

The Glittering Legacy and History of Gold

By

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About the Author

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DEDICATION

This book is dedicated to all the gold miners across the centuries—those who have risked life, limb, and fortune in their relentless pursuit of the glittering metal.

Driven by fascination and determination, they have dug deep into the earth to extract gold, or even pure nuggets themselves, and brought it to the surface for the amazement and benefit of us all.

I also dedicate this book to my wonderful daughter, Maddie.

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FOREWORD

As I sit here completing the final edits on this book, gold is trading above \$5,000 per ounce. Just a few days ago, an associate remarked to me that gold had "fallen" to \$5,100—an astonishing statement I never imagined hearing. Not long ago, many of us were surprised when gold reached \$2,000 per ounce.

The year 2026, as forecast in these pages, is delivering even greater opportunity for gold to climb higher. After decades of investors largely ignoring gold and silver in favor of vast accumulations of paper assets, real estate, and now digital assets, people are finally rebalancing their portfolios. Without precious metals as a hedge or cover, portfolios remain exposed.

Since the Nixon administration formally ended the gold standard in 1971, we have witnessed a remarkable shift. Gold is now rapidly evolving toward an informal gold-standard status: millions of investors around the world hold some gold, silver, and other precious metals to balance their fiat currency holdings, shareholdings, property investments, and other traditional financial assets.

This quiet but profound change underscores gold's enduring role in human history and finance—one that this book seeks to illuminate.

Introduction: What Is Gold, Where Does It Come From, and Why Is It So Valuable?

Gold! What is gold? For almost all individuals, even the mere mention of the word "gold" conjures up a very high level of excitement and historical fascination unlike anything else. Gold is the most truly remarkable, extraordinary, and legendary metal that eludes a simple definition, as saying "gold is gold" captures both its significance and its ambiguity. The best way I can convey the magnificence of gold is by sharing the valuable insights I have gained from three decades of working with it, which I have outlined in this book.

Gold is a metal with a density similar to tungsten, weighing approximately 19 grams per cubic centimetre, or about 19 times heavier than water by volume. It is now well understood that the gold atom, along with other heavy neutron-rich metals like silver, platinum, and uranium, originates from the violent explosion resulting from two neutron stars colliding in a cosmic event known as a Kilonova (which is different from a Supernova). Neutron stars are nearly at the threshold of becoming black holes, possessing strong gravitational forces due to their neutron-rich composition. They typically have a diameter of about 15 to 20 kilometres and a mass ranging from 1.5 to 3 times that of the Sun, depending on their spin rate and original makeup. To illustrate, a single teaspoon of material from a neutron star weighs around 10 million tons.

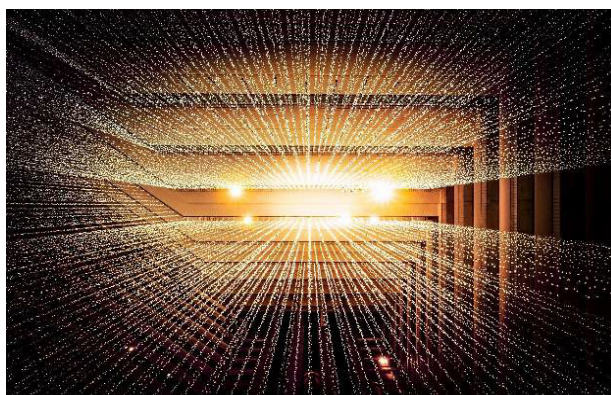


Figure 1. Gold formation in a Kilonova

The first Kilonova observed in the visible light spectrum occurred in 2017—named AT 2017GFO. This event demonstrated that when two neutron stars collide, approximately 5% of their mass is ejected from the merged entity, escaping into interstellar space as energy and neutron-rich atomic materials, including gold and other heavy metals. It is believed that the production of gold through Kilonova events billions of years ago contributed the majority of the gold found in Earth's crust, mantle, and core, which can be brought closer to the surface through geological processes, thereby making it accessible for exploration and commerce.

Gold is an incredibly beautiful metal that resists corrosion and tarnish, and its weight and tactile qualities evoke enduring fascination, physical and spiritual connection. Many ancient cultures viewed gold as divine, believing it to have originated from the sky. This belief aligns with the reality that gold does not form in Earth's crust, core, or mantle; instead, all the gold on our planet comes from cosmic events that predate the formation of Earth as we know it. It is intriguing to consider that ancient peoples, in their awe of gold, had some understanding of its celestial origins.



Figure 2. Pure Gold has a 99.9999 percent purity

The remarkable qualities of gold have garnered admiration across all human societies for the past 10,000 years, establishing its value. Throughout history, gold has consistently been held in higher esteem than all other materials. This has led to a closer association between the word "gold" and the concept of value than with any other material. Silver and copper are also beautiful metals; both possess antibacterial properties and have played crucial roles in advancing human civilization to date. It is interesting to note that Plato himself—in his work *The Republic*—referred to three types of people as gold, silver, and bronze. This motif has been widely used in terms of people and ages, showing the psychological connection humans have made between gold, silver, and bronze (a copper alloy).

Nevertheless, gold stands out amongst all metals. It inspired ancient peoples to ponder its very origins and creation—leading them to nearly grasp the truth despite their limited scientific understanding and tools. This book will examine the initial uses of gold—from famed Egyptian burial offerings to its monetization by the Etruscans and their protégés (the Romans)—and its remarkable rise in contemporary times beginning around 700 years ago.

While this book utilizes numerous written works as source material on gold's history—and on silver and copper that co-sponsored humanity's trade and modernization—historians are not archivists. As such, they must extrapolate and interpret from their own experience and wisdom to uncover likely historical facts. This is certainly what I have sought to do in writing this book. Over the past 700 years, gold has experienced more fluctuations than at any other point in history. Following a price low in 1999, it has been making a remarkable recovery at the close of 2024—and will likely continue throughout 2025 and beyond for several reasons.

Chapter 1 - The History of Gold in Ancient Times - From the Pharaohs to Augustus

The Glittering Legacy: Gold from Ancient Egypt to the Roman Empire

The Dawn of Gold in Ancient Egypt



Figure 3. Image depicting the Egyptian Pharaohs

In this chapter, we explore the very beginnings of humanity's relationship with gold. While prehistoric peoples undoubtedly discovered and used gold to a reasonable extent—primarily for simple adornments and ornaments—most evidence of this early usage has been lost to time, surviving only in scattered fragments and archaeological traces (such as the renowned Varna necropolis finds from around 4600–4200 BCE in Bulgaria).

As a result, our understanding of humanity's meaningful, large-scale engagement with gold begins with the emergence of organized civilizations. From roughly 4000–3000 BCE onward, societies in regions like ancient Egypt, Mesopotamia (Sumer), and the Balkans began working gold extensively for jewellery, religious artifacts, status symbols, and eventually more sophisticated purposes. This marked the point where gold transitioned from occasional curiosity to a central element of culture, economy, and power in the known world.

The story of gold in antiquity begins with the unification of Upper and Lower Egypt in 3100 BC. This pivotal moment marked the birth of dynastic Egypt and ushered in an era of unprecedented wealth accumulation, monumental construction, and a new autocratic government—likely under the first Pharaoh Narmer. The pre-dynastic period saw the early use of gold, but it was the unification that truly centralized power and resources,

including gold. Ancient Egypt was easily the economic powerhouse of its time, starting primarily in 3100 BC. The ancient Egyptians were aware of this wealth, as best demonstrated by Pharaoh Taharqa who, in 675 BC, held up water and earth to invaders, symbolizing the wealth of Egypt that could not be plundered or taken away as spoils of war.

The Fourth Dynasty, featuring pharaohs like Sneferu, Khufu, Khafre, and Menkaure, showcased Egypt's might through the construction of the pyramids, including the Great Pyramid of Khufu. These structures remain colossal even today, with the Great Pyramid weighing approximately 6.5 to 7 million tons—the equivalent of 600 Eiffel Towers. The massive building projects required immense resources and labor.

Egypt's agricultural prosperity provided the cornerstone of its power. The fertile Nile Valley produced abundant surpluses, enabling a vast workforce for construction projects and valuable commodities for long-distance trade. This economic strength allowed Egypt to import precious materials from distant lands, including lapis lazuli from the Sari-e-Sang mine in northern Afghanistan—transported over 5,000 to 8,000 kilometers depending on trade routes—the only known source of lapis lazuli at the time.

Copper: The Unsung Hero



Figure 4. Copper coins were the trading currency in ancient times.

While gold dazzled, copper tools were the true workhorses of Egyptian construction. Despite being softer than modern steel and iron, copper tools offered unique advantages: they were easy to sharpen and maintain, usable by workers with minimal training, and more forgiving and less prone to catastrophic failure. Egyptian workers resharpened their copper tools hourly, maintaining a steady work rhythm crucial for large-scale projects. Strangely, modern historians have not fully understood the key importance of copper metal in building the pyramids. While the pyramids were built out of stone, they were truly built with copper—without which they could not have been constructed. It is fair to say that only copper metal tools could build structures of such magnitude and dimension—both then and now.

The Golden Pharaohs

The reigns of Amenhotep III and his son Akhenaten marked a tumultuous period in Egyptian history. Amenhotep III, known for building the Temple of Karnak, was succeeded by Amenhotep IV (later Akhenaten), who attempted to institute monotheism centered around the Sun Disk and god Aten. This was met with resistance and later efforts to erase his legacy.



Figure 5. Bust depicting an Egyptian Pharaoh

Ramses II (Ramses the Great) was one of ancient Egypt's most powerful and celebrated pharaohs. His reign (1279–1213 BC) was marked by monumental building projects, military campaigns, and significant diplomatic achievements. Among these achievements was the Peace Treaty of Kadesh—a landmark event in diplomatic history. The original treaty still hangs today in the Archaeological Museum in Istanbul with a copy also found in the halls of the United Nations in New York. Inscribed on silver tablets to symbolize its precious nature, copies were made in both Egyptian hieroglyphs and Akkadian cuneiform—the diplomatic language of the time—and exchanged between courts.

The Ramses II's reign was characterized by immense wealth and prosperity. He embarked on extensive building projects funded by Egypt's vast resources—including its rich deposits of gold. Gold played a crucial role in maintaining loyalty among Ramses' subjects and allies; by distributing gold and other valuable items, Ramses ensured support within his empire and beyond.



Figure 6. The Great Pyramids

Gold symbolized divine power and eternal life in ancient Egypt. Ramses II used gold for religious purposes as well as to display his wealth and authority. Treasures found in his tomb reflect craftsmanship during his reign. The discovery of Tutankhamun's tomb (likely Akhenaten's son) in 1922 revealed Egyptian gold craftsmanship at its pinnacle: a solid gold coffin weighing 100 kilograms along with numerous golden artifacts.

Beyond Egypt: Gold in the Ancient Near East

While historical evidence remains elusive, the legend of King Solomon's gold mines has captivated imaginations for millennia. These fabled mines, believed to be the source of Solomon's immense wealth, have been speculatively located in various regions, from Africa to the Middle East. However, more recently, the copper mines of Timna have yielded further archaeological evidence that they were the actual mines which were operated by King Solomon.

It is interesting to note that in recent decades, the port of Wadi-al-Jarf on the red sea was found to have supplied the building of the great pyramid including imports of copper from the Sinai Peninsula amongst other building materials. The port is approximately 200km from the plateau of Giza – where the Great Pyramids are – showing the extent of the regional reach of the Egyptians to source critical materials like copper. However, as mentioned above, it was this regional over-utilization of copper resources which helped to create the copper drought that necessitated the intervention of King Solomon to increase regional copper production when he became involved in the copper mines of Timna.

Significant evidence from the waste dumps at Timna have shown multiple connections with Jerusalem – even though the mines were owned by the Edomites. It is clear that the copper mines were restructured by King Solomon and that his share of the significant revenue funded an enormous increase in revenue for the young Jewish state that led to the construction of Solomon's famed temple in Jerusalem. While it was copper and not gold that was mined at Timna – in the modern-day Negev desert, 300km from Jerusalem, the reality is that copper's many uses in cooking, tooling, commerce and industry made it indispensable to society and trade. It is very likely that King Solomon's share of the copper profits from Timna allowed greater use of copper in the Jewish state at the time – which would have had great utility in cooking and food preparation especially for families in addition to the known use of copper in the construction and decoration of the temple of Solomon.

While the first coinage has been attributed to the Lydians in approximately 612 BC, it is more likely that the Phoenicians used coins first - having an advanced society whose alphabet we still use today. The Phoenicians were instrumental in early trade economies. From around 1000 BC, they used weighed pieces of silver as a medium of exchange, with value determined by weight rather than by standardized coinage. These pieces were often hallmarked to indicate

quality. However, coins were subject to debasement, first under the Greeks and then far more prevalently under the Roman Empire.

The biblical land of Ophir, mentioned in the Old Testament, was renowned for its fine gold. Though its exact location remains a subject of debate, it symbolizes the ancient world's quest for gold and the mystique surrounding distant, gold-rich lands. Jonathan Pageau has spoken regularly on the topic of New Testament imagery and its potential connection to ancient Greek images and stories like Orphism.



Figure 7. An Etruscan Bust

The very interesting Etruscans and their culture, who predated and then gave rise to the Romans in Italy, were renowned for their exquisite gold work. Their granulation technique, creating intricate designs with tiny gold spheres, remains a marvel of ancient metallurgy. This Etruscan marvel is most evidenced by the Golden Orphism Book also known as the Etruscan Gold Book, a Thracian artefact consisting of six connected sheets of gold and weighing 100 grams. The small sheets contain writing identified as Etruscan, together with images of two people carrying a large vessel; a horned animal; a horse and its helmeted rider; a musical instrument, perhaps a lyre; a siren; and two people carrying shields. Inscribed leaves of gold known as Totenpässe were associated with the Orphic religion, hence the modern name of the artefact. It is probably the most beautiful gold artefact in human history – outside of funerary artefacts.

It is critically important to be aware of the fact that the Romans were not separate from the Etruscans. The Romans were highly Etruscan in their behaviour, culture, architecture, religion and town planning. Rome itself is most likely an Etruscan word and the Etruscans outlasted the Roman Republic. The Etruscans essentially created modern Rome by fusing disparate nearby settlements and providing community events like the Septimontium and draining a swamp between the settlements with their advanced Etruscan hydrology. They also provided their agricultural know-how to assist the fledgling Roman community. While the Romans essentially rebranded themselves into a Republic in 509 BC, they remained highly Etruscan in nature a fact that has escaped some modern historians and commentators.

Persian and Greek Gold

The ancient civilizations of Persia and Greece were not only bound by their epic conflicts and cultural exchanges but also by their shared history with precious metals, particularly gold and silver. The Persian Empire, under the Achaemenid dynasty, was renowned for its wealth, much of which was amassed through the extensive use of gold. Persian gold coins, known as darics, were a symbol of the empire's prosperity and were widely used to pay mercenary soldiers. These coins featured the image of a kneeling archer, representing the Persian king, and were minted from the late sixth century until the empire's conquest by Alexander the Great in 330 BC.

Themistocles, an Athenian politician and general, played a pivotal role in the Greco-Persian Wars. Known for his strategic brilliance, he was instrumental in the Greek victory at the Battle of Salamis in 480 BC. However, his story with gold is equally fascinating. After being ostracized from Athens, Themistocles sought refuge in Persia. He was welcomed by King Artaxerxes I and was granted the governorship of Magnesia, where he lived out his days in relative luxury.



Figure 8. Silver coins from ancient Greece

According to historical accounts, Themistocles was given a substantial amount of gold to aid his escape from Greece, marking a significant moment where Persian wealth directly influenced Greek political dynamics.

The silver mines of Laurion, located in Southern Attica, were a cornerstone of Athenian wealth and power. These mines were exploited from prehistoric times but gained prominence in the classical period, particularly during the 5th century BC. The silver extracted from Laurion was crucial in financing the Athenian navy, which played a decisive role in the defeat of the Persian fleet at Salamis. Mining in Laurion was a labor-intensive process, often involving large numbers of slaves who worked under harsh conditions. The wealth generated from these mines not only funded military endeavors but also contributed to the flourishing of Athenian democracy and the construction of iconic structures such as the Parthenon.

In recent archaeological discoveries, a hoard of Persian darics was found in the ancient Greek city of Notion, located in modern-day Turkey. This treasure, buried over 2,400 years ago, sheds light on the complex interactions between the Persians and the Greeks. The Persian Empire, particularly under Darius I, standardized gold coinage, facilitating trade across its vast territories. The Greeks, especially after Alexander the Great's conquests, incorporated gold into their economy and art, blending Hellenic styles with techniques learned from the East.

Alexander the Great amassed an enormous amount of wealth from his conquests in Persia. Historical accounts estimate that he seized around 200,000 talents of precious metals, which included both gold and silver. This staggering amount is roughly equivalent to 5,200 metric tons of silver. The largest hauls came from the treasuries of major Persian cities like Susa and Persepolis. For instance, the loot from Susa alone was estimated to be about 50,000 talents. This immense wealth played a crucial role in financing Alexander's further campaigns and the administration of his vast empire.

After defeating the Persian King Darius III at the Battle of Issus in 333 BC, Alexander turned his attention to Egypt, a vital satrapy of the Persian Empire. Unlike his other conquests, the invasion of Egypt was relatively peaceful. The Persian satrap Mazaces, recognizing the futility of resistance, surrendered without a fight. The Egyptians, who had long resented Persian rule, welcomed Alexander as a liberator. Upon his arrival, Alexander was proclaimed Pharaoh and celebrated with traditional Egyptian ceremonies. He founded the city of Alexandria, which would become a major cultural and economic hub of the ancient world. Gold played a crucial role in Alexander's campaigns, including his conquest of Egypt. The wealth he acquired from previous victories, particularly from the Persian treasuries, enabled him to finance his military expeditions and secure loyalty among his troops. The Persian Empire was known for its vast reserves of gold, and Alexander's capture of these treasures significantly bolstered his resources.



Figure 9. A statue of Alexander the Great

In Egypt, Alexander continued to utilize gold to consolidate his power. He respected and integrated local customs, including the worship of Egyptian deities, which helped him gain the support of the Egyptian priesthood and populace. This strategic use of wealth and cultural respect facilitated a smooth transition of power. One of Alexander's most enduring legacies in Egypt was the founding of Alexandria. Situated on the Mediterranean coast, Alexandria was strategically positioned to become a centre of trade and culture. The city's design incorporated Greek and Egyptian elements, symbolizing the fusion of cultures under Alexander's rule.

Gold and other precious metals played a significant role in the economic prosperity of Alexandria. The city's wealth attracted scholars, artists, and merchants from across the known world, making it a beacon of Hellenistic civilization. The famous Library of Alexandria, although established after Alexander's death, was a testament to the city's intellectual and cultural significance. Alexander's use of gold extended beyond Egypt. Throughout his empire, he minted coins that featured his image and symbols of his divine right to rule. These coins, including gold staters and silver tetradrachms, helped unify his diverse territories by promoting a common currency and reinforcing his authority. The wealth Alexander amassed from his conquests, including the vast amounts of gold, enabled him to fund further military campaigns and establish a lasting legacy. His empire, though short-lived, laid the foundations for the Hellenistic period, characterized by the spread of Greek culture and influence across the ancient world.

The Roman Golden Age: Augustus and the Roman Gold Standard

After defeating Mark Antony and Cleopatra at the Battle of Actium in 31 BC, Augustus (then Octavian) also turned his attention to Egypt. The annexation of Egypt was relatively smooth, with minimal resistance. Egypt, one of the wealthiest regions of the ancient world with its vast gold reserves, became Augustus' personal possession, significantly boosting his power and the wealth of Rome. Egypt was renowned for its immense wealth, particularly in gold. The Ptolemaic rulers had accumulated vast reserves of gold, which Augustus seized upon his conquest. This influx of gold was crucial for Augustus as it helped stabilize the Roman economy and finance his ambitious projects. To commemorate his victory, Augustus issued gold coins bearing the inscription "Aegypto Capta" (Egypt Captured), symbolizing the importance of this conquest. These coins not only celebrated his triumph but also reinforced his authority across the empire.

This windfall enabled Augustus to implement significant monetary reforms including the establishment of a new gold standard for Roman coinage and the introduction of the aureus, a gold coin that became the backbone of Roman currency. One of Augustus' significant achievements was the stabilization of the Roman economy. Before his reign, Rome had experienced high inflation rates, partly due to the debasement of currency and economic instability. Augustus implemented several reforms to address this issue. By standardizing the coinage and ensuring a steady supply of gold and silver, Augustus managed to reduce interest rates from around 12% to approximately 4%. This stabilization was crucial for maintaining the economic health of the empire and ensuring the loyalty of the Roman populace.



Figure 10. Emperor Augustus

Under Augustus and subsequent emperors, the Romans expanded their gold mining operations - reopening and expanding old Egyptian mines as well as developing new mining techniques in Spain, Dacia (modern Romania), and Britain. The Romans employed advanced hydraulic mining methods, including aqueducts for sluicing operations. In Rome, gold took on new symbolic importance: Golden laurel wreaths became emblems of imperial power. Gold was extensively used in imperial portraiture and architecture and even Roman triumphs featured displays of captured gold, showcasing military and economic might. On a lighter note, Lucius Verus, who reigned as co-emperor with Marcus Aurelius from 161 to 169 AD, was known for his luxurious and decadent lifestyle. He had natural blond hair and would sprinkle gold dust on it to make it appear even more radiant. This practice of using gold dust was a reflection of his opulent tastes and the broader Roman fascination with wealth and display. It also highlights how gold was not only a symbol of wealth and power.



Figure 11. Roman Gold Coinage

Gold was a cornerstone of the Roman economy, used extensively for coinage, trade, and wealth accumulation. The Roman Empire's prosperity was initially bolstered by the influx of gold from conquered territories. However, as the empire ceased to expand, the flow of new gold diminished. This reduction in gold supply had profound economic consequences. As the Western Roman Empire declined in the 4th and 5th centuries AD, its gold reserves dwindled due to increased military spending to defend borders, payment of tributes to barbarian tribes and economic instability and inflation. The loss of gold mines to invading forces further weakened the empire's economic foundation. In an attempt to restore economic stability, Emperor Constantine the Great introduced the gold Solidus in 312 AD. This pure gold coin, weighing 4.5 grams, was intended to re-establish trust in Roman currency and provide a stable monetary backbone for the empire. The Solidus became a standard for gold coinage in Europe for centuries, reflecting Constantine's efforts to combat economic decline.

In fact, one of Emperor Justinian's notable contributions to the Byzantine economy was the continuation and stabilization of the gold Solidus. Justinian's reign is often referred to as a golden age of Byzantine culture. The wealth generated from his economic policies and military conquests funded a flourishing of art, architecture, and scholarship. The construction of the Hagia Sophia, with its magnificent golden mosaics, stands as a testament to the cultural and artistic achievements of this period – made possible by gold.

Importantly, as the Western Roman Empire weakened, the Eastern Roman Empire, or Byzantine Empire, continued to thrive. One significant factor in this divergence was the flow of gold from the West to the East. The Eastern Empire maintained a more stable economy and continued to mint large quantities of gold coins, which were used for trade, subsidies, and tributes. This flow of gold helped sustain the Eastern Empire's economic strength long after the fall of the Western Roman Empire in 476 AD. The Byzantine Empire's ability to manage its gold reserves effectively contributed to its longevity and influence in the medieval world – up until its demise in 1453 AD.

The practice of debasing precious metal coinage, which involves reducing the intrinsic value of coins by lowering their content of gold or silver while maintaining their face value, was widespread prior to 1500 AD. The Roman denarius initially contained nearly pure silver, weighing about 4.5 grams. Over time, its silver content was gradually reduced. Under Nero in AD 64, the silver content dropped to 3.8 grams, and by the third century, it contained only about 2% silver before being replaced by the Argenteus. The continuous debasement led to inflation as people adjusted prices to account for the diminishing intrinsic value of coins. This debasement of coinage played a much more significant role in the eventual downfall of the Roman Empire than most historians and archivists surmise. It is likely that the gradual debasing of the Roman currency, is the only truly compelling explanation for the collapse of the Roman Empire.

The Eternal Allure of Gold

From the sun-drenched banks of the Nile to the marble halls of Rome, gold shaped the destinies of ancient civilizations. Its journey through history reflects the rise and fall of empires, the evolution of economic systems, and humanity's enduring fascination with this precious metal. As we reflect on this golden legacy, we see not just a story of wealth and power, but a shimmering thread that connects us to our ancient past, from the earliest Pharaohs to the last emperors of Rome. The histories of ancient Egypt, Persia, Greece, and Rome are intricately woven with the threads of gold and silver, reflecting the wealth, power, and strategic brilliance of these civilizations and the indelible impacts of these precious metals. However, the golden roar had only just begun and gold was to dramatically increase in importance in the coming centuries.

Chapter 2 - Gold from Augustus to Newton

The Advent of Islam and Early Islamic Influence on Gold (622 AD - 750 AD)



Figure 12. Islamic gold artefacts

The Islamic faith emerged in 622 AD, marking the beginning of a new era that would significantly influence the flow and use of gold. As Islam spread rapidly across the Middle East, North Africa, and parts of Europe, it brought with it new trade routes and economic practices. The expansion of Islamic territories created a vast network for the circulation of gold and other precious metals. The early Islamic period saw the establishment of extensive trade networks that connected the Islamic world with Europe, Africa, and Asia with gold being a central element in these networks. Gold from West Africa, particularly from the Ghana Empire, was transported across the Sahara Desert to North Africa and the Mediterranean. This trade route was crucial for the flow of gold into the Islamic world. Additionally, the Silk Road, which connected China with the Mediterranean, also facilitated the exchange of gold. Islamic merchants played a key role in this trade, bringing gold from the East to the West.

The Carolingian Empire and the Role of Gold (750 AD - 900 AD)

By the early 8th century, Islamic forces had advanced into Europe, reaching as far as France. In 732 AD, Charles Martel, known as Charles the Hammer, successfully repelled the Moorish invasion at the Battle of Tours. This event was crucial for the history of gold in Europe. Charles Martel took the unprecedented step of appropriating gold and silver from church treasuries to finance his army. Much of this wealth consisted of ancient artifacts and religious items, demonstrating the concentration of precious metals in ecclesiastical holdings. The use of these resources to pay troops highlighted the critical role of gold and silver in warfare and state power. This action set a precedent for future European monarchs in times of crisis, showing how gold could be rapidly mobilized for military purposes.

The Mini Ice Age and Viking Era (600 AD – 1100 AD)

Between 600 and 900 AD, Europe experienced a mini-ice Age, which had significant implications for economic activity and, consequently, the movement of gold. Agricultural production was limited, reducing trade and economic growth. As temperatures began to warm around 800 AD, there was a gradual increase in agricultural output and river navigation improved. This climate shift facilitated the expansion of trade routes and the circulation of gold.

The Viking Age, spanning approximately 800 to 1100 AD, further influenced the distribution of gold across Europe. Viking raids and trading expeditions spread gold and silver throughout Northern Europe and beyond. Their longships allowed them to navigate rivers deep into continental Europe, facilitating trade and the movement of precious metals. The Vikings' activities contributed to the redistribution of wealth and the circulation of gold coins from various regions. Most interestingly, the Normans, who were also Vikings, used gold in thread for clothes, pennants and family crests to lift their prestige and draw focus away from their iron implements of war.

The Byzantine Empire and the Gold Bezant (900 AD - 1200 AD)

The history of gold as currency finds one of its most influential chapters in the Byzantine Empire, where the gold bezant-known in Byzantium as the solidus and later as the hyperpyron - became the backbone of medieval commerce and a symbol of imperial power. The story of the bezant is not only a tale of coinage, but also of the empire's economic resilience, technological innovation, and far-reaching influence. The gold solidus, introduced by Emperor Constantine I in 312 AD, was a direct response to the economic instability that plagued the late Roman Empire. Constantine's reform established a coin weighing about 4.4–4.5 grams of nearly pure gold, with 72 solidi equalling one Roman pound of gold. This new standard quickly became the foundation of Byzantine monetary policy and remained remarkably stable for over seven centuries. The solidus was not just a medium of exchange; it was the "Dollar of the Middle Ages," universally accepted and trusted for its consistent weight and purity.

The Byzantine economy was intricately tied to its gold coinage. The state maintained a monopoly over minting, and the solidus (later the hyperpyron) was the linchpin of taxation, military expenditure, and international diplomacy. Annual revenues and expenditures were often calculated in nomismata (the Greek term for the gold coin), and large payments-such as tributes, ransoms, or diplomatic gifts-were made in gold coins. The empire's ability to maintain a stable gold currency allowed it to weather crises and project power for centuries, even as Western Europe relied mainly on silver and bronze. By the late 11th century, the solidus began to suffer from debasement due to fiscal pressures and administrative decline. Under Emperor Alexios I Komnenos, a major reform in 1092 replaced the debased solidus with the hyperpyron, a new gold coin of slightly lower weight but high purity (about 4.45 grams, .900–.950 fine). The hyperpyron restored confidence in Byzantine currency and continued the legacy of the bezant as the standard of international trade

The Medieval Warming Period and Increased Trade (900 AD - 1300 AD)

The Medieval Warm Period (MWP), spanning roughly from 950 to 1250 CE, marked a transformative era in European and North Atlantic history. This climatic anomaly, characterized by warmer and more stable weather patterns, profoundly shaped agriculture, population dynamics, and, crucially, the expansion of trade networks across medieval Europe and beyond. The prosperity of the MWP coincided with Europe's re-engagement

with wider trade networks. Italian city-states like Venice, Genoa, and Pisa capitalized on their strategic locations and maritime expertise to dominate Mediterranean and, later, transcontinental trade. These cities became conduits for the exchange of luxury goods-silks, spices, and precious metals between Europe, the Byzantine Empire, the Islamic world, and Asia.

The Crusades, launched in the late eleventh century, further opened access to markets in the Near East and North Africa, integrating Western Europe into a broader commercial world. Italian merchants established trading posts in Crusader states, and goods from as far away as China and India began to filter into European markets, often paid for in gold and silver coinage that was once again being minted in places like Florence and Venice.

The Rise of the Normans and the Reform of Coinage (1066 AD - 1150 AD)

A pivotal moment in the history of gold currency came in the 1150s under Henry II of England – who not only made monetary reforms but also legal reforms as well. Initially, there were 200 licensed private minters or “moniers” in England, reflecting a decentralized approach to currency production. Henry II rapidly centralized control, reducing licenses to just four in one year. By the following year, all private minting was abolished, and the Royal Mint was established in 1158 AD.



Figure 13. Coinage reformation by Henry II of England

An interesting historical point to note was when Henry II's son, Richard the Lionheart was imprisoned in Germany on his way back from the crusades. After being captured by Leopold of Austria on his return from the Third Crusade, Richard was held for ransom and had to be bailed out with a significant amount of gold. His mother, Eleanor of Aquitaine, managed to raise the enormous sum of 150,000 marks – the equivalent to 65,000 pounds of silver or 3 trillion pounds sterling adjusted for inflation to secure his release. This amount was roughly three times the annual income of the English crown at the time.

This centralization of currency production had far-reaching consequences. It gave the crown unprecedented control over the quality and quantity of coinage setting a model that would be emulated by other European monarchs. The standardization of currency was crucial as it facilitated trade and economic growth. This system remained largely unchanged for over 850 years, until the advent of digital assets like Bitcoin and other cryptocurrencies in the 21st century.

Introduction of the Venetian Ducat (1284 AD)

Venice's rise as a major trading power began in the early Middle Ages. Its strategic position on the Adriatic Sea allowed it to become a crucial hub for trade between the East and the West. By the 13th century, Venice had established itself as a dominant maritime republic, controlling key trade routes and ports.



Figure 14. The Venetian Ducat

In 1284, Venice introduced the gold Ducat, also known as the Zecchino. This coin quickly became one of the most important and widely accepted currencies in Europe and beyond. The Ducat's success can be attributed to several factors. The Venetian Ducat was made of 99.47% pure gold, the highest purity that medieval metallurgy could achieve. This high standard of purity made the Ducat a trusted and reliable currency. Each Ducat weighed approximately 3.5 grams, ensuring consistency and trust in its value. The Ducat's reliability and the economic power of Venice ensured its acceptance across Europe, the Mediterranean, and even parts of Asia.

The late thirteenth century marked a turning point in the history of gold coinage with the introduction of the Venetian ducat—a coin that would become the backbone of international commerce for centuries and a symbol of the Republic's commercial might. Venice's rise as a major trading power began in the early Middle Ages. Its strategic position on the Adriatic Sea allowed it to become a crucial hub for trade between the East and the West. By the 13th century, Venice had established itself as a dominant maritime republic, controlling key trade routes and ports.

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Venice's commitment to maintaining the ducat's integrity was unwavering. The city's mercantile oligarchy understood that their prosperity depended on the trust of foreign merchants. Only Venetian citizens could work at the mint, and the authorities strictly guarded the dies and patterns used to strike the coins. Unlike many feudal monarchies, which frequently debased their currencies to cover expenses, Venice steadfastly preserved the

ducat's weight and purity, reinforcing its reputation for fair dealing and financial stability.

The Mali Empire and Mansa Musa's Pilgrimage (1300 AD - 1400 AD)

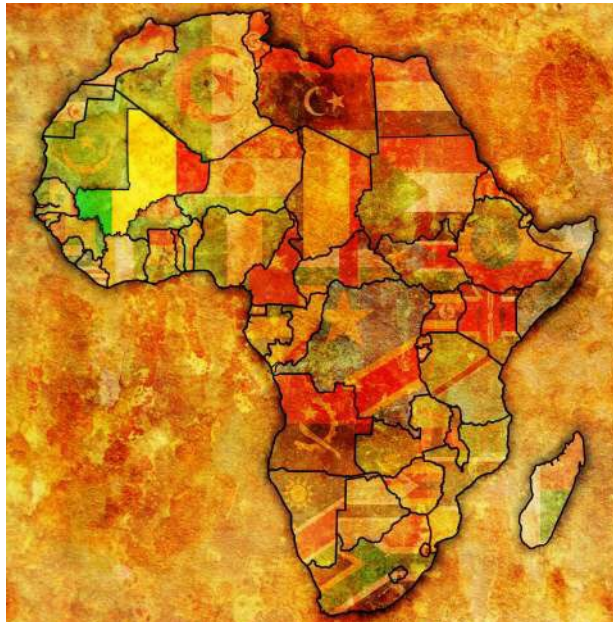


Figure 15. Map of Africa depicting the Mali Empire

In the annals of gold's history, few tales rival the spectacle and economic consequence of Mansa Musa's legendary pilgrimage to Mecca in 1324–1325. As the emperor of Mali, one of the world's richest pre-modern empires Mansa Musa's journey was both a religious obligation and a dazzling display of wealth that reverberated across Africa, the Middle East, and Europe. Mansa Musa ruled an empire that straddled the gold-rich regions of West Africa, including the famed Bambuk and Bure goldfields. Under his reign, Mali became a nexus of trans-Saharan trade, linking the mineral wealth of the interior to the bustling markets of North Africa and beyond. Gold, traded for salt, textiles, and other luxuries, was the lifeblood of Mali's prosperity.

When Musa set out for Mecca, he did so with an entourage of legendary proportions. Contemporary accounts describe a procession of 60,000 people, including courtiers, soldiers, slaves, and attendants, along with 80–100 camels each bearing between 23 and 136 kilograms of gold dust. The caravan stretched for miles across the Sahara, an awe-inspiring testament to the emperor's resources and organizational prowess. Musa's generosity was as extravagant as his retinue. In every city along

the route-including Cairo, Medina, and Mecca-he distributed gold to the poor, gifted it to officials, and spent lavishly on goods and construction, reportedly building a mosque every Friday. In Cairo alone, he is said to have handed out or spent over 20,000 ounces of gold-a sum that, even by conservative modern estimates, would be worth hundreds of millions of dollars.

The consequences of Musa's largesse were immediate and profound. The sudden influx of gold into the economies of Egypt and the wider region caused the value of gold to plummet and prices to soar-a textbook case of inflation triggered by monetary oversupply. Goods and services, previously affordable to a few, became accessible to many, driving up prices across the board. The purchasing power of gold fell, and the effects lingered for over a decade, with Cairo's market in particular struggling to recover.

The journey also strengthened Mali's diplomatic and commercial ties with the Islamic world, fostering cultural exchange and the spread of Islamic scholarship in West Africa. The pilgrimage, in short, was a turning point: it broadcast the economic might of sub-Saharan Africa to the world and set the stage for centuries of gold-driven trade between Africa, the Middle East, and Europe. Mansa Musa's hajj remains one of history's most remarkable episodes of gold in motion-a single journey that altered economies, reshaped perceptions, and illuminated the power and pitfalls of monetary abundance. His pilgrimage stands as a testament to the profound influence that gold, in the hands of a determined ruler, could wield on the medieval world

The Little Ice Age and Economic Adaptations (1315 AD)

From 1315 to 1850, Europe experienced another climatic shift known as the Little Ice Age. This change necessitated the expansion of international trade to ensure food supplies across regions as well as the development of more sophisticated financial instruments to manage risk in a challenging economic environment. Noteworthy, there was also an increased demand for stable currencies, often based on gold and silver, to facilitate long-distance trade.

The Little Ice Age presented significant challenges to European economies, but it also drove innovation and adaptation. Increased trade, changes in land

use, and financial innovations helped societies navigate the economic impacts of the cooler climate. Throughout this period, gold remained a cornerstone of economic stability, underscoring its enduring importance in times of uncertainty.

The Late Medieval Period and the Medici Influence (1400 AD - 1500 AD)



Figure 16. A Medici Bust in Venice

The 1400s saw a surge in international business, particularly under the influence of the Medici family in Italy. The Medici bank and other Italian financial institutions developed sophisticated financial instruments. International trade networks expanded, increasing the need for reliable currencies and credit systems. The use of bills of exchange and other financial innovations facilitated long-distance trade without the physical movement of gold. The Medici family's rise to power was built on the foundation of the Florentine gold florin, one of Europe's earliest and most trusted gold coins, which became the preferred currency for international trade during this era. The Medici Bank's operations, underpinned by gold, enabled the family to establish a financial empire with branches across Europe, serving as the official bankers to the Papacy and extending credit to rulers and merchants alike. By mastering the movement and management of gold, the Medici pioneered banking practices-like bills of exchange and double-entry bookkeeping-that would shape the global economic system for centuries. Their financial influence allowed them to become de facto rulers of Florence and major patrons of the Renaissance, funding art, architecture, and scholarship that defined the age.

Interestingly, an often overlooked but significant event was the opening of the Schwaz silver mines in Austria in the 1400s. These mines became a major source of silver for Europe. The increased silver supply fuelled economic growth and international trade. The wealth generated from these mines influenced European politics and power dynamics.

The Ming Dynasty and the Silver Trade (1368-1644 AD)

The Ming Dynasty (1368–1644) stands as a pivotal era in the global history of precious metals, not for gold, but for the unprecedented influx and influence of silver. The story of silver in Ming China is one of economic transformation, global interconnectedness, and the far-reaching consequences of monetary policy. It is interesting to note that in China prior to 1 AD, gold was rarely used as a currency with the Chinese preferring to use copper in bullion form to trade with at a high level. Silver and gold of course did become very important in Chinese history much later especially in the 16th century AD.



Figure 17. An image of silver bars

Silver has been used in China for thousands of years, but its prominence grew significantly during the Tang (618-907 AD) and Song (960-1279 AD) dynasties. During these periods, silver was used alongside copper coins and paper money, providing a stable medium of exchange and store of value. By the early Ming period, China's experiment with paper currency had ended in failure. Rampant inflation and widespread counterfeiting rendered Ming paper money nearly worthless, undermining confidence in the government's ability to manage its currency. Attempts to revive copper coinage also faltered due to inconsistent supply and production. In response, the Ming state and society gradually turned to silver as the primary medium of exchange, a transition formalized through tax reforms beginning in the 1430s and accelerating over the next century.

Silver's adoption was transformative. Taxes, which had once been paid in grain or labor, were now demanded in silver, creating a massive and sustained demand for the precious metal throughout the empire. This shift not only stabilized the monetary system but also integrated China more deeply into emerging global trade networks. The influx of silver had profound effects on the Ming economy and society. Silver became the standard for large transactions and the basis of the tax system, replacing traditional copper coins and barter. This monetization stimulated commercial growth, expanded domestic markets, and facilitated the rise of a wealthy merchant class. Urbanization accelerated as cities grew into vibrant centres of trade and finance.

China's historical and modern demand for silver highlights its enduring importance in global economics. From the Ming Dynasty's silver trade to contemporary industrial uses, silver has played a crucial role in shaping economic landscapes. Understanding this history provides valuable insights into the dynamics of global trade and economic development – much in the same way gold has.

The Golden Legacy of the Incas (1400s AD)

The Incan Empire, which flourished in the Andean region of South America from the early 13th century until the Spanish conquest in the 16th century, is renowned for its remarkable achievements in architecture, agriculture, and metallurgy. Among these, the Incas' relationship with gold stands out as a symbol of their wealth, religious beliefs, and the dramatic events that unfolded during the Spanish conquest. For the Incas, gold was more than just a precious metal; it was considered the "sweat of the sun". The sun, or Inti, was the most important deity in the Inca pantheon, and gold, with its radiant lustre, was believed to embody the sun's divine essence. This belief imbued gold with immense spiritual significance, making it a central in religious ceremonies and

royal adornments.



Figure 18. An Incan Artefact

The Incas deliberately conquered a group called the Chimú because they were good gold workers. The Inca conquest of the Chimú led to a merging of their metallurgical traditions, with Chimú expertise significantly enhancing Incan gold work. This resulted in some of the most exquisite pre-Columbian artifacts, furthering the Inca Empire's wealth and reinforcing their religious and political authority. However, this legacy also set the stage for exploitation by European colonizers, who sought to plunder the Andean riches. The Chimú-Inca synthesis in gold work played a significant role in attracting Spanish conquistadors, who were astonished by the abundance of gold in the Andes. The looting of golden artifacts from Chimú and Inca temples and tombs by the Spanish marked the end of this golden age of Andean metallurgy.

Gold in Aztec Culture: A Symbol of Divinity

The people commonly referred to as the Aztecs were originally known as the Maschika (or Mexica). This name, derived from their patron deity Huitzilopochtli, reflects their deep connection to their spiritual and cultural origins. The Maschika migrated to the Valley of Mexico, where they founded their capital, Tenochtitlán, in 1325 AD. Over time, the name "Mexico," derived from the Maschika, became synonymous with their homeland and eventually the modern nation of Mexico. Tenochtitlán itself evolved into present-day Mexico City, built upon the ruins of this once-great metropolis.

Gold held profound significance in Aztec society. Known as *teocuitlatl* ("excrement of the gods"), it was considered sacred and divine. Its radiant luster symbolized the sun, a central element in Aztec cosmology and religion. Gold was not merely a material of wealth but a medium for spiritual expression and societal status. It was used to craft intricate jewelry, ceremonial objects, and adornments for temples and statues, showcasing both artistic mastery and religious devotion. The Aztecs combined gold with other precious materials such as jade and turquoise to create stunning artifacts. These creations were not only symbols of power but also offerings to deities, reinforcing their belief in gold's divine origin. Despite its cultural importance, gold was not used as currency in the Aztec economy; instead, it served as a symbol of wealth and spiritual connection.

The arrival of Hernán Cortés in 1519 marked a turning point for the Aztec Empire. Drawn by tales of immense wealth, Cortés and his Spanish conquistadors were captivated by the abundance of gold in Tenochtitlán. Emperor Moctezuma II initially sought to appease the Spaniards with gifts of gold, hoping to avoid conflict. However, these gifts only fueled their greed. Cortés exploited internal divisions within the empire, forming alliances with rival city-states such as Tlaxcala to strengthen his forces. In 1521, after months of battles and betrayals, Tenochtitlán fell to the Spanish. The conquest was marked by immense bloodshed and destruction. The Spaniards looted vast quantities of gold from temples and palaces, melting down priceless artifacts into ingots for easier transport back to Spain. One estimate suggests that the total gold plundered weighed over 6,000 kilograms (13,420 pounds), valued at more than 1.3 million gold pesos at the time—equivalent to hundreds of millions of dollars today.

One poignant artifact from this period is a large gold bar discovered beneath Mexico City in 1981. Analysis revealed it was likely part of the treasure looted during Cortés' retreat on La Noche Triste ("The Night of Sadness") in 1520—a failed escape attempt that saw many Spaniards perish while trying to flee with stolen riches. The story of Aztec gold is one of beauty and tragedy. It symbolizes not only the artistic brilliance and spiritual depth of the *Maschika* but also the devastating impact of European colonization. Today, ongoing archaeological discoveries continue to shed light on this rich heritage, offering glimpses into a civilization that valued gold not merely for its material worth but as a bridge between humanity and the divine.

The Age of Exploration and the Influx of New World Gold (1500 AD - 1600 AD)

The late 15th and 16th centuries brought significant changes to the global gold supply. Columbus's voyage to the Americas in 1492 opened new sources of gold and silver. Throughout the 1500s, Spanish conquests in South America led to a massive influx of precious metals to Europe. This influx of gold and silver had profound economic effects, including price inflation in Europe and shifts in global trade patterns. The influx of gold from the New World had several significant economic impacts. The sudden increase in the supply of gold led to inflation in Europe, particularly in Spain. Known as the "Price Revolution," this period saw a dramatic rise in prices for goods and services, which affected the entire European economy. Consequently, the wealth generated from New World gold bolstered the power of Spain, enabling it to finance wars, expand its empire, and exert influence across Europe. However, this wealth also led to economic imbalances and dependency on imported goods. Additionally, the influx of gold facilitated the growth of global trade networks. European powers used gold to trade with Asia for spices, silk, and other luxury goods, further integrating the global economy.

The Golden Voyage of the Spanish Galleons (1500 AD - 1800 AD)

The Spanish galleons of the 1500s were majestic multi-deck cargo ships that played a crucial role in the transatlantic trade between the New World and Spain. These ships were the lifeline of the Spanish Empire, transporting vast quantities of gold, silver, and other valuable goods from the Americas to Europe. However, the perilous journey across the Atlantic was fraught with dangers, leading to numerous shipwrecks and the loss of immense wealth. Spanish galleons were designed to carry large amounts of cargo, including precious metals, spices, and other goods. These ships were heavily armed to protect against pirates and enemy navies, making them formidable vessels on the high seas.



Figure 19. An image depicting one of the Spanish Galleons

The galleons followed a well-established route, departing from ports in the Americas and making their way back to Spain, laden with treasures that fueled the Spanish economy and its imperial ambitions. Between 1500 and 1800, the Spanish Empire lost an estimated 1,000 to 3,000 ships to various maritime disasters. These shipwrecks were caused by storms, navigation errors, piracy, and conflicts with other European powers. The loss of these ships often meant the loss of significant amounts of gold, silver, and other valuable cargo, which had a profound impact on the Spanish economy and its ability to maintain its empire.

Several shipwrecks from this period have become legendary due to the immense wealth they carried.

Firstly, the **Nuestra Señora de Atocha (1622)**: This galleon sank off the Florida Keys with 40 tons of gold and silver, along with emeralds and other treasures. It was famously rediscovered in 1985 by treasure hunter Mel Fisher.

Secondly, we have the **1715 Treasure Fleet**: A fleet of eleven ships was wrecked in a hurricane off the coast of Florida, carrying immense wealth. Many treasures from this fleet have been recovered, but much remains lost.

Thirdly, often referred to as the "Holy Grail of Shipwrecks," the San José sank off the coast of Colombia during a battle with the British. It was carrying a fortune in gold, silver, and emeralds.

As we entered the 1600s, the stage was set for gold to play an even more crucial role in the emerging global economy. The foundations laid during this period – from the centralization of minting to the discovery of new gold sources and the expansion of international trade – would shape the use and perception of gold for centuries to come. The interplay between climate changes, technological advancements, political decisions, and economic innovations all contributed to the ever-evolving role of gold in the global economy.

Chapter 3 - Gold from Newton to Nixon



The Early 1600s: The Flow of Gold and Silver

The 1600s marked a significant period in the history of gold, driven by the influx of precious metals from South America due to the explorations and conquests by Portugal and Spain. This era saw a substantial flow of gold and silver into Europe, which played a crucial role in the economic and political dynamics of the time. The great navigators of Portugal and Spain, such as Vasco da Gama and Christopher Columbus, opened new trade routes that facilitated the movement of these precious metals.

The Rise of Mercantilism

During this period, the concept of Mercantilism emerged, where the wealth of a nation was measured by its stockpile of gold and silver. European powers, including Britain, Spain, and the Netherlands, engaged in extensive trade and colonization to accumulate these precious metals. The British, for instance, ventured to California and navigated the treacherous Drake Passage to secure their share of the wealth. The mercantilist policy was the first economic policy that emphasized the importance of accumulating gold and silver to increase national wealth.

The Influence of Isaac Newton



Figure 20. Bust of Issac Newton

In 1717, Isaac Newton, then Master of the Mint, made a pivotal decision that would shape the future of gold. He set the gold-to-silver ratio, inadvertently establishing a de facto gold standard. Newton's mistake was putting a low face-value on silver coins than the actual metal value of the silver. This decision had long-lasting implications, as it led to the dominance of gold over silver in backing currency. This support for gold over silver in backing currencies was further supported by economist David Ricardo in the early 1800's – who was in support of a gold standard. Newton's work in this area was part of his broader contributions to science and mathematics, but his impact on the monetary system was profound. Thinkers like Adam Smith and David Hume emphasized financial literacy over hoarding gold reserves. They argued that economic strength lay in prudent citizens rather than stockpiles of precious metals. These economists were the first to challenge the concept of mercantilism.

The Gold Rushes

The mid-1800s witnessed significant gold rushes in California and Australia, further cementing gold's importance in global economics. These rushes not only boosted the economies of these regions but also contributed to the global supply of gold. The discovery of gold in California in 1848 and in Australia in 1851 led to mass migrations and the rapid development of these areas. The gold rushes were characterized by a frenzied search for gold, with thousands of prospectors flocking to the goldfields in hopes of striking it rich.

Rothschild Gold and the Napoleonic Wars

The Napoleonic Wars (1803-1815) were a series of conflicts that pitted the French Empire, led by Napoleon Bonaparte, against various European coalitions. These wars required immense financial resources, and one of the key figures in financing the British war effort was Nathan Mayer Rothschild. His strategic use of gold made financing history and played a crucial role in supporting the British military and ultimately contributed to Napoleon's defeat.

During the Napoleonic Wars, the British government faced significant financial challenges. The Duke of Wellington's armies, fighting in Spain and Portugal, required substantial funds to pay and supply troops. In 1814, J.C. Herries, the Commissary in Chief to the British government, engaged Nathan Rothschild to secretly obtain large amounts of gold. Rothschild's brothers across Europe were instructed to buy gold discreetly to avoid alerting the French. The gold was then shipped to Wellington in Southern France, enabling him to sustain his military campaign. This financial support was crucial in maintaining troop morale and ensuring the British army's operational effectiveness.



Figure 21. A depiction of the Napoleonic wars

In 1815, following Napoleon's escape from Elba, the need for funds became even more urgent. Rothschild once again rose to the occasion, raising immense sums of money in a short period. His innovative approach included melting down bullion to compensate for the shortage of coins. This financial maneuvering allowed Wellington to pay the 209,000 English, Dutch, and Prussian soldiers assembled in Belgium, leading to Napoleon's final defeat at the Battle of Waterloo.

Nathan Mayer Rothschild's contributions during the Napoleonic Wars cemented his reputation as a financial genius. His ability to mobilize vast amounts of gold under challenging circumstances demonstrated the power of financial networks in shaping historical events. The Rothschild family's influence continued to grow, and they played a significant role in European finance throughout the 19th century.

The British Empire and Gold

From 1700 to 1900, the British Empire thrived, partly due to its robust infrastructure and industrial advancements. The British East India Company played a crucial role in trading gold and other commodities, establishing Britain as a dominant global power. The Kingdom of Travancore, located in the Southwestern part of India, was established in 1729 by Marthanda Varma. Travancore's relationship with the British began in the late 18th century. In 1788, the Travancore royal family signed a treaty with the British East India Company, which marked the beginning of British dominance in the region. This treaty was revised in 1805, further diminishing the royal authority and political independence of Travancore. The British influence brought about significant changes in the administration and economy of Travancore, integrating it into the broader colonial framework of British India. Gold played a crucial role in the economy and culture of Travancore. The region was known for its wealth, partly due to its strategic position in the spice trade, particularly pepper.



Figure 22. Currency of the Maharajah of Travancore

The Maharajah of Travancore engaged in extensive trade with the British, exchanging spices for gold. This trade relationship significantly boosted the wealth of Travancore, and the gold accumulated during this period was often stored in temples and royal treasuries. One notable example is the Padmanabhaswamy Temple in Thiruvananthapuram, which is reputed to have vast reserves of gold and precious stones to this day. These treasures, accumulated over centuries, reflect the historical wealth and the importance of gold in Travancore's economy and culture as a result of the spice trade. These existing gold treasures are reputed to be worth approximately \$22 billion dollars or \$1 trillion rupees. This estimate is far more grounded in comparison to other public estimations asserting trillions of dollars of gold value in the unopened vaults.

The introduction of the British Sovereign in 1817 further solidified gold's role in the economy. The British Empire's success was also due to its ability to leverage its colonies for resources, including gold, which helped finance its expansion and maintain its global influence.

The Sherman Silver Purchase Act

The Sherman Silver Purchase Act of 1890 was a significant piece of legislation in the United States that had profound implications for the country's monetary policy and the global gold market. The Sherman Silver Purchase Act was enacted on July 14, 1890, as a response to the growing demands of farmers and miners. The act required the U.S. Treasury to purchase 4.5 million ounces of silver each month, significantly increasing the government's silver purchases compared to the previous Bland-Allison Act of 1878. The Treasury issued paper notes redeemable in either gold or silver bullion to buy this silver. The act was named after Senator John Sherman of Ohio, who played a crucial role in its passage. Although Sherman himself had reservations about the act, it was seen as a compromise to appease both the silver advocates in the West and the gold standard supporters in the East.

The late 19th century was a period of economic hardship for many American farmers, who faced deflation and falling crop prices. They believed that increasing the money supply through the free coinage of silver would cause inflation, making it easier to pay off debts. Silver miners, on the other hand, sought to boost the demand for silver, which had seen a sharp decline in price due to oversupply. The Sherman Silver Purchase Act aimed to address these concerns by increasing the government's silver purchases. However, the act also posed a threat to the U.S. Treasury's gold reserves. As more paper notes were issued, there was a growing fear that the public would redeem these notes for gold, depleting the Treasury's gold stock.



Figure 23. 19th century British coinage

The economic instability caused by the Sherman Silver Purchase Act contributed to the Panic of 1893, a severe financial crisis marked by bank failures and widespread unemployment. The depletion of gold reserves led to a loss of confidence in the U.S. monetary system. In response, President Grover Cleveland called a special session of Congress, which resulted in the repealing of the Sherman Silver Purchase Act in 1893.

The Sherman Silver Purchase Act is a notable episode in the broader history of gold and its role in the global economy. Throughout history, gold has been a symbol of wealth and a standard for monetary systems. The act's impact on gold reserves highlighted the delicate balance between silver and gold in United States' monetary policy. The debates over bimetallism and the gold standard in the 19th century reflected the still-ongoing struggle to balance economic stability with the needs of different economic sectors.

Nazi Gold and the Hidden Treasures of World War II

The story of Nazi gold during World War II is one of systematic looting, covert operations, and the desperate measures taken by nations to protect their wealth. This section explores the efforts to smuggle gold out of Nazi-occupied territories, the extensive looting carried out by the Nazis, and the fate of the gold that was seized.

Gold Smuggling to the UK: The Norwegian Effort

As the threat of Nazi invasion loomed over Europe, several countries took drastic measures to safeguard their gold reserves. Norway, in particular, undertook a daring operation to prevent its gold from falling into Nazi hands. In 1940, as German forces began their invasion, Norwegian officials, in cooperation with the British government, arranged to smuggle the country's 50 tons of gold out of Norway. The gold was secretly transported to England via the merchant ship SS Jutlandia, navigating the treacherous waters of the North Sea. This successful operation ensured that Norway's gold reserves were stored safely in Britain throughout the war, preventing them from being seized by the Nazis.

Nazi Looting of Occupied Countries

While Norway managed to save its gold, many other countries were not as fortunate. The Nazis systematically looted the gold reserves of the countries they occupied, seizing both central bank gold and gold taken from individuals.

Key countries that had their gold reserves looted by the Nazis included:

Belgium: The Germans seized gold from the National Bank of Belgium.

France: The Germans took gold from the Banque de France.

Netherlands: The Nazis also took gold from the Dutch central bank.

Austria: After the annexation of Austria in 1938, the Nazis seized its gold reserves.

Luxembourg: Gold was also taken from Luxembourg's central bank.

Looting of Jewish Property

The Nazis also systematically robbed Jewish citizens, plundering homes and concentration camps. Jewish individuals were often forced to hand over valuable possessions, including gold jewelry, coins, and other precious items. This gold was then melted down and processed by the Germans to finance their war efforts.

The Role of the Reichsbank

Much of the seized gold was stored in the Reichsbank, the central bank of Nazi Germany, where it was held as part of their war economy. Some of the gold was used to finance the German war machine, while other parts were moved to Switzerland and other neutral countries for safekeeping or laundered through Swiss banks.

Gold from the Soviet Union

After the invasion of the Soviet Union in 1941, the Germans also seized large amounts of gold from Soviet territories. However, much of this gold was used to fund military operations rather than for long-term storage.

The Decline of the Gold Standard

The early 20th century saw increasing criticism of the gold standard. Economists like John Maynard Keynes referred to gold as a "barbarous relic," arguing for more flexible monetary policies. It is notable that the Great Depression was lengthened by policies that attempted to attract gold deposits by offering higher interest rates and it was these higher interest rates that prolonged economic stagnation.

The Bretton Woods Agreement in 1944 established a system where currencies were pegged to the US dollar, which was convertible to gold. However, this system faced challenges, leading to its eventual collapse. The gold standard was seen as too rigid, limiting the ability of governments to respond to economic crises and manage their economies effectively.

Nixon and the End of Gold Convertibility

In 1971, President Richard Nixon announced the suspension of gold convertibility, effectively ending the Bretton Woods system. This decision marked the transition to fiat currencies, where the value of money is not directly tied to physical commodities like gold. Nixon's decision was driven by a need to address economic challenges, including inflation and trade imbalances, and it marked a significant shift in the global monetary system.

The period from the 1600s to 1970s was marked by significant developments in the history of gold. From the mercantilist policies of European powers to the establishment and eventual decline of the gold standard, gold played a central role in shaping global economics. The decisions made by figures like Isaac Newton and Richard Nixon had profound impacts, influencing the way we perceive and use money today. The journey of gold during this period reflects broader trends in economic thought and policy, highlighting the complex interplay between politics, economics, and precious metals.

Chapter 4 - Gold from Nixon to Now

The history of gold from the 1970s to the present day is a tale of dramatic shifts and evolving perceptions. This period has seen gold transition from a fixed monetary standard to a dynamic investment asset, influenced by global economic forces and changing market sentiments.

The 1970s: Nixon and the End of the Gold Standard

The 1970s marked a watershed in the history of gold—a decade when the world's monetary system underwent a seismic transformation. At the center of this upheaval stood U.S. President Richard Nixon, whose decision to sever the link between the U.S. dollar and gold ended a centuries-old era and ushered in the age of fiat money. On August 15, 1971, President Nixon announced a dramatic “New Economic Policy” in a televised address. In a move that would become known as the “Nixon Shock,” he unilaterally suspended the dollar's convertibility into gold, effectively ending the Bretton Woods system. This decision was taken to halt the drain of U.S. gold reserves and to address domestic inflation and international speculation against the dollar.

Nixon's measures were intended as temporary, but the consequences were permanent. The dollar was devalued, and other currencies were allowed to appreciate. The Smithsonian Agreement of December 1971 attempted to restore fixed exchange rates at new levels, but these efforts quickly unravelled. By 1973, major currencies were floating freely, and in 1976, the United States officially removed all statutory references to gold from the definition of the dollar. Nixon's decision fundamentally reshaped the global economy. The move to fiat currencies enabled greater flexibility in monetary policy but also introduced new risks, including inflation and volatile exchange rates.

The end of the gold standard marked the close of a chapter in monetary history and the beginning of a new era—one where trust in government and central banks, rather than the intrinsic value of gold, underpinned the world's money.

The 1970s thus stand as a pivotal moment in the story of gold: a time when the metal's ancient role as the bedrock of money was finally relinquished, yet its allure and significance endured, adapting to the realities of a new financial age.

The 1980s: Market Manipulation and Decline

1980s began with a dramatic episode that revealed the vulnerabilities and excesses of global commodities markets. While the decade saw gold reach new heights, it was silver-and the infamous attempt by the Hunt brothers to corner its market-that epitomized the era's speculative fervor, regulatory challenges, and the limits of market manipulation. Nelson Bunker Hunt and William Herbert Hunt, heirs to a Texas oil fortune, viewed silver as a hedge against inflation and the perceived instability of paper money. With U.S. citizens still restricted from owning gold bullion, the Hunts turned to silver, initially buying futures contracts and then amassing vast quantities of physical silver. By early 1980, the Hunt brothers, along with strategic partners, controlled an estimated 100–150 million ounces of silver-about one-third of the world's supply not held by governments.

Their aggressive buying drove silver prices from around \$6 per ounce in early 1979 to a staggering \$49.45 per ounce by January 1980, a more than 700% increase. The Hunts' actions created a genuine shortage, prompting panic buying by investors and the public alike. People pawned silverware and coins, and even retail jewellers like Tiffany's condemned the Hunts' hoarding in public advertisements. The fallout from the Hunt brothers' failed attempt to corner the silver market was far-reaching. The brothers were ultimately convicted of illegally manipulating the market, fined \$10 million each, and banned from trading commodities. Their spectacular rise and fall led to bankruptcies, forced mergers, and a wave of new regulations designed to prevent similar episodes in the future.

The episode served as a cautionary tale about the dangers of excessive speculation, leverage, and attempts to manipulate commodity markets. It also underscored the interconnectedness of precious metals: while the Hunt brothers targeted silver, gold prices also peaked in the same period, reflecting the broader climate of uncertainty and speculation. The saga of the Hunt brothers and the silver market in the early 1980s remains one of the most dramatic examples of market manipulation in financial history. It exposed the limits of even the wealthiest speculators to control global markets, led to lasting regulatory reforms, and reinforced gold and silver's enduring allure-and volatility-in times of economic uncertainty.

The 1990s: A Period of Malaise

The 1990s stand out in the history of gold as a decade marked by stagnation and neglect—a period when the yellow metal lost its lustre amid booming stock markets, strong global currencies, and shifting investor sentiment. After centuries as a pillar of monetary systems and a safe haven in times of crisis, gold found itself sidelined as the world embraced new economic realities. Throughout the 1990s, gold prices remained subdued, fluctuating within a narrow range and even declining to multi-decade lows by the end of the decade. In the late 1990s, gold hovered around \$360 an ounce, far below the highs seen in previous decades.

The combination of excess supply, weak demand, and a lack of investor enthusiasm kept prices in check. Economic research from the period highlights that gold's price was primarily influenced by exchange rates, inflation, and stock market performance. Unlike later periods, gold did not serve as an effective hedge against inflation in the 1990s, as price stability and currency strength reduced its appeal.

In retrospect, the 1990s can be seen as a calm before the storm. The neglect of gold during this period set the stage for dramatic changes in the following decade, when financial crises, geopolitical shocks, and a renewed search for safe havens would drive gold to unprecedented heights. But in the 1990s, gold's role was diminished—overshadowed by the optimism of the age and the promise of new financial frontiers gains.

The Early 2000s: A New Bull Market

The dawn of the 21st century marked a dramatic reversal in gold's fortunes. After a decade of malaise in the 1990s, gold entered a powerful bull market in the early 2000s, driven by a confluence of financial crises, shifting monetary policy, and changing investor psychology. This period not only restored gold's status as a safe haven but also set new records for its price and global relevance. This period coincided with the BREX scandal, which saw central banks limit their gold sales, potentially stabilizing the market.

The early 2000s were punctuated by events that further fuelled gold's ascent. The September 11, 2001 terrorist attacks and the subsequent wars in Afghanistan and Iraq heightened geopolitical uncertainty, prompting investors to seek safe-haven assets. While these tensions were not as globally destabilizing as those of the Cold War, they contributed to a general sense of unease that supported gold demand.

As the decade progressed, the onset of the Great Recession in 2007–2008 proved to be a major catalyst. The collapse of major financial institutions, widespread credit crises, and extraordinary central bank interventions—including massive quantitative easing—eroded confidence in fiat currencies and global financial stability. Investors poured money into gold, driving its price from around \$730 in October 2008 to \$1,300 by October 2010, and ultimately to a nominal high of about \$1,825 in August 2011 during the European sovereign debt crisis.

Economic uncertainties, geopolitical tensions, and the bursting of the dotcom bubble led investors to seek the safety of gold once again. From the early 2000s, gold prices began a steady ascent, reaching new highs by the end of the decade.

The 21st Century: Gold's Resurgence

In the 21st century, gold has seen a remarkable resurgence. From around \$400 an ounce in the early 2000s, gold prices soared to over \$3,500 an ounce by 2025. This increase was driven by a combination of factors, including economic instability, inflation fears, and the growing demand from emerging markets like India and China. Unlike previous periods, the demand for gold was not just for jewellery but also as a hedge against the volatility of paper and digital currencies, including Bitcoin. A defining feature of the recent gold resurgence has been the

extraordinary accumulation by central banks. According to the World Gold Council, 2023 marked the 14th consecutive year of net central bank buying, with a record 1,136 tonnes added to reserves. This trend has only accelerated, with China's central bank alone acquiring 95 tonnes in the first quarter of 2025. Central banks are strategically diversifying away from the U.S. dollar, seeking the stability and neutrality that gold provides in an era of rising geopolitical tensions and currency volatility.

Institutional investors and high-net-worth individuals have also increased their allocations to gold. In 2025, family offices and affluent investors have dramatically ramped up gold purchases, viewing the metal as a hedge against inflation, market drawdowns, and systemic risk. This shift reflects a broader change in sentiment: gold is now prized less for rapid growth and more as a "sleep well at night" asset—a cornerstone of diversified, resilient portfolios.

The Role of Emerging Markets

India and China have played a significant role in the modern gold market. Both countries have a long-standing cultural affinity for gold, which has translated into substantial demand. In addition to jewelry, gold is increasingly seen as a safe investment, providing a hedge against economic uncertainty and currency fluctuations.



As we look towards the future, gold's role in the global economy continues to evolve. Some countries, such as the UAE, are reportedly considering gold-backed currencies, potentially signaling a new phase in gold's monetary role. However, the full implications of these developments and gold's ultimate place in the financial system may not be fully understood until mid-century or beyond.

The history of gold since the 1970s has been marked by significant volatility and changing perceptions. From being the backbone of the global monetary system to a speculative asset and now a potential hedge against economic uncertainty, gold continues to fascinate investors and policymakers alike. As we move further into the 21st century, gold's story is far from over, and its role in the global economy continues to be redefined. Although, now more than ever, it is better understood.

Chapter 5 - Gold Through the Ages: From Empires to Questionable Ventures

While gold is best known and appreciated for its visible aspects in jewelry, artwork and architecture, gold's most potent characteristic is in its power to drive humans to almost any length to discover it – whether in lost hoards or new mines.

This chapter explores the multifaceted relationship between gold and human civilization, examining historical finds, major gold regions, under-explored territories, and the enduring and amazing allure of lost treasures. By analyzing significant discoveries and ventures, we can understand the motivations behind the quest for gold and what constitutes a worthwhile pursuit.

Great Historical Gold Artifact Finds

Throughout history, remarkable gold artifacts have been discovered, shedding light on ancient civilizations and their craftsmanship. One of the most notable finds is the discovery of the Royal Cache of Ramesses the Great, unearthed by the Abdell Rasul brothers in Deir el-Bahari.



Figure 24. Historical gold artefacts

These artifacts, including golden scarabs and jewelry, provide a glimpse into the wealth and funeral rites of ancient Egypt. These finds, offer insights into the wealth, power, and religious beliefs of the time. Antiquity dealers Allian and Armad Fahkry helped create global interest via "Egyptomania" by introducing these amazing artifacts into the marketplace. The authorities however took a dim view and swiftly clamped down on the antiquities market which helped preserve critical pieces for the public that otherwise would have been lost into private collections.

During the 21st Dynasty (around 1,000 BCE), Egypt faced political instability and grave robbing. To protect the royal remains from further desecration, a group of priests decided to relocate the mummies of several pharaohs to a hidden chamber in the cliffs near the Temple of Hatshepsut at Deir el-Bahari.

The pursuit of gold in ancient Egypt was deeply intertwined with religious beliefs surrounding the afterlife. Pharaohs were buried with vast quantities of gold and precious artifacts, intended to accompany them on their journey to the next world. The Valley of the Kings served as the primary burial ground for

Another significant and far more recent discovery is the Staffordshire Hoard, found in England. This collection of over 4,000 pieces of gold and silver, dating back to the Anglo-Saxon period, was buried and trampled into the ground, possibly as a ritual or to hide it from invaders. The hoard includes intricately designed sword hilts, helmet fragments, and religious artifacts, highlighting the artistry and wealth of the time.

discovery underscores the craftsmanship and artistry of the Anglo-Saxon period and raises intriguing questions about the hoard's purpose and origins. The Staffordshire Hoard of gold artifacts bears a striking resemblance to the gold artifacts that were stamped into the ground in the ancient story of "Beowulf". As a result, the Staffordshire Hoard has potentially provided significant substantiation for the historical value of texts like Beowulf - that are potentially not fictional alone.



The reference to Beowulf highlights the legendary tales. The discovery of the hoard fits the descriptions of gold and treasure found in the poem. King Alfred the Great and his son Edward the Elder received a reward for the discovery of the hoard. The hoard is the largest gold discovery in British History and dates back to the Anglo-Saxon period. However, the hoard mentioned in the ancient Beowulf poem provides not only historical interest but evidence as well that other ancient tales exist within them.

The Big Gold Mines

Witwatersrand, South Africa

The Witwatersrand basin in South Africa is one of the world's most significant gold producing regions, with an estimated two billion ounces of gold discovered. This region has played a pivotal role in the global gold market and South Africa's economic development. The Witwatersrand Basin, often called the "Wits Basin," is the largest known goldfield on Earth, stretching 300 km in length and 160 km in width, with sedimentary rocks up to 7,000 meters thick. Formed between 2.7 and 3.1 billion years ago, the basin hosts gold in conglomerate reefs-ancient river gravels cemented by silica and other minerals.



Figure 26. An image depicting a gold production mine

These reefs, such as the Vaal Reef, Ventersdorp Contact Reef (VCR), and C Reef, are the primary mining targets, each with distinct geological characteristics and gold distributions.

Gold was first discovered on the Witwatersrand ridge in 1886, sparking the Witwatersrand Gold Rush and leading to the rapid growth of Johannesburg. The rush transformed a rural area into South Africa's largest city and had profound political consequences, contributing to the Second Boer War. Over 150 mines have operated in the basin, extracting more than 42,000 tonnes of gold-over 22% of all gold ever mined globally.

Maricunga Belt, South America

Located in Chile, the Maricunga Belt is a high-altitude gold-producing region with approximately 200 million ounces of gold discovered. The Canadians discovered it in the 1980s. The Maricunga Belt is a prolific metallogenic province in the high Andes of northern Chile, extending over 200 km and hosting more than 65 million ounces of gold resources. Gold mineralization occurs in both porphyry and epithermal systems, primarily associated with Miocene volcanic rocks and large stratovolcanoes.

The belt features numerous mineralized zones, with gold often found in quartz stockworks and associated with iron oxides and hydrothermal alteration. The Maricunga Belt's gold is primarily extracted via open-pit mining and heap leach processing, which is well-suited to the region's lower-grade, bulk tonnage deposits. The belt continues to attract investment and exploration, with ongoing resource expansion and new project development.

Under-Explored Regions for Golden Precious Metals

Longwoods Platinum Complex, Southern New Zealand

Southern New Zealand remains significantly under-explored for gold and precious metals, despite a rich placer gold history and geological promise from Paleozoic–Mesozoic terranes.

The Longwoods (or Longwood) Range in Southland features the Longwood Igneous Complex, a layered mafic-ultramafic intrusion (including the Hekeia Gabbro) prospective for platinum group elements (PGE), nickel, and associated gold. Historical placer PGE (and minor gold) in nearby Orepuki and Waiau River drainages point to primary sources in these rocks, with pervasive PGE enrichment indicating "fertility."

Government reports and studies highlight potential for magmatic PGE-gold mineralization, though limited modern exploration has occurred. Anomalous Pt, Pd, and Au in cumulates suggest opportunities, but the area lacks large-scale development—making it a frontier for targeted geophysical and drilling programs amid New Zealand's broader underexplored mineral potential.

Tibooburra Old Albert Goldfield, Western New South Wales

The Tibooburra Old Albert Goldfield is located 340km from Broken Hill in Western New South Wales, Australia (often linked to the historical Albert Goldfield in northwestern New South Wales, Australia) represents another underexplored opportunity in a classic gold province.

The Albert Goldfield, discovered in the 1880s near Tibooburra/Milparinka, produced primarily from alluvial sources with minor reef mining (e.g., Warratta and Pioneer reefs yielding visible gold in quartz veins). Total output was modest compared to major fields, but the arid terrain and historical focus on placers left much reef and structural potential untapped.

Modern interest has revived through companies like Novo Resources (ASX: NVO), which holds the Tibooburra Gold Project covering the historical Albert Goldfield (including Clone and New Bendigo prospects) via farm-in/JV agreements. Novo targets high-grade vein systems and district-scale potential.

Additionally, Novo has a farm-in deal with TechGen Metals (ASX: TG1) on the John Bull project (north of Sydney in the New England district), featuring high-grade rock chips (up to 67.9 g/t Au), extended soil anomalies, and IRGS-style targets with planned RC drilling. These areas highlight NSW's underexplored extensions of known gold belts, offering discovery upside in stable Australian jurisdictions.

Questionable Ventures

Oak Island, North Atlantic

Oak Island, located off the coast of Nova Scotia, is famous for its legendary treasure. Despite numerous expeditions and significant investment, the treasure remains elusive, making it a prime example of a questionable venture. The narrator shares that it was thought to be the last place of the Knights of the Temples treasure and chance of all.

Throughout history, the allure of hidden gold treasures has captivated adventurers and treasure hunters alike. Two of the most enduring legends are the Oak Island Money Pit and the lost gold treasure of the last Shogun of Japan. These tales have inspired generations, but they also highlight the risks and uncertainties associated with such pursuits. This chapter delves into the history and intrigue surrounding these ventures, exploring why they remain so captivating despite the lack of concrete evidence.

The Lost Treasure of the Last Shogun

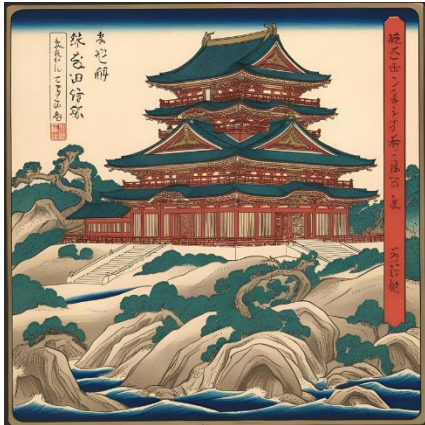


Figure 27. illustration of the Japanese Shogunate

The treasure of Tokugawa Yoshinobu, the last shogun of Japan, has captivated treasure hunters for over a century. Despite extensive searches, the treasure remains undiscovered, raising questions about its existence. These ventures highlight the allure and mystery of gold, driving explorers and adventurers to seek out hidden riches, often with little to show for their efforts. The search for the lost treasure of the last Shogun in Japan represents another enduring but questionable quest. Even in the 21st century, investors have continued to fund

expeditions, yet the treasure remains unfound.

The chapter raises a fundamental question about the nature of a "correct quest" for precious metals, differentiating between credible pursuits and widely speculative ventures. The pursuit of gold has driven exploration, conquest, and innovation throughout history. By examining the stories behind historical finds, major gold regions, and questionable ventures, we gain a deeper appreciation for the complex relationship between humanity and this precious metal. While the allure of lost treasures persists, the evidence suggests that a "correct quest" is one grounded in tangible evidence and a clear understanding of risk and reward.

Chapter 6 - Gold Rushes Throughout History

Ancient and Early Gold Rushes (Before 1800)

Roman Gold Mining (1st Century AD): The Roman Empire was one of the earliest civilizations to engage in extensive gold mining. Significant operations took place in regions such as Las Médulas in Spain and Dacia, which is modern-day Romania. These mining activities were not rushes in the modern sense but systematic, state-driven endeavors aimed at consolidating wealth and power for the empire. The Romans developed advanced mining techniques, including hydraulic mining, which involved using water to wash away debris and expose gold veins. This method was particularly effective in the mountainous regions of Spain.

West African Gold Trade (9th-14th Century): In West Africa, gold discoveries in Mali and Ghana played a crucial role in the region's history. The wealth generated from gold mining fueled the trans-Saharan trade and contributed to the prosperity of powerful empires like the Mali Empire under the legendary ruler Mansa Musa. This period saw the rise of Timbuktu as a major centre of commerce and learning. Mansa Musa's famous pilgrimage to Mecca in 1324, during which he distributed vast amounts of gold, highlighted the region's immense wealth and significantly impacted the global economy.

Modern Gold Rushes (19th-21st Century)

Brazilian Gold Rush (1690s-1750s): One of the earliest modern gold rushes occurred in Minas Gerais, Brazil. This rush led to the Portuguese colonization of the region and the establishment of the city of Ouro Preto. The influx of settlers and the wealth generated from gold mining had a profound impact on Brazil's development. The Brazilian gold rush also led to the exploitation of indigenous populations and the importation of African slaves to work in the mines, which had lasting social and demographic consequences.

California Gold Rush (1848-1855): The discovery of gold at Sutter's Mill in 1848 sparked one of the most famous gold rushes in history. Thousands of prospectors, known as "forty-niners," flocked to California in search of fortune. This rush not only accelerated the settlement of California but also had significant economic and social impacts on the United States. The rapid population growth led to California's admission as a state in 1859. The gold rush also spurred the development of infrastructure such as roads, railroads,

and ports, and had a lasting impact on the region's economy and culture.

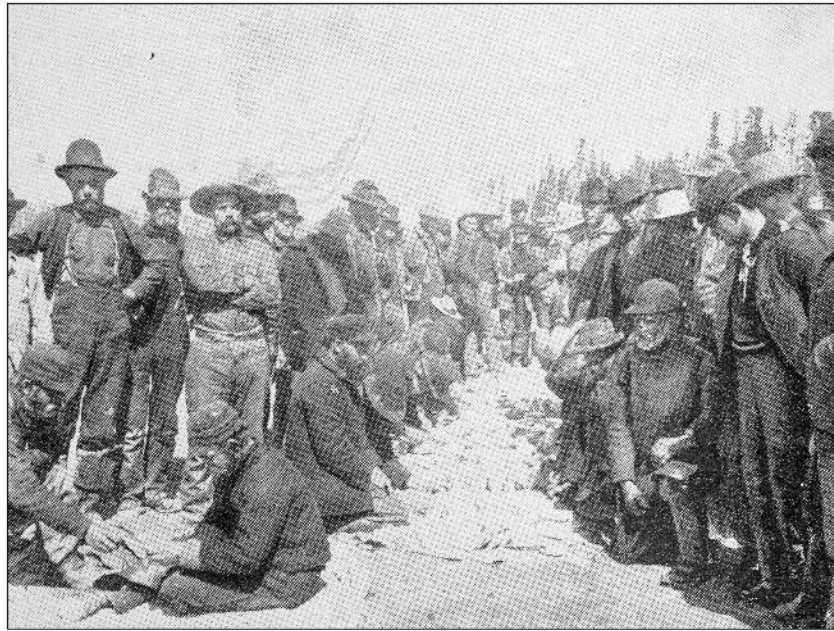


Figure 28. Illustration of the early Australian gold rush

Australian Gold Rushes (1851-1860s): Gold discoveries in Victoria and New South Wales attracted international prospectors and transformed the Australian economy. Towns like Ballarat and Bendigo grew rapidly, and the influx of immigrants contributed to Australia's multicultural society. The gold rushes led to significant economic growth and the establishment of democratic institutions, as miners demanded political representation. The Eureka Rebellion of 1854, a miners' uprising against licensing fees and lack of representation, is a notable event from this period that influenced Australian democracy.

South African Gold Rush (1886): The discovery of gold in the Witwatersrand region of South Africa marked the beginning of one of the world's largest gold mining industries. This rush led to the establishment of Johannesburg and had lasting economic and political implications for the region. The wealth generated from gold mining attracted international investment and Labour, leading to the development of infrastructure and the growth of the South African economy. However, it also exacerbated social inequalities and contributed to the entrenchment of apartheid policies.

Klondike Gold Rush (1896-1899): In the remote Yukon Territory of Canada, the Klondike Gold Rush drew thousands of prospectors to the harsh Arctic

conditions. The rush was characterized by its challenging environment and the significant hardships faced by those seeking their fortunes. Many prospectors travelled long distances through difficult terrain, often facing extreme weather and limited supplies. Despite these challenges, the Klondike Gold Rush led to the establishment of Dawson City and had a lasting impact on the region's development.

Alaska Gold Rush (1890s-1910s): Various gold strikes in Alaska, including those in Nome and Fairbanks, attracted fortune seekers to the region. The harsh climate and remote locations made these rushes particularly challenging, but they contributed to the development of Alaska. The influx of miners and the establishment of mining towns spurred economic growth and infrastructure development. The Alaska gold rushes also played a role in the eventual purchase of Alaska by the United States from Russia in 1867.

Recent and Contemporary Gold Rushes

Papua New Guinea (1930s-Present): Gold discoveries in the highlands of Papua New Guinea have led to ongoing mining activities. These operations often have significant environmental and cultural impacts, affecting local communities and ecosystems. The mining industry has brought economic benefits to the region, but it has also led to conflicts over land rights and environmental degradation. Efforts to balance economic development with environmental and social sustainability continue to be a challenge.

Amazonian Gold Rush (1980s-Present): Informal gold mining in the Amazon rainforest, particularly in Brazil, has caused extensive ecological destruction. Despite the environmental costs, the rush continues to attract miners due to the potential for significant profits. The use of mercury in gold extraction has led to widespread contamination of water sources and harm to local wildlife and communities. Efforts to regulate and mitigate the environmental impact of gold mining in the Amazon remain ongoing.



Africa (2000s-Present): Modern gold rushes in countries like Ghana, Sudan, and Burkina Faso are driven by both artisanal miners and large-scale mining projects funded by foreign investment. These rushes have significant economic impacts but also pose challenges related to regulation and sustainability. Artisanal mining often operates outside formal regulatory frameworks, leading to environmental degradation and social conflicts. Large-scale mining projects, while contributing to economic growth, can also lead to displacement of communities and environmental concerns.

Noteworthy, below is a list containing some of the largest gold hoards in history, based on available information:

I. Federal Reserve Bank of New York: Holds approximately 6,350 tons of gold in its vaults, belonging to various countries and international organizations.	II. Fort Knox: The United States Bullion Depository in Kentucky stores about 4,583 tons of gold reserve.
III. Bank of England: Houses around 5,134 tons of gold, including the UK's national reserves and those of other central banks.	IV. International Monetary Fund (IMF): Holds about 2,814 tons of gold.
V. Deutsche Bundesbank: Germany's central bank possesses approximately 3,370 tons of gold.	VI. Banco d'Italia: Italy's central bank has around 2,452 tons of gold reserves.
VII. Banque de France: The French central bank holds about 2,436 tons of gold.	VIII. People's Bank of China: Officially reported to have around 1,948 tons of gold, though actual holdings may be higher.
IX. Swiss National Bank: Switzerland's central bank holds approximately 1,040 tons of gold.	X. Bank of Japan: Japan's central bank has about 765 tons of gold reserves.
XI. Mansa Musa's Caravan: While not a current hoard, the 14th-century Mali emperor reportedly travelled with an entourage carrying 18 tons of gold during his pilgrimage to Mecca.	XII. Spanish Treasure Fleet of 1715: This fleet, sunk off the coast of Florida, was carrying gold, silver, and gems estimated to be worth billions in today's currency
XIII. *Travancore: Unknown tons of gold.	

Chapter 7 - Gold Exploration Techniques - From Ancient Methods to Modern Marvels

Throughout history, the quest for gold has driven human ingenuity, leading to the development of increasingly sophisticated exploration techniques. This chapter delves into the evolution of gold exploration methods, highlighting key advancements across different regions and time periods.



Ancient Techniques: The Foundations of Gold Discovery

Panning and Placer Mining - The earliest gold exploration techniques were simple yet effective, relying on the metal's high density and lustrous appearance. Panning for gold has been used since ancient times and remains a popular method for small-scale prospectors today. The technique involves; Scooping sediment from riverbeds or stream banks into a shallow pan, submerging the pan in water and agitating it with a circular motion. Next, gradually washing away lighter materials, leaving heavier gold particles behind. This method was widely used in early gold rushes, including the California Gold Rush of 1848-1855.

Sluicing - was an advancement on panning, sluicing involved; Channeling water through a box-like structure (sluice) lined with riffles. As water flows through, heavier gold particles settle behind the riffles. This method allowed for processing larger volumes of sediment more efficiently.

Ancient Metallurgy: Early Refining Techniques

Mercury Amalgamation - One of the earliest methods for extracting gold from ore was mercury amalgamation: The technique dates back to at least the time of the Roman Empire. Mercury forms an amalgam with gold, allowing for its separation from other materials. The gold-mercury amalgam is then heated, vaporizing the mercury and leaving behind pure gold. While effective, this method posed significant health and environmental risks due to mercury's toxicity.

Medieval and Early Modern Advancements

Hydraulic Mining - Developed during the Roman era but perfected in medieval times, hydraulic mining represented a significant leap in gold exploration technology.

Ruina Montium - The Romans employed a technique called "ruina montium" (mountain demolition) at sites like Las Médulas in Spain. Engineers dug a network of tunnels into gold-bearing mountains. These tunnels were then flooded with water from nearby aqueducts. The resulting pressure caused the mountain to collapse, exposing gold-laden sediment. Workers then washed this sediment to extract the precious metal. This method allowed for the exploitation of larger deposits but came at a significant environmental cost.

Improvements in Assaying

The medieval period saw advancements in assaying techniques, crucial for determining the purity and value of gold: Touchstone testing became more refined, allowing for more accurate assessments of gold purity. Fire assaying, which involves melting a sample with lead to separate precious metals, was perfected during this time.

The Industrial Revolution: Mechanization of Gold Exploration

The Industrial Revolution brought mechanization to gold exploration, dramatically increasing the scale of operations. In the late 19th century, both California and Australia saw the introduction of large-scale dredging operations. Steam-powered dredges could process vast amounts of river sediment. These machines could reach depths impossible for manual methods, opening up new areas for exploration.



Figure 29. Illustration of a mining project

As easily accessible placer deposits were exhausted, attention turned to hard rock mining: Steam-powered drills and pumps allowed miners to dig deeper shafts and tunnels. Improved explosives, such as dynamite (invented in 1867), made it easier to break up hard rock.

The Chemical Revolution: Cyanide Leaching

MacArthur-Forrest Process - In 1887, John Stewart MacArthur, working in Scotland, developed the cyanide leaching process: This method allowed for the extraction of gold from low-grade ores previously considered uneconomical. The process involves dissolving gold in a cyanide solution, then precipitating it out using zinc. It was first used on a large scale in South Africa in 1890 and quickly spread to other gold-producing regions. In 1902, it was implemented on a large scale in Nevada, marking a significant milestone in gold processing technology. This adoption in Nevada represented a major advancement in gold mining practices, as it enabled the profitable extraction of gold from ores that were previously overlooked or discarded.

20th Century: Geophysical and Geochemical Techniques

The 20th century saw the development of sophisticated geophysical exploration techniques: Electromagnetic (EM) surveys use induced electrical currents to detect conductive ore bodies. These methods are particularly useful in areas with thick overburden or dense vegetation. Induced Polarization (IP) is another geophysical method that became important for gold exploration: IP measures the electrical chargeability of subsurface materials. It's particularly effective in detecting disseminated sulphide minerals often associated with gold deposits.

The advent of aviation allowed for large-scale magnetic surveys. Aeromagnetic surveys can quickly cover vast areas, identifying magnetic anomalies that might indicate mineralization. This technique has been crucial in identifying potential gold deposits in remote or challenging terrains.

Geochemical Sampling - Advancements in analytical chemistry led to more sophisticated geochemical exploration techniques: Soil sampling and stream sediment sampling became standard practices. These methods can detect trace amounts of gold or pathfinder elements, helping to identify potential deposits.

Modern Era: Digital Revolution and Remote Sensing

The space age brought new tools to gold explorers: Multispectral and hyperspectral satellite imagery can detect subtle changes in vegetation or surface minerals that might indicate gold deposits. LIDAR (Light Detection and Ranging) technology allows for detailed mapping of surface features, even in heavily forested areas.

Geographic Information Systems (GIS) have revolutionized how exploration data is managed and interpreted: GIS allows for the integration of multiple data sets (geological, geophysical, geochemical) in a spatial context. This integration helps identify patterns and relationships that might not be apparent when looking at individual data sets.

The latest frontier in gold exploration involves the application of artificial intelligence: Machine learning algorithms can analyze vast amounts of exploration data to identify patterns and predict the likelihood of gold mineralization. These techniques are particularly useful in mature exploration areas where traditional methods have been exhausted.

A more recent innovation in gold processing is biological oxidation or BIOX: This method uses bacteria to break down sulphide minerals that often encapsulate gold particles. BIOX is particularly useful for processing refractory ores that are resistant to conventional cyanide leaching.

In the ever-evolving landscape of gold mining and production, toll treating has emerged as an innovative strategy that allows smaller mining companies to extract value from their gold deposits without the need for substantial upfront capital investment. Toll treating, also known as toll milling or custom milling, is a process where a mining company processes ore from another company's mine for a fee. This arrangement allows smaller mining operations to access processing facilities without having to build their own, which can be prohibitively expensive. Some key benefits of utilising a toll treating arrangement include; smaller companies can avoid the significant capital expenditure required to build processing facilities, by utilizing existing infrastructure, companies can begin producing gold more quickly, the financial risk associated with building and operating a processing plant is mitigated and mining companies can concentrate on exploration and extraction while leaving processing to specialized facilities.

Case Studies

Resources and Energy Group - Resources and Energy Group (REZ) is an ASX-listed has successfully employed toll treating to transition into cash flow generation. By utilizing existing processing facilities, the company has been able to: Minimize initial capital requirement generating revenue from their gold deposits more rapidly as well as Allocate resources more efficiently towards further exploration and development.

Challenger Gold - Challenger Gold (CEL) is another ASX-listed company that has also adopted a toll treating strategy for 2025 to accelerate its path to production. This approach will allow the company to: Validate the economic viability of its deposits, Generate early cash flow to fund ongoing operations and Gain valuable operational experience without the full commitment of building a processing plant.

Toll treating represents a significant advancement in gold mining and production strategies, particularly for smaller operators. By allowing companies to generate cash flow without the need for substantial upfront investment in processing facilities, it has opened up new possibilities for mine development and resource exploitation. As the industry continues to face challenges such as declining grades and more complex ores, innovative approaches like toll treating will likely become even more crucial in maintaining a vibrant and diverse gold mining sector.

Interestingly, from a geological viewpoint, it is important to note that copper and gold often occur together in nature. This is particularly common in certain types of ore deposits, such as the DeGrussa copper-gold mine in Western Australia that was run by Sandfire Resources. The DeGrussa deposit was discovered in 2009 by geologist Margaret Hawke, marking one of the highest-grade copper-gold discoveries in Australia.

The Top Gold Companies by Market Capitalization and Production

Zijin Mining Group Co Ltd (China) Market Cap: \$56.48 billion Profile: As of mid-2025, Zijin Mining is the world's largest gold company by market capitalization. Based in China, Zijin is a diversified mining group with significant assets in gold, copper, and other metals, operating both domestically and internationally.

Newmont Corporation (United States) Market Cap: \$47.76 billion 2024 Gold Production: 6.85 million ounces (approx. 185 tonnes) Reserves: 134.1 million ounces of gold Profile: Newmont is the world's largest gold producer by output. Headquartered in the US, it operates mines in the Americas, Australia, and Africa. Newmont's recent acquisition of Newcrest Mining further cemented its dominance, expanding its portfolio and resource base. The company also holds substantial reserves in copper and silver.

Agnico Eagle Mines Limited (Canada) Market Cap: \$41.25 billion 2024 Gold Production Guidance: 3.35–3.55 million ounces Profile: Agnico Eagle is a leading Canadian gold miner with operations in Canada, Finland, Australia, and Mexico. The company is known for its stable production and robust pipeline of development projects.

Barrick Gold Corporation (Canada) Market Cap: \$29.99 billion 2024 Gold Production: 129 tonnes (approx. 4.15 million ounces) Profile: Barrick Gold is one of the world's most recognized gold mining firms, with a global footprint spanning North America, Africa, the Middle East, and South America. Its Nevada Gold Mines joint venture with Newmont is the world's largest gold mining complex.

Wheaton Precious Metals Corp. (Canada) Market Cap: \$27.61 billion Profile: Wheaton is a major precious metals streaming company, providing upfront financing to miners in exchange for future production at fixed costs. While not a traditional miner, its business model gives it significant exposure to gold output.

Franco-Nevada Corporation (Canada) Market Cap: \$23.14 billion Profile: Franco-Nevada is a global leader in gold-focused royalties and streaming, holding interests in numerous producing and development-stage mines worldwide.

Newcrest Mining Limited (Australia) Market Cap: \$16.03 billion (prior to Newmont acquisition) 2022 Gold Production: 75 tonnes Profile: Newcrest was Australia's largest gold producer before its acquisition by Newmont. Its assets included Cadia, Lihir, and Red Chris, among others.

Shandong Gold Mining Co. Ltd (China) Market Cap: \$13.81 billion Profile: A major Chinese gold miner with operations in China and overseas, Shandong Gold is a key player in Asia's gold sector.

Gold Fields Limited (South Africa) Market Cap: \$13.36 billion 2023 Gold Production: 82 tonnes Profile: Gold Fields operates mines in Australia, Africa, and the Americas. It recently announced a major joint venture with AngloGold Ashanti in Ghana, aiming to create Africa's largest gold mine.

AngloGold Ashanti Limited (South Africa) Market Cap: \$12.31 billion 2023 Gold Production: 70 tonnes Profile: AngloGold Ashanti is a global gold producer with operations and projects on four continents. Its African mines contribute the bulk of its output.

The Future of Gold Exploration

As we look to the future, gold exploration techniques continue to evolve: Advances in drone technology are making aerial surveys more accessible and cost-effective. Improvements in portable XRF (X-ray fluorescence) analyzers allow for real-time elemental analysis in the field. The growing focus on environmental sustainability is driving research into more eco-friendly exploration and extraction methods. These modern exploration techniques are most utilized by the major gold companies - Newmont Corporation, Newcrest Mining and Barrick Gold. Gold still continues to fascinate, attracting some of the world's most reputable investors. These include John Paulson, Ray Dalio, Eric Sprott, Stanley Druckenmiller and Jacob Rothschild.



Figure 30. A depiction of workers on a mining project

From the simple pan to sophisticated satellite imagery and AI-driven analysis, the history of gold exploration techniques reflects humanity's enduring fascination with this precious metal. As technology continues to advance, we can expect even more innovative methods to emerge, potentially unlocking gold deposits that remain hidden to this day.

Conclusion

The history of gold is uniquely exciting, from the very creation of the gold atom in the Kilonova event of two colliding neutron stars to the depositing of gold atoms in planet crusts and mantles and the eventual discovery by humankind. Today, amazement, excitement and even drama are at their highest levels in the universal history of gold. Gold has been so powerful that it has pulled other metals in its wake, most notably copper and silver - which have benefited from their comparisons with gold. The use of gold, silver and copper/bronze in the Olympic medal set is a prime example of gold's pre- eminence and its relationship with the other two aforementioned metals in particular.

In order to crown the Pyramids with gold it was necessary to utilise vast amounts of copper, in the chiseling and working of the stones that made the Pyramids. This significant use of copper created a dramatic lack of native copper available for use in the regions around the Pyramids despite the fact that the Egyptians imported copper through the port of Wadi al-Jarf on the Red Sea) leading directly to the need for King Solomon to increase the output of copper metal from the mines at Timna. Subsequently, these events led to a long-term relationship between copper, gold and the Israelites/Jewish community which has lasted to this day – and which was exacerbated by the dissolution of the Knights Templar Order in 1312 as this reduced banking availability in the Middle Ages. Gold became the important basis for metal monies and coinage but there was always a tension between the face value also known as “nominal value” and the metal weight value. Ultimately, this led to issues with the increasing use of paper currencies over the years and the attempt to have a gold standard and even silver purchases by Governments as well.

After the civil war in England, gold coinage became more prevalent with the use of the Guinea - after the restoration of the monarchy. However, paper currency was already on the rise and Isaac Newton's mistake with the gold-silver ratio only provided a relatively short reprieve for gold usage in coinage through the ill-fated gold standard. The English civil war also created modern day councils leading to a further explosion of Government spending that reduced the need for metal coinage.

Interestingly though, as paper currencies and paper assets have proliferated over the last two centuries - and now digital assets like Bitcoin have come about, demand for gold is now being pulled along by the need for simple hard asset value backing of the balance sheets of individuals in particular. As such, gold has a strong future as the best method of providing balance to a paper based, computerized global wealth and financial system.



Figure 31. Wall Street - The Global Financial capital

Also, it is clear to see through our relationship with gold and the intense pace of modernization that we are still very much in the post-medieval, modernizing phase and we have a long way to go before reaching the true modern age.

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May the journey of gold continue to inspire, fascinate, and connect us all.

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