“Roots of Knowledge is an extraordinary work of art that underscores the University’s core commitment to serious reflection and consideration of the human mind’s greatest achievements.”

MATTHEW S. HOLLAND, PRESIDENT, UVU
From conception to completion, Roots of Knowledge represents 12 years of work, handcrafted into 80 individual stained glass windowpanes, spanning 10 feet in height and 200 feet in length.

The project takes shape beginning with various roots etched in the glass — from the Trees of Life, Knowledge, and Hope for Humanity — that symbolically weave throughout the panes. In the final scene, the Tree of Hope for Humanity solidly stands, having been forever strengthened by all the world’s experience. Branches emerge and stretch across the upper panels to represent the hope that is inextricably tied to knowledge.

Utah glass artists Tom Holdman and Cameron Oscarson approached Utah Valley University President Matthew S. Holland with an early concept of the project. President Holland enthusiastically embraced it with one condition — make it bigger. He enlisted University expertise and fundraising to ensure the project’s success, including a permanent exhibition home in the Marc C. and Deborah Bingham Gallery within the Ira A. and Mary Lou Fulton Library.
At UVU students learn by applying their classroom learning to real-world projects and situations. Throughout the making of Roots of Knowledge, more than 350 UVU students had the opportunity to contribute to some aspect of the project, furthering their education in the process. UVU faculty members also contributed their extensive expertise and guidance.

Work began with research and consultation to ensure historical accuracy and balance. From there, charcoal met paper, transforming research into a storyboard and map. Then the ideal texture, form, and shape of each piece of glass were carefully chosen. The glass was cut and polished by hand or machine and then transferred to artisans, who painstakingly painted each piece. Lead lines accent the exquisite details, steel reinforces the windowpanes, and a patina coating lends the finishing touch.

UVU faculty members are already designing curriculum around events depicted in the murals so that future students can benefit from their proximity to this masterpiece. Work is underway, as well, to create an instructional app that viewers can use to learn the significance of every piece of knowledge woven into these windows.

**FAST FACTS**

- 80 complete panes of stained glass
- More than 60,000 pieces of glass used, along with rock, fossils, coins, meteorite, petrified wood, and coral
- More than two dozen UVU faculty scholars undertook historical accuracy of the project, overseeing research and consulting in design and aspects of the panels
- Over 350 UVU students participated in the project in a variety of roles
- More than 2,400 pieces of glass were used to make the Alexander and Bucephalus mosaic on panel F3
- 12 years to complete, from conception to completion
- Glass types: Uroboros, Youghiogheny, Kokomo, Holdman, Oceana, Spectrum, Lamberts, and Fremont
- Paints: Crushed glass fired at 1,200°
B-1 Coursing through each column of stained glass windows are roots and branches attached to trees at both ends of the series, such as the millennia-old bristlecone pine in Column A (see brochure cover). The symbolic meaning behind these roots and branches is the interconnection of knowledge, originating from both ancient and current sources, as it bridges generations across the oceans of time.

B-2 This window features a depiction of outer space and Earth’s place in the universe. The imagery of the celestial bodies is based on Copernicus’s solar system chart, the heliocentric model published by the astronomer Nicolaus Copernicus in 1543. Other pictured planets include Mars and Venus.

B-3 The scene in this window portrays the genesis of life found on Earth. Among the planet’s first inhabitants were bacteria. This life-form is represented in the lower-central section of the window by blue-green cyanobacteria, a phylum of bacteria that obtains energy through photosynthesis and is thought to have helped in converting the early reducing atmosphere into an oxidizing zone. Another early inhabitant is the ammonite, an extinct ancestor of today’s cephalopods, depicted by the window’s artists as a fossil in the lower-right corner. Also, a motif found throughout Roots of Knowledge, introduced in this window, is that of the DNA double helix.
C-1 Among the initial ways in which humans communicated and left records was through petroglyphs and cave paintings, the former being rock carvings and the latter being an early method of visually capturing places and animals.

C-2 In many cultures, there is often a traditional motif of a Tree of Knowledge, or a Tree of Good and Evil. In the window’s scene, there is a symbolic depiction of the creation of life through a blossoming of such a tree in a primavera stage, with human forms in the composition. The belief in a Divine Creation is as old as preserved human records, although the characteristics of deities differ from society to society, and the pair of human figures in the fetal position inside the tree represent the first man and woman.

C-3 In this window is a scene summarizing the prehistoric era of Earth history and the primitive stages of human development. Fossils, some depicted through glass and others being genuine artifacts sealed into the window, harken back to the planet’s Mesozoic Era. Among these depicted fossils are also hominid skulls in evolutionary sequence, visually conveying a transformation covering the time span of several million years. The main spectacle of this scene is a mammoth hunt, portraying humankind’s growing mastery over the Earth during the Stone Age.
"In the beginning..." is the introductory phrase inscribed in Hebrew at the bottom of this panel. Key to the development of civilization was the written recording of language and its bequeathing transfer down through the ages. In this window is a collage of some of the earliest examples of written text: the Egyptian Book of the Dead, the Tablet of Gilgamesh, the Stele of Kilamu, Chinese oracle bones, and the Dead Sea Scrolls.

A Phoenician ship, symbol of the Phoenicia's maritime mastery and enterprising spirit, sails by great stone monuments erected in ancient times and found throughout the world. These monuments include timeless works from Egypt's Nile Valley, such as the Pyramids of Giza, the Sphinx, and the Obelisk of Hatshepsut. In the background is Stonehenge, a circle of standing stones used by the Druids of Neolithic Britain for astrological purposes, while in the foreground is the citadel of Kot Diji in modern-day Pakistan, where resided the forerunners to the Indus Civilization.

The evolution of humanity turned a corner by transitioning from a nomadic race of hunters and gatherers into a grounded civilization that planted and cultivated. This is evidenced by the Neolithic settlement of Catal Huyuk in southern Anatolia, depicted in the upper-left corner of the window. Making appearances in this window are staple crops from various societies around the world: rice, wheat, barley, potatoes, and maize.
Much of civilization's ancient development occurred in the Fertile Crescent — a region encompassing Egypt's Nile, the Levant, and Mesopotamia. For instance, the lower-left corner contains imagery and text from the Code of Hammurabi, a Babylonian legal code dating back to circa 1772 BC. Above the code is another famous relic of ancient text: the Rosetta Stone. This Egyptian stele is inscribed with a decree made in 196 BC by Ptolemy V, with the text written in three languages: Ancient Egyptian hieroglyphs, Demotic Egyptian, and Ancient Greek. After being rediscovered by the French Army in 1799, the Rosetta Stone opened a floodgate of archaeological research.

Great empires of the past are on the move in this window, with powerful rulers such as Cyrus the Great directing construction projects on some of the most massive buildings of the ancient world. Such buildings include the Great Ziggurat of Ur, a Neo-Sumerian step pyramid located in modern Iraq, and the Palace of Minos at the city of Knossos, center for Minoan society on the island of Crete.

Artifacts from the developing societies of the ancient world are captured in this scene: the bust of Egyptian Queen Nefertiti, a Hindu idol to exhibit the world's oldest major religion, and a Greek statue depicting a discus thrower that represents the origins of the Olympic Games.
This window features material such as early keys and jade carvings, but the primary focus is on Confucius and his teachings. A philosopher from the Spring and Autumn period of Chinese history (c. 771–476 BC) who continues to influence followers to the present day, Confucius emphasized virtuous living, inner harmony, and ancestor veneration.

The Hanging Gardens of Babylon, one of the Seven Wonders of the Ancient World, sets the scene for this window. An ascending series of tiered gardens supported by brick columns, the structure is believed to have been built by Nebuchadnezzar II around 600 BC. To the right is the Holy Temple constructed by Solomon, King of the Unified Kingdom of Israel and Judah. This grand edifice crowned the city of Jerusalem and housed the Ark of the Covenant (also depicted in the window) but was destroyed by the Babylonians during an infamous siege, also ordered by Nebuchadnezzar II.

One of the towering figures from antiquity is Alexander the Great. A Macedonian monarch, Alexander carved out a vast Hellenized empire stretching from the Balkans to the Indus River, and all by age 30. His likeness is preserved in the Alexander Mosaic, a Roman floor mosaic dating back to c. 100 BC. While his mosaic image is damaged and incomplete, it has been reproduced and completed by stained glass artists for this window.
A theme found in this window is the passage of history and how knowledge is transferred from one generation to the next. At left is the Sun Stone, an elaborate solar disk carved in the 15th or 16th century, and discovered in 1790 during repairs on the Mexico City Plaza, once the site of the Aztec capital. The motifs in this stone connect to creation myths, cataclysmic predictions, and calendar systems traditionally upheld by the Mesoamerican culture.

Both the large structures and small artifacts exhibited in this window confirm the high levels of comparable knowledge shared among the ancients. For example, the edifice on the landscape is the Pyramid of the Sun in Teotihuacan, a construction not unlike the pyramids and ziggurats located in the Old World and used for similar purposes.

Columns of Terracotta Soldiers bridge windows F-3 and G-3. Numbering well into the thousands, these life-sized terracotta sculptures were prepared as funerary art on behalf of the first emperor of a unified China, Qin Shi Huang, and buried with the emperor in Xi’an. Also on the window’s left side is reference to the birth of the major religion of Buddhism, thanks to its founder Gautama Buddha who lived in ancient India sometime between the sixth and fourth centuries BC. The representation is based upon bronze statues such as that of the 13th-century Great Buddha at the Buddhist temple of Kōtoku-in in Kamakura, Japan.
A semicircular arch, a continuous curve commonly used in the Classical Age, supports the scene in this window. The relief sculpted into the arch’s keystone is the so-called “Tellus” panel from the Ara Pacis, an altar in Rome dedicated to Pax, the Roman goddess of peace. To the side of the arch are examples of written pillars of ancient wisdom, most notably a scrap from Plato’s “The Republic,” one of the world’s most celebrated works on political theory.

Recreated in stained glass is The School of Athens, one of a series of Vatican frescoes painted in the early 1500s by Renaissance artist Raphael. Regarded as a masterful interpretation of the Classical Age, the image is a gallery of the eminent Greek philosophers: Plato, Aristotle, Diogenes, etc. Raphael used himself and such peers as Da Vinci and Michelangelo as models for the philosophers, a trick the studio artists emulated by using their own faces for the figures in the window.

While an early cataract surgery from India takes place in the foreground, a performance of Greek tragedy is held in this window. In the treatise “Poetics,” the earliest surviving work of dramatic theory (c. 335 BC), Aristotle laid out six elements to tragedy, starting with the most important: mythos (plot), ethos (character), dianoia (thought), lexis (diction), melos (melody), and opsis (spectacle). Several of these elements are spelled out on the ring surrounding the stage.
I-1 Various forms of record keeping employed around the world appear in this window. Very telling is the stone stelae, known as Izapa Stelae 5 or the Tree of Life, a slab discovered in Mexico dating back to 300 BC to 300 CE, and depicting what could be interpreted as a Mesoamerican take on the creation story. In the lower-right left corner is the Julian Calendar, devised in 46 BC by Julius Caesar; this dating system organized a regular year into 12 months and 365 days.

I-2 Having adopted many cultural aspects of their Greek predecessors, the Romans spread their version of Hellenism throughout their far-flung domain. In the lower-left corner, the statesman Cicero, one of history’s great orators, is depicted addressing the Senate. Above, the landscape is composed of engineering feats: the Roman Forum, the Colosseum, and the Lighthouse of Alexandria.

I-3 A prominent figure making an appearance in this window is Thales of Miletus, who founded the Milesian school of natural philosophy, invented the scientific method, and proposed astronomical theories; on the right side of the window is a portrayal of the legendary introduction between Caesar and Cleopatra, who became one of the most illustrious couples in world history.
The Classical Age reached a zenith with Pax Romana, as evidenced by Pliny the Elder’s “Naturalis Historia” (Latin: Natural History) and the architectural designs for the marvel that was the Pantheon. There were, however, other proud offerings of advanced knowledge from other regions, such as the Bakhshali Manuscript, the oldest extant manuscript of Indian mathematics, as well as the mathematical constant of π that is accredited to Chinese invention.

More wonders of the Ancient World are depicted in this window’s scene, notably the Colossus of Rhodes, the Great Wall of China, and the Library of Alexandria. However, some of the most impacting places and events of history were not always so visually monumental. Spotlighted in this scene is the Sermon on the Mount, a collection of teachings humbly taught by Jesus Christ on a hilltop in Galilee and recorded in the Gospel of Matthew.

At the base of the reproduction of Carl Bloch’s painting are small tokens and mementos related to antiquity. Among these are the Delphic Hymns, musical compositions from Ancient Greece, dating between c. 138 to 128 BC and regarded as the earliest known examples of notated music in the Western World; the Hypocaust Fragments, crafted by the Romans for a system below floors to heat houses and baths; and the strategy board game of Oware invented in West Africa.
Many cultures and religions can trace their origins to the texts captured in this window, including the earliest chronicle of Japanese history known as the Kojiki and the supreme religious text of Islam known as the Quran, authored by the prophet Muhammad in the 7th century. Also of note is the homage to the Monkwearmouth-Jarrow stained glass in Northumbria, the oldest preserved stained glass in the world.

Although the period after Rome’s Fall is oft remembered as a dark age for European history, in other parts of the world roots of knowledge thrived. The Byzantine Empire, ruled by Justinian and Theodora, oversaw in Constantinople the construction of the largest church in Christendom; Hagia Sophia; in the Middle East, the Islamic Golden Age flourished, leaving behind the shrine known as the Dome of the Rock in the sacred city of Jerusalem.

Following the Fall of Rome, much of Western civilization was lost in a condition of decay and ignorance. The setting for this window’s scene reflects the ruined state much of humankind found itself in but also depicts the illuminated individuals who selflessly devoted themselves to the preservation of knowledge and recovery of society. Among them is an anonymous Sri Lankan man faithfully producing the coveted cinnamon spice and the Venerable Bede, an 8th-century Anglo-Saxon monk and the “Father of English History.”
A method in which civilization recorded knowledge through the bleakness of the Dark Ages was through illuminated manuscripts. Containing text adorned by illustration, these scholastic treasures were traditionally produced by most major religions, notably in Christendom and Islam. Receiving special attention in this scene is the Book of Kells from the 9th century, a folio collection from Ireland containing the New Testament Gospels, and the Dresden Codex, a pre-Columbian book detailing Mayan culture.

Light rises with the sun from behind the Lofoten mountain peaks of a Norwegian fjord, symbolizing the light of knowledge that prevailed against the Dark Ages. Bordering the shores of this fjord are the Tatev Monastery in Armenia, the expansive Buddhist temple of Borobudur in Java, and the Moai sculptures left by Polynesian people on Easter Island. Meanwhile, a Viking vessel bids farewell to its homeland and embarks upon a voyage of discovery to the west.

Long before Gutenberg invented the printing press in Europe, the concept of moveable type was realized by the Chinese alchemist Bi Sheng in the 11th century; also invented in China during this period was gunpowder, originally conceived for fireworks for religious practices and entertainment spectacles, then subsequently adapted into an instrument of destruction. In the background is Mesa Verde, hidden home to the Ancestral Puebloan culture in modern-day Colorado.
M-1 Rising into the air of this window are the spires of Cologne Cathedral, a triumphant testament to the men and women in Europe who built up the Middle Ages. Flowing behind the conical structures are more illuminated manuscripts that include the “Shahnameh” (Persian: The Book of Kings), the world’s longest epic poem penned by a single poet, and the 1375 Catalan Atlas portraying Musa I of Mali, thought to be one of the richest rulers in history.

M-2 The midsection of a cathedral diagram, featuring at its center the rose window of Notre-Dame and flanked by buttresses common to Gothic architecture. In the spaces beneath the flying buttresses are portraits of medieval figures, such as Marco Polo and Kublai Khan, and centers of commerce and culture, such as the Jameh Mosque of Isfahan in Persia and Great Zimbabwe in sub-Sahara Africa. Running horizontally on the outer walls are seals of universities founded during the Middle Ages, including Oxford and the Sorbonne.

M-3 This scene takes place within the Sainte-Chapelle Cathedral’s nave. Front and center is King John of England reluctantly adding his seal to one of the most seminal documents in medieval history: the Magna Carta. Also occupying the holy halls are a statue from Angkor Wat, Sino-Japanese performers putting on a Noh play, and tribal masks from Africa’s Guro and Songye peoples.
Enter the studio of an original Renaissance Man. This scene portrays a colorful room during the late-15th century where a European artist and architect would keep his various works and numerous trappings. Leonardo da Vinci’s personal effects, such as the Vitruvian Man and a model of a gliding machine, are on display, as is a terracotta bust of his Florentine patron, Lorenzo the Magnificent. Hanging from the lines are prints of Albrecht Dürer’s Rhinoceros, Circle of Chalk by Li Qianfu, a Ming banknote, and Harmonice Musices Odhecaton by Ottaviano Petrucci, possibly the first music collection produced using the Gutenberg print system.

The Andean mountain ranges of the New World create the environment for this window, atop which are found more than the hidden Incan city of Machu Picchu and Jesuit mission of São Miguel das Missões. Also depicted is the Chinese Imperial Palace in the Forbidden City and the Funerary Complex of Sultan al-Ashraf Qaytbay in Cairo.

Taking center stage in this atrium is Johannes Gutenberg’s printing press, a seminal creation that introduced printing to Europe, with the German inventor holding a fresh page of the Book of Isaiah from the Holy Bible. Meanwhile, the Renaissance artist Michelangelo chips away marble to create his masterpiece David, and the Protestant Reformation ignites with Martin Luther nailing his Ninety-five Theses upon the doors of All Saints’ Church in Wittenberg.
0-1 The world comes into focus with this window, thanks to a map from the Theatrum Orbis Terrarum, published in 1570 and considered to be the first complete atlas ever produced. Framing the map are works from the period, including Ming paintings by Shen Zhou, the 1582 papal bull announcing the Gregorian calendar, and a folio containing the plays of William Shakespeare, with characters illustrated by William Blake springing to life from the pages.

0-2 Lining the top of this window is a gallery of explorers that includes Prince Henry the Navigator, Vasco da Gama, Christopher Columbus, Zheng He, and Henry Hudson; the tatters on the paper resemble the topography chart of the seafloor found in the Atlantic Ocean between Portugal and the Americas. In the scene below, a galleon sails by Lisbon and the cliffs of the Cape of Good Hope at the extreme southern end of the African continent.

0-3 A scene set either in the East Indies or the Caribbean captures a moment from the Age of Exploration. As Europeans raced around the globe in search of resources and territory, they came into contact with other peoples, either to beneficial or negative effect. In front are two figures epitomizing such cultural contrast: Bartolomé de las Casas, a Dominican friar from Spain who defended the rights of indigenous people abused in the West Indies, alongside his pupil Enriquillo, a Taíno Cacique who rebelled against Spanish rule on the island of Hispaniola.
The Leviathan from the eponymous book by Thomas Hobbes looms in the skies over the 17th-century world. This window portrays an era when civilization was entering the more modern stage of human history, as the writings of astronomers and theologians alike challenged men and women to re-evaluate their place in the universe, and bloody conflicts between mighty powers brought about tumultuous changes felt to this day.

In the shadows of the Himalayas stand shimmering palaces and fortresses from across Asia, most notably the ivory-white mausoleum of the Taj Mahal. Standing upon the balcony are the astronomers Thomas Harriot and Galileo, who scrutinize the heavens filled with such mathematical shapes as the cardioid and the Fibonacci spiral.

Baroque musicians, along with a Mongolian player of the morin khuur (horsehead fiddle), perform in this scene set outside the Parisian palace of Versailles. Beyond music, the 1600s saw great strides in medical science and political philosophy. For example, in the left side of the window is a revision of Rembrandt’s painting, The Anatomy Lesson of Dr. Nicholas Tulp, but with the addition of a more diverse circle of onlookers; also framing the window in the lower-left corner is the King James Bible and a copy of the Mayflower Compact.
Q-1 The stage is set — literally — for this window that introduces the arts and sciences of the 1700s. The venue is the Margravial Opera House in Bayreuth where Handel rehearses his choral Messiah, with oversized books of the Enlightenment, such as Diderot’s Encyclopédie, acting as stage props. The backdrops are buildings connected to the American Revolution: Philadelphia’s Independence Hall, Boston’s Old State House, and Monticello in Charlottesville.

Q-2 The giant Lemuel Gulliver, the titular protagonist from Jonathan Swift’s satirical novel, gently elevates Lilliputians in his palm, while sitting amid the grand palaces that epitomize the 18th century. The Age of Enlightenment watched academics use scientific reason and deductive logic to challenge the status quo of ancient establishments. Thereby many modern perceptions of democracy, capitalism, individuality, and tolerance were introduced.

Q-3 The German philosopher Immanuel Kant defined the Enlightenment by declaring, “Sapere aude (dare to know)!” In the evening scene of this window, set in the palatial gardens of Peterhof, figures who defined the age mingle to discuss ways to improve life for their fellow man. Collaborating in the forefront is the Declaration Committee consisting of Thomas Jefferson, John Adams, and Benjamin Franklin; together these Founding Fathers helped to forge in the New World the first post-Enlightenment republic for “unalienable rights.”


**R-1** Vive La Revolution. In this window covering the late 1700s to the very early 1800s, a period when the world was rumbling with earthshaking revolution, is a gallery of the movers and shakers who changed society forever. In a celestial scene reminiscent of the Apotheosis of Washington, the eminent cast includes William Wilberforce, Miguel Hidalgo y Costilla, Olaudah Equiano, Alexander Hamilton, and Madame Roland, along with pivotal documents such as the U.S. Constitution and the Napoleonic Code.

**R-2** In this Arcadian scene, partially resembling the Oregon littoral, advanced civilization is only sparse and various indigenous peoples of North America and the Pacific Isles work harmoniously with nature. However, the arrival of Captain James Cook aboard the HMS Endeavour signals that change is in the air for human history and many regions across the globe.

**R-3** Shoshone guide Sacagawea gives direction to Meriwether Lewis and William Clark, leaders of the Corps of Discovery that set out in 1804 to study the vast geography, along with all of its contained flora and fauna, in the Louisiana Purchase. The theme of this window is that of learning and discovery, as exhibited by such individuals as Alexander von Humboldt, Sir Joseph Banks, Georges Cuvier, and the Cherokee transcriber Sequoyah.
The beauty and majesty of Romanticism spring to life in this window. Here the artistic and intellectual movements of the first half of the 19th century are represented by Ludwig van Beethoven’s Ninth Symphony, Jane Austen’s novels, Lord Byron’s poetry, Rossini’s operas, Pushkin’s verse from “Eugene Onegin,” Emerson’s transcendentalism, Kim Jeong-hui’s calligraphy, and Hans Christian Andersen’s fairy tales.

From an Alpine lookout and the Bastei Bridge, we can see a landscape transforming from the bucolic to the urban. The arboreal hills and flowing rivers of recreated paintings by artists from the Hudson River School evolve into the smokestacks of Manchester and the Menai Bridge in Wales, one of many bridges that would be constructed to traverse the earth’s waterways.

With the progress of the 1800s, the pastoral countryside makes way for the mechanized steel of the Industrial Revolution in this window’s scene. The advent of railways, canals, and bridges in all their technological brilliance announce the arrival of unprecedented development, but there are costs to this growth. Subtle references are made to a damaged environment and endangered resources. There is also a human toll in the forms of slavery and child labor, as alluded to by Oliver Twist and Mr. Bumble, Dickensian characters invented to create social awareness for these issues.
The mid-1800s was a period of immense change. The Industrial Revolution was in full swing, Western empires were on the rise, slavery and serfdom were abolished, and large steps were made in science and medicine. At center is the Emancipation Proclamation, issued by President Abraham Lincoln during the Civil War. The bottom-left corner makes references to such writers as Fyodor Dostoyevsky, Harriet Beecher Stowe, and Lewis Carroll, while the opposite side recognizes the scientists Dmitri Mendeleev, Charles Darwin, and Gregor Mendel.

With the Crystal Palace’s rooftop rising in the foreground, important manmade structures fill the landscape in this window: Neuschwanstein Castle in Bavaria, the Smithsonian Institution Building in Washington D.C., the Mosque of Muhammad Ali in Cairo, and the Semperoper in Dresden. Crowning the horizon is Kilimanjaro, a mountain described by nonindigenous explorers for the first time in the 1840s.

The exchange of culture and sharing of ideas are at the heart of this window covering the mid-19th century. The venue is the Crystal Palace in London’s Hyde Park in 1851. Queen Victoria opens the Great Exhibition of the Works of Industry of All Nations, alongside her husband, Prince Albert, who helped to organize this anticipated event that would go down in history as the first World’s Fair.
The late 1800s through the turn of the 20th century was a time for dreamers, in which inventors such as Thomas Edison and Nikola Tesla imagined a brighter world and Sigmund Freud interpreted dreams. Much of this window is occupied by such art as Vincent van Gogh’s Abstract Expressionistic painting Starry Night and symbolist Gustave Klimt’s Portrait of Adele Bloch-Bauer I; other parts of the window are occupied by the thoughtful writings of Rudyard Kipling, Emily Dickinson, Mark Twain, Benito Pérez Galdós, and Friedrich Nietzsche.

In a growing urban world, mankind begins erecting structures taller and more wondrous, including the Eiffel Tower, the Statue of Liberty, La Sagrada Familia, and the Amazon Theatre; not content to be earthbound, man even finds ways to defy gravity with flying machines that carry such pioneering aviators as Alberto Santos-Dumont and the Wright Brothers into the future.

This window sees the rapid growth and development of major cities, such as Paris during the Belle Époque and New York City during the Gilded Age. Upon the cobblestone streets, newsies and kiosks announce the latest news, immigrants settle in new homes, horse-drawn carriages are replaced by automobiles, and illustrious figures such as Booker T. Washington, Theodore Roosevelt, John Muir, and Alexander Graham Bell define the age.
The composition of this window is that of a De Stijl painting by Piet Mondrian, with squares and rectangles filled by scientific breakthroughs, literary achievements, and artistic feats from the early 1900s through the 1920s. Notable figures include Albert Einstein, Pablo Neruda, Virginia Woolf, Amedeo Modigliani, T. E. Lawrence with Prince Faisal, and the Gershwin Brothers, George and Ira, as caricatured by Al Hirschfeld.

A truly 20th-century cityscape is found in this window’s skyline, including early skyscrapers and Art Deco structures commanding the vista. Taking to the skies are the first gyrocopter, a Zeppelin airship, and Charles Lindbergh’s Spirit of St. Louis, the last of which flies above the newly invented Electrocardiogram (EKG) measuring the economic pulse of the world market until the infamous stock market crash of 1929.

The Roaring Twenties are in full swing in this window. Writers and performers celebrate the Harlem Renaissance, audiences marvel at motion pictures, suffragettes appeal for the right to vote, and the Model T and first motorcycles take to the road. In the background is an amalgam of monuments erected by numerous nations to memorialize the many millions who perished in the Great War (1914-1918).
The cluttered office of an anonymous correspondent — complete with a typewriter, wireless radio, books, and other resources needed for a journalistic trade — comprises this window’s scene. The 1930s and ’40s witnessed economic hardship and destructive conflict unlike anything the world had ever seen, and the unknown writer works tirelessly to follow and report transpiring events, as evidenced by the walls bedecked by maps, photos, and newspaper clippings.

The Empire State Building, the tallest skyscraper in the world when completed (ahead of schedule) in 1931, stands triumphantly in all of its Art Deco glory. Midway through the 20th century, humankind faced nothing less than a latter-day Dark Age and not only managed to endure but made leaps and bounds in scientific, technological, and architectural achievements.

This window finds freedom-loving people everywhere jubilantly celebrating the end of the Second World War and, in the victorious aftermath, paving the way for peace between nations. In the foreground are leaders — not simply from the World War II era but also from subsequent decades — who championed the causes of liberty, justice, and harmony: Eleanor Roosevelt, Nelson Mandela, the Dalai Lama, Mary McLeod Bethune, and Mohandas Gandhi.
During the 1950s and onward, populations relocated away from the crowded urban centers and settled in the more spacious and friendlier suburbs. Depicted in this window’s scene is a suburban home filled by ever-growing sophisticated appliances and consumer goods in demand by a prospering economy: color televisions, refrigerators, electric guitars, audio recorders, and video game consoles.

Buildings from the post-World War II period rise in the modern era, such as New York’s original World Trade Center and The Gherkin in London, as do structures created by studio artists. At the base of the cityscape is an amalgam of modernistic architecture that includes the Sydney Opera House, the Guggenheim Museum, and the Heydar Aliyev Cultural Centre in Azerbaijan. Also rising into the heavens is the Apollo 11 spaceflight, the Saturn V rocket launched by NASA and carrying the astronauts and lunar module that would land successfully on the moon on July 20, 1969.

In this window, a park scene sees crowds making dramatic social changes, such as the demolition of the Berlin Wall and Civil Rights marches, as society adapts in a modern world. In the foreground on the right are a trio of technological visionaries and computer entrepreneurs (left to right): Drew Major, Tu Youyou, and Steve Jobs. Such farsighted individuals assembled the digital building blocks that redefined the way human beings work, play, communicate, and even think.
The setting for this window is a futuristic classroom where the rising generation prepares to inherit a rapidly changing world. The latest digital technology projects the imagery necessary to learn about anatomy, economics, literature, machinery, and mathematics. By this point in the series of windows, the limbs from the original Tree of Knowledge depicted in the Creation connect to the tree found at the end of the series.

Making up the cityscape in this window are authentic buildings depicted realistically, such as Dubai’s Burj Khalifa and One World Trade Center, while others are works of imagination conceived by the window’s designers and artists to reflect current technological advances. Among these imagined structures is the Willis Tower (Sears Tower) in Chicago redefined with genuine circuit boards pieced together by the artists.

The park comes to the water’s edge where we find teachers and grandparents wisely passing on useful knowledge to the heirs of the earth. Objects and architecture that appeared in the early 21st century, such as The Gates in Central Park and Beijing National Stadium from the 2008 Olympics, are given room to make this scene as current as possible. As one of the last windows, this scene shows the roots come full circle as they have circumnavigated their way through the entire series arrive at the second tree.
The journey of the Roots of Knowledge reaches its conclusion in this scene — or does it? An elderly couple, an impression of the young couple that first appeared in the Tree of Knowledge early in the series, bids farewell to younger generations that continue on life’s journey into a limitless horizon. These growing individuals will have the opportunity to honor their predecessors by carrying the proverbial torch into the future, lighting the way with knowledge as they discover new ways to act as thoughtful stewards over the planet and care for one another.

The overall theme of Roots of Knowledge is one of connection — to the past, to the future, and to each other. From the Tree of Life and the Tree of Knowledge, surrounded by the origins of life, to the Tree of Hope for Humanity, the roots span through the ages and cultures. This running theme represents the fact that all knowledge is linked and, most importantly, so is all of the human race: we all share the same roots and add to them. In the final scene, the Tree of Hope for Humanity stands, growing forth from the roots of all of the world’s experience and branching into the upper windows to symbolize the hope that is inextricably tied to knowledge, as knowledge is to hope. The objective of the studio and UVU is to ignite hope and confidence in all individuals that they, like those before, can make a difference for good in the world.
“No matter what language an individual may speak, this beautiful artwork will ignite the fire of the heart through the language of art.”

TOM HOLDMAN, ARTIST
THANK YOU

to the donors of the Roots of Knowledge Gallery

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