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## THE GREAT FLOOD

*O man of Shuruppak, son of Ubara-tutu, demolish the house, build a boat. Abandon riches and seek survival. Spurn property and save life. Put on board the boat the seed of all living creatures.*

—THE FLOOD NARRATIVE FROM *THE EPIC OF GILGAMESH*

THE FIRST AGE OF WATER WAS A TIME WHEN EARLY HUMANS were slowly emerging from the natural chaos of evolution to become a species capable of commanding the essentials for life. But their survival was still vulnerable to the vicissitudes of nature. Over time, the development of language and writing enabled early cultures to pass down lessons from their experiences in the form of stories. With only a limited understanding of science and nature, it is no surprise that among the oldest surviving stories are narratives about hidden forces and vengeful gods meting out punishments to sinful humans in the form of devastating, uncontrollable events. Most origin myths contain fierce water gods and an epic flood.

Every child of the Western religions of Judaism, Christianity, and Islam hears the story of the Great Flood sent by God. We learn how Noah, the righteous man or holy prophet, is warned by God of a coming deluge as divine punishment for human corruption and sin. Noah is told to build a boat to save his family and the animals, and he tells his neighbors of God's wrath and coming judgment, only to be ignored

or mocked. He builds the ark, loads the animals two by two, survives the flood of forty days and nights, and after the scouring waters recede becomes a second Adam to repopulate Earth.

What most of us didn't learn as children is that the origins of this story predate the Bible by as much as 2,000 years, appearing in some of the oldest writings recovered from the ruins of more ancient Mesopotamian empires. All of these narratives share common elements: the creation of humans by the gods, growing divine anger at human failings, the decision of the gods to send a cleansing flood sweeping across the face of Earth, and a single human warned to build a boat and save his family and the animals.

What we also don't learn is that these stories may have their roots in actual floods that devastated early civilizations, and especially in one disastrous flood in the ancient Middle East that occurred around 5,000 years ago. During the First Age of Water, humans had no control over nature. They either survived on their ability to live with nature or died when events out of their control overwhelmed them. Truly extreme events were remembered and woven into cultural and religious stories, becoming first oral histories and eventually written records to be passed on to following generations. And over time, communities sought ways to decrease their vulnerability to such events and to increase their control over nature—what ultimately led to the Second Age of Water.

In the mid- to late 1800s, archaeologists from Europe, England, and the United States flocked to the Middle East during a period of intensive research. Expeditions uncovered lost cities and temples, remnants of early hand-dug irrigation canals, vast libraries of clay tablets inscribed with unknown symbols and languages, and weapons, pottery, and art—all evidence from civilizations previously unknown or hinted at only through biblical stories, legends, and folklore. The remains of the cities of Nineveh, Jericho, Babylon, Kish, Ur, Eridu, and Shuruppak were found and excavated. The empires of Sumeria, Akkadia, Assyria, and Babylonia emerged from the mists of time and myth to become real places. Fabled kings like Nebuchadnezzar, Sargon the Great, Hammurabi, and Gilgamesh turned out to be flesh-and-blood individuals.

Many of these early expeditions were funded by Western religious groups seeking evidence supporting their traditional views of the Old and

New Testaments. Instead, what they found buried by time was evidence of civilizations predating the Bible by thousands of years. As layer after layer of ancient cultures was uncovered, archaeologists and historians learned about the evolution of early humans from the Stone Age to the Copper Age to the Bronze Age, the creation of the first written languages and mathematics, the rise and fall of empires, and evidence that water—both too much and too little—was central to it all.

Many of the earliest archaeologists had little idea what they were finding. By today's standards and tools, their primitive digs were little more than mining expeditions to dig up, box, and ship back to Western museums, universities, and private collections piles of materials that were not properly documented, dated, or protected. One of their most important discoveries was tens of thousands of baked clay tablets with marks they couldn't, at first, even read. But once early linguists began to decipher the cuneiform writing and translate the texts, thousands of years of human history were revealed, including records of daily life, economic transactions, religious texts, political edicts, and epic stories.

In the 1830s, Henry Creswicke Rawlinson, a British army officer, later trustee of the British Museum, and considered the “father of Assyriology,” was one of the first to successfully transliterate and then translate Mesopotamian texts. In the 1840s, he and archaeologist Austen Henry Layard led teams that excavated the ancient city of Nineveh and uncovered what has become known as the Library of Ashurbanipal (ca. 668–627 BCE)\* with thousands of cuneiform tablets that were crated and shipped off to the British Museum. In 1872 George Smith, a young scholar who worked with Rawlinson, pieced together and deciphered a set of previously unstudied tablets from this collection. One of these tablets (Figure 4), dated from the seventh century BCE, contains what has become known as the Flood Story of *The Epic of Gilgamesh*. Smith presented that story to the world on December 3, 1872, in a public lecture at the Society of Biblical Archaeology in London. Smith told a

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\* Throughout the book, I try to use consistent wording for past periods, either “years ago” or the form “BCE: Before the Common Era,” where the “common era” began between the year 1 BC and AD 1 in the Gregorian calendar; what the astronomical year-numbering system would call the year zero. Thus, 1000 BCE is the same as 1000 BC, or approximately 3,000 years ago.



FIGURE 4. The eleventh tablet of *The Epic of Gilgamesh*, from the seventh century BCE, discovered and translated by George Smith in 1872. Known as the Flood Tablet, it was recovered in the Library of Ashurbanipal in the ruins of Nineveh and describes how the gods sent a flood to destroy the world. The Flood Hero Utnapishtim, like Noah in later biblical stories, was forewarned and built an ark to save his family and the animals. The tablet is in the British Museum. Photo by BabelStone, <https://commons.wikimedia.org/w/index.php?curid=10755114>.

packed audience of his translation of the epic with its vengeful Assyrian gods, their warning to the Flood Hero Utnapishtim, and the unleashing of a world-cleansing deluge, all predating the Jewish and Christian accounts of Noah. “For six days and seven nights, there blew the wind and the Deluge, the gale flattened the land. When the seventh day arrived, the gale relented. The sea that had fought like a woman in labour grew calm, the tempest grew still, the Deluge ended. I looked at the weather and there was quiet, but all the people had turned to clay.”<sup>1</sup>

George Smith’s lecture electrified the world, simultaneously opening the door to a deeper understanding of the roots of human civilization and disturbing and contradicting the beliefs of biblical literalists, already struggling with the challenges posed by Charles Darwin’s theory of evo-

lution published thirteen years earlier. Accounts of Smith's talk appeared over the following days in nearly every newspaper in England, Scotland, and Wales, and two weeks later in the *New York Times*, describing a large and distinguished audience, including British prime minister William Gladstone, Smith's mentor Sir Henry Rawlinson, and the dean of Westminster\* with his wife, Lady Augusta Stanley.<sup>2</sup> Smith, at the conclusion of his lecture, said:

All these accounts, together with considerable portions of the ancient mythologies, have, I believe, a common origin in the plains of Chaldea. This country, the cradle of civilization, the birth place of the arts and sciences, for 2,000 years has been in ruins; its literature, containing the most precious records of antiquity, is scarcely known to us, except from the texts the Assyrians copied, but beneath its mounds and ruined cities, now awaiting exploration, lay, together with older copies of this Deluge text, other legends and histories of the earliest civilization in the world.<sup>3</sup>

Following Smith's talk, Prime Minister Gladstone—known for his ability to orate,<sup>†</sup> got up and spoke, raising the issue that must have been on the minds of many:

I do not know whether it is supposed that inquiries into archaeological and other sciences are to have the effect of unsettling many minds in this our generation, but I must say that for me, as to the very few points on which I am able to examine them, they have a totally different effect, and much of ancient tradition and record which we were formerly obliged to accept as of a purely indeterminate character, though we believed it contained a seed and nucleus of truth, we are about to see

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\* Arthur Penrhyn Stanley, the dean of Westminster in 1872, cofounded the Palestine Exploration Fund, which supported many of the archaeological expeditions to the Middle East. Their most famous expedition, led by Charles Warren in 1867, discovered the ancient water systems under Jerusalem. Stanley's wife served as "lady in waiting" to Queen Victoria.

† Note that, as reported by the *Times* of London, this was a single sentence. Gladstone once gave a well-regarded speech on finance that lasted five hours. His oratory skills included a mastery of facts and an ability to inspire moral indignation, and he was known for his long rivalry with Benjamin Disraeli.

gradually taking up its form, that there will be a disinterring and building up of what was conceived to be buried forever, and not merely the recollections of that world, but its actual history is about to undergo a great process of great retrospective enlargement. "Hear, hear" the audience responded.<sup>4</sup>

Smith's find opened the door to a whole world of research on the Flood. Smith himself made many more important discoveries, but in sad irony, his life was cut short by dysentery from contaminated water, and he died in 1876 in a small village near Nineveh at the age of thirty-six.

Western institutions continued to send expeditions to Mesopotamia and to ship back archaeological finds excavated from ruins throughout the region. In the late 1800s, a series of digs funded by the University of Pennsylvania discovered cuneiform tablets in the ruins of the ancient city of Nippur and shipped them back to the United States where they lay untranslated for decades, poorly stored, poorly maintained, and often disintegrating in damp basement storerooms. In 1910 Professor Herman Hilprecht of the University of Pennsylvania's Department of Archaeology announced he had found in this collection a tablet with a portion of the "Babylonian Deluge Story," written in the Akkadian language.<sup>5</sup> Hilprecht's find is now understood to be part of the Atrahasis Flood Epic, an even older narrative of the Flood than *The Epic of Gilgamesh*. The fragment, dated from between 1400 and 1100 BCE, tells the story of the Flood Hero Atrahasis and the Deluge, with strong parallels to *The Epic of Gilgamesh* and Western Bibles written later.

Just two years after Hilprecht's announcement, German Assyriologist Arno Poebel found and deciphered an even older tablet written in Sumerian from this same collection from Nippur that tells another and even older version of the story of a Great Flood and its hero, Ziusudra. That tablet is now dated to around 1700 BCE and tells what has become known as the Sumerian Flood Story, with hints it *too* may have evolved from even older Sumerian stories.

The Sumerian civilization of Mesopotamia lasted from around 6500 to around 2300 BCE along the banks of the Tigris and Euphrates Riv-

ers in the city-states of Uruk, Ur, Eridu, Kish, Sippar, Nippur, Umma, Lagash, and Larsa. As Sumer expanded, it made the transition from the Copper Age to the Bronze Age with increasingly sophisticated metallurgy; created the first known writing, math, and astronomy; cultivated crops with artificial irrigation; and developed widespread trade with people in central Asia, the Indus Valley, and the Caucasus Mountains.<sup>6</sup> The Akkadian, Assyrian, and Babylonian Empires that followed were founded by a different race of Semitic peoples believed to have come to the northern Tigris-Euphrates watershed (in what are today Syria and northern Iraq) sometime between 3500 and 3000 BCE.

In 1912, when Poebel found the Sumerian Flood Story in the tablet from Nippur, it was the oldest surviving narrative of a Great Flood sent by the gods, but even that version offered hints of stories with a far older origin. In the 1960s, a Sumerian text from around 2600–2500 BCE was recovered about twenty kilometers from Nippur at the ruins of Abu Salabikh during an expedition led by Donald Hansen of the Oriental Institute of Chicago.<sup>7</sup> Called the *Instructions of Shuruppak, Son of Ubara-tutu*, it offers community standards of wisdom, propriety, and behavior and hints of a Great Flood. The text contains the “Sumerian King List,” a sequential record of the early kings of Sumer, their locations, the length of their reigns, and the changes of political power. Most notably, the list is split into two: the kings before and after a great flood. Ubara-tutu is described in the King List as the last king before the Deluge and the father of Ziusudra/Utnapishtim, the Flood Hero in the later *Epic of Gilgamesh*.<sup>8</sup>

The Sumerian Flood Story is incomplete because the recovered tablets are fragmentary and damaged, but the story begins with Sumerian gods creating humans, the animals, and the first cities of Eridu, Badtibira, Sippar, Shuruppak, and Larak, each with a king. The narrative describes how Enlil, the god of wind, earth, and storms, or Enki, the god of fresh water, secretly warns humanity of its pending destruction by means of a flood. “A flood will sweep over the land. . . . A decision that the seed of mankind is to be destroyed.”<sup>9</sup> The story’s hero, Ziusudra, is urged to heed the voice of the gods and build a boat. The storm with wind and water sweeps over

the land for seven days and nights, but Ziusudra and the animals are saved and his boat returns to land. The gods spare him, grant him divine life, and send him to live in the Sumerians' heavenly garden on earth.

By around 2300 BCE, Sargon of Akkadia, also known as Sargon the Great, conquered Sumeria and captured Lugalzagesi, the last Sumerian king, ushering in the Akkadian Empire, which lasted only a few short centuries, but whose influence over the region waxed and waned in the form of the Assyrian and Babylonian civilizations for the next thousand years.\* Each of these cultures absorbed stories, traditions, and practices from their predecessors. The Akkadians recounted a version of the Great Flood, in the form of the *Atrahasis Flood Epic*, described in a tablet dated to the middle of the seventeenth century BCE. Other versions recovered from the ruins of Sippar on the banks of the Euphrates have been dated to the reign of the king Ammi-Saduqa (1646–1626 BCE)—a grandson of the Babylonian king Hammurabi. The *Atrahasis Flood Epic* is told as a first-person narrative, and while it has elements virtually identical to the older Sumerian Flood Story, it also contains additional threads not found in the older Sumerian epic.<sup>10</sup>

In this story, the older gods divide the world into realms: heaven under the god Anu, Earth under the god Enlil, and fresh water ruled by Enki. The senior gods order the lesser gods to create the world, and after the hard work of digging the course of the Tigris and Euphrates Rivers, the younger gods rebel,<sup>†</sup> and Enki asks for the creation of humans to do their bidding. Mami, the mother goddess, agrees to sacrifice a god and mix its flesh and blood with clay to create seven men and seven women.<sup>‡</sup>

Over time, as humans prospered and multiplied, their noise and ultimately their very existence disturb Enlil,<sup>§</sup> and he decides to lessen the population by sending disasters in the form of drought, pestilence,

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\* There is a growing consensus that the first collapse of the Akkadian Empire, just a few short centuries after Sargon, was the result of severe drought. E. Cookson, D. J. Hill, and D. Lawrence, "Impacts of Long Term Climate Change During the Collapse of the Akkadian Empire," *Journal of Archaeological Science* 106 (2019): 1–9.

† This may be the first recorded labor dispute: "Heavy is our toil, excessive the difficulty."

‡ "You are the mother-womb, creatress of mankind; then create man, he shall bear the yoke. . . . The load of the gods man shall carry."

§ "The inhabited land had expanded, the people multiplied. The land was bellowing like a bull. . . . Enlil had heard their din. He said to the great gods, 'grievous has grown the din of mankind.'"



and famine.\* A human servant of Enki and the Flood Hero of this story, Atrahasis,† pleads for relief, which is granted for a time, but the problem always returns until Enlil, angered a final time, persuades the other gods to wipe out humanity with a devastating flood.

Enki takes pity on Atrahasis and as in the Sumerian story gives him advance warning of the coming flood, telling him to build a boat.‡ Atrahasis does as he is commanded, and “For seven days and seven nights came the downpour, the tempest, the flood”:

*The flood came out. . . . No one could see anyone else  
They could not be recognized in the catastrophe  
The Flood roared like a bull  
Like a wild ass screaming, the winds howled  
The darkness was total, there was no sun.*<sup>11</sup>

After the waters subside, the boat returns to land, Atrahasis makes offerings to the gods, and the gods, realizing that some humans have survived, propose other ways of slowing human population growth, including creating less fertile women, demons who steal children and cause miscarriages, and women who remain virgins to serve the gods. Like Ziusudra in the *Sumerian Flood Story*, Atrahasis is carried away to paradise and granted long life. Versions of the *Atrahasis Flood Epic* spread to neighboring regions and have now been found in archaeological digs in Syria, Palestine, and southern Turkey dated from the middle of the second millennium BCE.

The third version of the Deluge story is the Babylonian *Epic of Gilgamesh*. Gilgamesh was first thought to be a character of myth or legend, but we now know he was a real person who lived in the first dynasty of the city of Uruk around 2700–2500 BCE. His name is included on the Sumerian King List, and texts recovered from the period refer to him as a

\* “Cut off sustenance from the people. . . . Let Adad withhold his rain, from below let there not rise the water from the spring, let the wind come and sweep the earth bare. . . . Let the field withdraw its yield.”

† Atrahasis means “exceedingly wise” in ancient Akkadian.

‡ “Pull down the house, build a boat. Scorn goods, but save life.”

mighty king and ultimately a god—a status often conferred upon leaders of high renown.

While many versions and copies of the epic have been uncovered and translated, archaeologists now believe the work was originally composed in Akkadian in the first part of the second millennium BCE, drawing on the earlier Sumerian and Akkadian stories.\* It then evolved over the next thousand-plus years.<sup>12</sup> The full *Epic of Gilgamesh* recounts adventures, battles, interactions of King Gilgamesh with gods and goddesses, and an awakening in Gilgamesh of his own mortality. That understanding leads him to seek out Utnapishtim, a human who, with his wife, somehow learned the secret of immortality. Utnapishtim tells that his own immortality was granted only because of his deliverance from a Great Flood, and he recounts the story to Gilgamesh.

This is the Flood Story deciphered by George Smith in 1872 from the tablets recovered from the remains of the Library of Ashurbanipal, dated from between 600 and 700 BCE. Since then, older versions of *The Epic of Gilgamesh* have been found in excavations ranging from the far south of Babylonia to the far north (southern Turkey today). It is possible that the Flood Story was added to the stories about Gilgamesh by the Akkadians and Babylonians from the legends handed down over previous centuries through the *Atrahasis Epic* and the *Sumerian Flood Story*.<sup>13</sup> Indeed, several lines in the Gilgamesh Flood Story are identical to those that appear in the older *Atrahasis Epic*.

The evocative power of the story of a Great Flood is evident in its longevity and durability. From 3000 BCE through the rise and fall of empires, the story has persisted and been repeated in many forms, languages, and cultures—from an early Egyptian version in the Book of the Heavenly Cow found inscribed on tomb walls dated to the middle of the second millennium BCE to the Old Testament to versions that lasted into the Hellenistic period.

Flood stories were also adopted by Greek and Latin writers, including Ovid's masterpiece *Metamorphoses* written in AD 8, in which Zeus (or

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\* Akkadian is the earliest known Semitic language and was used for 2,000 years in ancient Babylonia and Assyria.

Jupiter) unleashes the world's waters upon humanity because "Mankind's a monster . . . sworn to crimes . . . involved in ill."\*

*Let loose the reins to all your watery store;  
Bear down the dams and open every door.  
The floods, by Nature enemies to the land,  
And proudly swelling with their new command,  
Remove the living stones that stopped their way,  
And gushing from the source augment the sea . . .  
Now seas and Earth were in confusion lost,  
A world of waters, and without a coast.<sup>14</sup>*

Again, a god (in this case Prometheus, the creator of humanity) warns the Flood Heroes Deucalion (often described as Prometheus's son) and his wife, Pyrrha, who are instructed to build a boat. When Zeus opens the skies and brings forth the waters for nine days, they survive while the flood destroys everything else. In the end, Deucalion and Pyrrha are the only survivors, spared by their holiness and devotion to the gods, and they bring forth children to repopulate the world.

*High on the summit of this dubious cliff,  
Deucalion wafting, moor'd his little skiff.  
He with his wife were only left behind  
Of perish'd Man—they two were human kind.<sup>15</sup>*

Flood stories also appear in ancient Hindu texts such as the Satapatha Brahmana, Vishnu Purana, and the Mahabharata. In versions of these stories, roughly dated in various centuries of the first millennium BCE, Shradhadeva Manu, the first man, protects and raises Matsya, the fish avatar of Vishnu (one of the supreme deities of Hinduism), from a small vulnerable fish to a giant fish as large as the ocean. Matsya warns Manu of an impending flood and advises him to build a boat to carry the sacred

\* There are many translations of Ovid. These sections come from Dryden's version, translated in *Ovid's Metamorphoses in Fifteen Books*, edited by Samuel Garth and published in 1717.

Vedas,\* seeds, animals, and the seven sages of ancient Hinduism to safety. During the flood, Matsya tows the boat to safety, and afterward the boat comes to rest on a mountain. Manu, like Noah, Atrahasis, and Utnapish-tim, is chosen by the gods to survive. And as in the Mesopotamian stories, after the ark comes to rest on a mountain, the Hero is rewarded by the gods and repopulates the earth.

The similarity between the Hindu stories and the Sumerian and Akkadian flood stories is not surprising. Evidence abounds of strong trade and cultural exchange between Mesopotamia and the early Indus Valley civilizations as early as the third millennium BCE, including sharing of agriculture, art, precious minerals, timber, and ivory. Writings and seals with Harappan inscriptions have been uncovered in Babylon and Kish, and cylinder seals with Mesopotamian writing and images have been found in the Indus Valley, including images relating to Gilgamesh.

Could these many ancient flood stories have a basis in actual geophysical events—either individual devastating floods or some sort of regional cataclysmic flood so severe that it led to the creation by the survivors first of an oral history and then, with the advent of writing, written accounts of an epic, punishing flood? Mesopotamian cities and centers of power were all built on the banks of the Tigris or Euphrates River, to take advantage of the availability of water for agriculture and water supply and the ability to move goods up and down the rivers. There is no doubt that these rivers, despite flowing through some of the most parched and arid regions of the world, are capable of generating floods capable of wiping out towns and devastating large areas. It is possible that the flood narratives are all purely allegorical and apocryphal, with no basis in geophysical events, but there is also evidence they have roots in catastrophic geophysical events, recorded or remembered by ancient cultures, and woven into cultural and religious epics, legends, and morality tales.

We know now that many of the characters in the earliest Sumerian and Akkadian flood stories were real people relating real experiences. We

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\* The Vedas are religious scriptures composed in ancient Sanskrit and represent some of the oldest texts of Hinduism.

are also learning of real hydrologic events that could have been sufficiently catastrophic to be remembered across time, worthy of telling and retelling following generations. Three different kinds of actual events could have formed the basis for epic flood stories in the Middle East: catastrophic regional flooding in the Black Sea basin, flooding from rapid sea-level rise in the Persian/Arabian Gulf, and severe flooding along the Tigris-Euphrates Rivers.

Sea levels, rainfall patterns, and temperatures have all fluctuated naturally over the past 20,000 years. Under some circumstances, the relative levels of the Mediterranean Sea and the Black Sea could have varied enough to raise the possibility of a rapid and sudden inflow or outflow of vast quantities of water. In the late 1990s, a few researchers speculated that a catastrophic flood from the Mediterranean across the Bosphorus into the Black Sea occurred around 5500 BCE (later revised to around 6800 BCE).<sup>16</sup> Under this “Black Sea Deluge” hypothesis, such a flood would have affected prehistoric communities in the region, and those humans who fled and survived might have retained a dramatic flood narrative in their traditions. Current paleoclimatic evidence, however, suggests any possible hydrologic exchanges between the Mediterranean and the Black Sea were gradual—on the order of centuries or even millennia—certainly not sudden enough to be considered catastrophic floods. In addition, the timing of those events would have required retaining those stories within oral cultures for thousands of years before the invention of writing.<sup>17</sup>

The end of the last glacial period that influenced the Black Sea scenario also led to large changes in sea level as the ice caps melted. Over a long period—perhaps 10,000 years—global sea level rose around 120 meters (390 feet), submerging coastal lands, including in the Persian/Arabian Gulf. Because early cultures in the region were located in the southern portion of the Tigris-Euphrates watershed, they would have been exposed to the consequences of any sea-level rise. It seems likely, however, that such changes would have been extremely slow, permitting a gradual retreat to higher land over many years. In addition, the most significant rise in sea levels ended more than 6,000 years ago, making it an unlikely origin for the flood narratives, especially ones so definitively rooted in a rapid flood caused by intense rains over a period of days.

The possibility of severe flooding along the Tigris-Euphrates Rivers is the most likely basis for epic flood stories in the Middle East. Like any major river system, both the Tigris and the Euphrates are capable of producing severe and rapidly evolving floods. Combined with the importance of the rivers for irrigation and agriculture, the location of the major cities on the rivers' edges, and the flat nature of the lower watershed where the earliest Sumerian cities arose, the idea of storms causing rare but catastrophic floods is both scientifically plausible and testable.

The causes of floods in an arid or semiarid watershed can vary, from a long and intense rainfall event to rapid upstream melting of snow stored in mountains to a physical failure of an upstream dam or lake to the rapid change in the location of a riverbed—a process known as avulsion, when a river breaks through a natural levee and suddenly shifts to a new streambed and floods new areas.\* In low-lying regions where rivers carry a heavy silt load, these shifts are common, and there is clear evidence of many such changes in the courses of the Tigris and Euphrates. Ancient cities known to be on the banks of these rivers were abandoned when the rivers shifted, and their ruins are now sometimes kilometers distant from the river's modern location.

Toward the end of the 1920s, archaeologists working in Mesopotamia at the sites of the ancient Sumerian cities of Shuruppak, Ur, and Kish found evidence of flooding on the Tigris and Euphrates Rivers in the form of layers of sediment sandwiched between the ruins of early cultures. Stephen Langdon, an American Assyriologist and curator of the Babylonian archives at the University of Pennsylvania, together with L. C. Watelin, encountered such sediments while excavating in the ruins of Kish, and these flood deposits have been dated to around 2900 BCE, consistent with the nature and timing of the recovered flood narratives.<sup>18</sup> Similar flood deposits were discovered a few years later in the ruins of Shuruppak, downstream of Kish along the former riverbed of the Euphrates. Shuruppak is considered the home of Ziusudra, the Flood Hero

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\* Millions of dollars have been spent on control structures to try to prevent the Mississippi River from suddenly breaking through levees and shifting its main flow down the Atchafalaya River, which would cause massive disruption of shipping and commerce.

of the Sumerian Flood Epic. Those deposits are also dated from around 2900 BCE, possibly from the same flooding that struck Kish. Other circumstantial evidence supports the possibility of a devastating flood around this time. The Sumerian King List—the formal accounting of the rulers of Sumer—includes around eleven rulers between the epic flood and the rule of Gilgamesh (ca. 2600–2700 BCE), which would place the flood around 2900 BCE, fitting with the geophysical evidence from Kish and Shuruppak.<sup>19</sup>

Around the same time that Langdon and Watelin were digging in Kish, the famed British archaeologists Sir Charles Leonard Woolley and his wife, Katharine Woolley, together with teams from the British Museum and the University of Pennsylvania, discovered the royal tombs of ancient Sumerian kings and queens in the ruins of Ur, to the south.\* Woolley dug a deep pit near the tombs, revealing a chronological record of the civilizations dated from between 2900 BCE in the upper layers and 3500 BCE in the oldest. In between, they also found a massive layer of silt three to four meters deep they believed was laid down by a single massive flood event. As Woolley later wrote: “By the time I had written up my notes I was quite convinced of what it all meant; but I wanted to see whether others would come to the same conclusion. So I brought up two of my staff and, after pointing out the facts, asked for their explanation. They did not know what to say. My wife came along and looked and was asked the same question, and she turned away remarking casually, ‘Well, of course, it’s the Flood.’”<sup>20</sup>

Modern dating of these flood deposits shows this flood at Ur probably occurred around 3500 BCE, substantially earlier than the large flood events recorded in the silt of Kish. While no contemporaneous written account of this event exists, oral histories could have survived. We do know that by the middle of the second millennium BCE, the awareness of the risk of severe flooding along these rivers prompted cities along the region’s rivers to build defensive levees and other infrastructure.

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\* In a historical aside, one of Woolley’s top assistants was Max Mallowan, later to become the husband of author Agatha Christie, whose novel *Murder in Mesopotamia* was inspired by the discovery of the royal tombs of Ur.

Archaeologists have discovered that the city of Sippar, along the Euphrates River, was protected by a kilometer-long earthen dike built during the reign of Hammurabi (ca. 1696–1654 BCE).

Similar flood events occurred in other cultures in Asia and the New World. There is geological evidence for a massive catastrophic flood on the Yellow River around 4,000 years ago. This flood is thought to have carried more than five hundred times the average flow of the river and is among the largest freshwater floods recorded during the past 12,000 years. Some researchers argue that the size of this flood and the efforts to prevent future catastrophes would have persisted in the oral stories of the time, eventually becoming the legend of the Great Yu recorded in written histories,<sup>21</sup> similar to the Mesopotamian Flood Epics around the same time.

We know that stories of great floods have survived through thousands of years, inspiring fear of the moral anger of the gods, and we know that the rivers that lie at the heart of ancient cultures of the First Age of Water are capable of generating massive floods. The archaeological work that brought us these stories and hints of these early events also uncovered the remains of the first significant water infrastructure and provided evidence of the first efforts to learn how to live with, and ultimately control, the raging waters of nature.