, more garbage to sort through than ever too.

For seekers who wish to cut through the dross, to find deeper levels of meaning, beauty, and quality of life, Leonardo da Vinci—the patron saint of independent thinkers—beckons you onward.

**The Modern Renaissance Man or Woman**

The ideal of the Renaissance man or woman, or *uomo universale*, has always suggested a well-rounded, balanced person, comfortable with both art and science. The liberal arts curriculum of universities around the world originated as a reflection of this ideal. In an age of increasing specialization, attaining balance requires going against the grain. In addition to possessing a good knowledge of the classical liberal arts, the modern *uomo universale* is also:

- **Computer literate**: Although even Leonardo may have had trouble programming a VCR, the modern Renaissance man or woman is attuned to developments in information technology and is increasingly at home on the World Wide Web.
- **Mentally literate**: As discussed earlier, 95% of what we know about the human brain has been learned in the last twenty years. *Mental literacy* is a term, coined by Tony Buzan, to express a practical familiarity with this evolving understanding of the workings of the human mind. It begins with an appreciation of the vast potential of the brain and the multiplicity of intelligences, and includes the development of the accelerated learning and creative thinking skills that will be introduced in the following pages.
- **Globally aware**: In addition to appreciating the global links in communication, economies, and ecosystems, the modern *uomo universale* is comfortable with different cultures. Racism, sexism, religious persecution, homophobia, and nationalism are viewed as vestiges of a primitive stage of evolution. Modern Renaissance people in the West cultivate a particular appreciation for Eastern culture and vice versa.