

Chapter 2

Religious Science Fiction *Before* Science Fiction

2.1 The 'Start' of Modern SF

A close relative of SF is *horror*, another genre that makes great use of the fantastic and a willing suspension of disbelief. Two well-known writers of the modern era who worked in both areas, occasionally in the same story, were H. P. Lovecraft (1890–1937) and Ray Bradbury (1920–2012). Long before the rise of SF to what it has become today, the literary niche occupied by horror stories for the masses was a busy place. Dating back to before the start of the nineteenth century and the invention of the high-speed rotary printing press, the Georgian and Victorian periods in England, in particular, were seemingly populated by endless numbers of people who couldn't get enough of tales involving supernatural entities like ghosts, vampires, the devil, demons, werewolves, and other assorted monsters (a role played later in SF by 'aliens from the stars'). Sex sold well, too, and the Gothic horror novel had a tremendous following, with hack writers often out-selling more recognized authors such as Dickens and Thackeray. Not all such works were prurient, of course, with the 1818 *Frankenstein* by Mary Shelley (1797–1851) considered today to be a classic, as is the much later 1897 vampire horror novel *Dracula* by Bram Stoker (1847–1912).

Scholars date the origin of the horror genre for 'the unwashed and unsophisticated but able to read' with the 1764 appearance of *The Castle of Otranto* by Horace Walpole (1717–1797). It was soon followed by many others of a similar nature, including (in 1796) *The Monk* by Matthew Lewis (1775–1818). The tale of a young monk enthralled with sex and demonology to the point of selling his soul to the Devil, one critic's appraisal of it nicely describes the spirit of the typical Gothic horror tale: "a mass of murder, outrage . . . and indecency."¹ As the decades of the 1800s passed, literally kilo (if not mega) tons of inexpensive

¹ Peter Haining, *A Pictorial History of Horror Stories*, Treasure Press 1985, p. 12.

horror story magazines printed on cheap paper were eagerly purchased by readers who simply couldn't get enough of them. Going under the descriptive names of 'penny dreadfuls,' 'penny bloods,' and 'shilling shockers,' names indicating the economic status of their intended audience, those magazines made a lot of money for their publishers.

This success led, as the nineteenth century came to its end, to the creation of a higher caliber magazine, the so-called *slick* (in reference to its better grade of paper) such as *The Strand Magazine* in 1891. It was in *The Strand*, for example, that the wonderful adventures of Sherlock Holmes first appeared. The slick concept soon crossed the Atlantic and appeared in America, and included *Harper's*, *The Century*, and *Scribner's*. All these magazines carried horror fiction (commonly appearing, for example, were demonology and witchcraft in *Harper's*, ghosts and werewolves in *The Century*, and ghosts and explicit torture in *Scribner's*), but only as a *portion* of the contents.

The very first all-fiction pulp was *The Argosy*, begun in 1896 by Frank Munsey (1854–1925), and in 1905 he started *The All-Story Magazine* devoted specifically to adventure tales. (The term *pulp* came from the use of inexpensive wood-pulp—you could *feel* the lumpy wood chips in each ragged, untrimmed page—to make paper that was far too crummy for the use by any publisher of 'words meant to last.' Such paper quickly yellowed, turned brittle, and finally, amid billowing clouds of bits and pieces, entered into eternal oblivion. Think of the paper used in your newspaper before its final contribution to civilization in the bottom of your cat's litter box; pulp was worse.) Both of Munsey's magazines often published stories that, before the term 'science fiction' was coined, went under the general rubric of the 'scientific romance' (as did, for example, the classic SF novels of H. G. Wells, such as *The Time Machine*, *War of the Worlds*, and *The Invisible Man*).

The late 1930s and the 1940s define the period generally thought of as the 'golden age' of pulp magazine science fiction. Before then, however, starting with the April 1926 appearance of the first issue of *Amazing Stories*, there is a precursor decade or so of what Hugo Gernsback (1884–1967), the publisher of *Amazing*, described with the clumsy word "scientifiction." *Amazing Stories* was the first pulp to be devoted totally to science fiction. With its masthead motto of "Extravagant Fiction Today—Cold Fact Tomorrow," and with the illustration on the contents page of each issue showing a muscular Jules Verne (1828–1905) bursting from his grave in the heroic, up-up-and-away pose made famous years later by Superman, there could be no doubt as to what kind of fiction the reader would find under the dramatic, multi-colored cover art.

The stories in *Amazing* were 'read it in the morning, forget it by dinnertime' adventure fiction, the sort of stuff you'd put inside a newspaper if on a crowded train or bus so fellow passengers wouldn't know what a low-grade mind you had. The transient nature of pulp fiction was independent of its

literary quality, as the cheap acid-based paper that stories were printed on began to oxidize and literally burn-up as soon as it rolled off the press. In the introductory essay to a 1950 collection of pulp-detective Philip Marlowe stories (*Trouble Is My Business*), mystery writer Raymond Chandler commented on this when he wrote “pulp fiction never dreamed of posterity.” *Pulp* fiction was synonymous with *trash* fiction, and the nature of early pulp SF has been aptly described as “scientific pornography for the mechanically minded,” and “writing which drooled over descriptions of technology.”²

It was this sort of fiction that helped primed the imaginations of the millions who years later listened to Orson Welles’ infamous 1938 dramatization (on his Radio Mercury Theatre program) of the 1898 novel *War of the Worlds* by H. G. Wells. In that Halloween eve, coast-to-coast broadcast, millions heard the horrifying news: Martians had invaded the planet, their first rockets landing in the little town of Grovers Mill, New Jersey! Hundreds were already said to be dead, and panic and terror swept the national listening audience. The near-hysterical public response to what had been merely a stunt so stunned the government that the FCC announced it would hold hearings on whether the “public trust” had somehow been violated. It was Gernsback’s pulps, however, that had prepared massive numbers of people to seriously entertain the idea such an incredible event might even occur.

Gernsback’s earlier publications, *Modern Electrics*, *Science & Invention* and *Radio News*, had printed SF from time-to-time, as had many of the ‘ten-cent family magazines’ since the 1890s. It was in *Modern Electrics* that Gernsback published, as a 1911 serial, his own historically important (but so incredibly awful that it’s funny) tale “Ralph 124C 41+.” Set in the year 2660, Ralph—a scientific genius who has a “gigantic mind”—pursues through space the villains who have kidnapped his sweetheart, Alice. There is no adversity in this tale that Ralph cannot overcome with the aid of some marvelous invention, created instantly on-the-spot using only (or so it seems) a bucket of whipped cream, an old garden hose, and a broken mousetrap. Even bringing Alice back from the apparently dead, in a perhaps unintentional imitation of the miracle described in the Gospel of John, where Jesus raises Lazarus from the dead, is not beyond Ralph’s astonishing skill-set.

That sort of juvenile nonsense greatly declined in SF (although it didn’t totally vanish) in later years, particularly after *Astounding Science Fiction* magazine and its editor John W. Campbell, Jr. (1910–1971) came on the scene in the late 1930s. With Campbell, who was editor³ until his death, aspiring writers for

² Anthony Frewin, *One Hundred Years of Science Fiction Illustrations*, Jupiter Books 1974, p. 53.

³ Campbell was also a writer, and his story “Who Goes There?” (which appeared in the August 1938 issue of *Astounding* under the pen-name of Don A. Stuart) is rightfully considered a masterpiece that straddles the horror and SF genres. The tale is of a shape-changing alien who terrorizes a scientific research team in the Antarctica; it has been filmed at least three times, most recently in 2012 as *The Thing*.

Astounding had to pay far more attention to the fundamental laws of nature than had been the case with Gernsback. *Astounding* still publishes today, under its new name (since 1960) of *Analog*. *Analog's* editors after Campbell have remained faithful to his commitment to science, and the magazine enjoys a reputation for publishing 'SF for engineers.' And it's still printed on pulp paper. Even before the pioneering pulps of Munsey and Gernsback, however, one can find the glimmerings of SF.⁴

2.2 Before the 'Start' of SF

Indeed, long before modern SF became populated with space aliens, intelligent robots, and time travelers, the extraordinary voyages of Jules Verne (*Journey to the Center of the Earth*, *From the Earth to the Moon*, *Around the World in 80 Days*, and *20,000 Leagues Beneath the Sea*) were the nineteenth century equivalent of science fiction (the difference between those two brilliant contemporaries, the Englishman Wells and the Frenchman Verne, is the difference between super-speculative science and super-high technology/engineering, respectively). More than a century before Verne and Wells, the 1735 *Gulliver's Travels* by Jonathan Swift (1667–1745) was an extraordinary voyage of the first-rank, and a century before *that* the German mathematician and astronomer Johannes Kepler (1571–1630)—best known today for the three laws of planetary motion named after him—had in 1611 written his posthumously published *Somnium* (*The Dream*) of a trip to the moon.

Perhaps less well-known is the equally imaginative 1638 work by the Anglican bishop Francis Godwin (1562–1633), *The Man in the Moone* (published posthumously), which describes a journey from the Earth to the Moon and back. Twenty years later (1657), Cyrano de Bergerac (1619–1655) did the same with his better known, posthumously published *L'Autre Monde: ou les États et Empires de la Lune* (*The Other World: or the States and Empires of the Moon*). In 1752 Voltaire turned the extraordinary voyage on its head, with Earth being visited by aliens from Sirius and Saturn in his *Micromégas*.

One of Swift's contemporaries broke completely free from the 'trip to the moon' theme⁵ and its variations, and actually played with a modern SF idea—that

⁴ Three useful guides to the pre-pulp SF literature are Marjorie Hope Nicolson, *Voyages to the Moon*, Macmillan 1948, Roger Lancelyn Green, *Into Other Worlds: space-flight in fiction, from Lucian to Lewis*, Arno Press 1975, and J. O. Bailey, *Pilgrims Through Space and Time: trends and patterns in scientific and utopian fiction*, Argus Books 1947 (reprinted in 1972 by Greenwood Press).

⁵ A very old theme, in fact, as the second century AD Lucian of Samosata, in his *True History*, includes descriptions of a voyage to the moon and of interplanetary war. That was pretty far-out stuff 2,000 years ago.

of time travel. As observed by a present-day SF historian, “The first time-traveler in English literature is a guardian angel who returns with state documents from 1998 to the year 1728 in Samuel Madden’s *Memoirs of the Twentieth Century*.”⁶ This premise was *slightly* improved upon a century-and-a-half later by Mark Twain in his *A Connecticut Yankee in King Arthur’s Court* (1889), which used a knock on the head with a crowbar (instead of an angel) to achieve time travel.

Of course, just having a tale involving marvelous adventures isn’t sufficient to make it an SF tale. Cervantes’ *Don Quixote* (1605, 1615), Dumas’ *The Three Musketeers* (1844), and the many old tales of Robin Hood and his Merry Men and of King Arthur and his Knights, are all simply bursting with adventures that are out of the ordinary, but nobody would call them SF. And of course all of these early efforts in marvelous events found ancient inspiration in exciting adventure story-telling in Homer’s *Odyssey* and *Illiad*, and Virgil’s *Aeneid*. I don’t really think those are SF stories, either.

So, what *does* make a story an SF story? This question has prompted literary critics and analysts to write literally tons of papers and monographs, read mostly by other critics and analysts. The people who do that sort of thing tend to be professors of English, not SF writers (although there are, of course, some important exceptions, such as Gregory Benford and Stanislaw Lem). It has been my experience that many of the definitions such critics have come-up with can be problematical. One, for example, says that SF necessarily involves an unfolding future.⁷ I think that *far* too restrictive, disqualifying many stories that I think clearly *are* SF.⁸ Nevertheless, let’s accept it and see where it might take us.

I’ll start by quoting the fourth century BC Greek philosopher Aristotle, who wrote in his *Rhetoric* that “nobody can ‘narrate’ what has not yet happened. If there is narration at all, it will be of past events, the recollection of which is to help the hearers to make better plans for the future.” This is an early statement of an ancient taboo against telling (or writing) a tale of the future, which certainly wouldn’t have encouraged any potential SF authors in ancient Greece. Matters didn’t change any time soon, either, as in one of his sermons the seventeenth century English poet and priest John Donne (1572–1631), who eventually became Dean of St. Paul’s in London, declared “to write a chronicle of things before they are done” is “irregular” and “perverse.”

⁶ Paul Alkon, *Origins of Futuristic Fiction*, University of Georgia 1987, p. 85. Madden’s work, more a satire than it is SF, was published in 1733. Madden was an Irish Anglican clergyman.

⁷ Thomas A. Hanzo, “The Past of Science Fiction,” in *Bridges to Science Fiction* (George E. Slusser et al., editors), Southern Illinois University Press 1980, p. 132.

⁸ Just to name one; Isaac Asimov’s beautiful 1958 short story “The Ugly Little Boy,” the tale of a young Neanderthal boy plucked out of his time by present-day time machine experimenters. After studying their subject for a lengthy time, they grow weary of him and decide to send him back to the remote past, where he has no chance for a normal life and to the virtually certain fate of a quick, brutal death. Asimov’s emotional ending will bring tears to all but the coldest of hearts.

The taboo against writing of the future actually makes some sort of theological sense in Donne's case, as doing that might well seem to a cleric to be mocking the religious prophecies of the Bible. *God's* words may speak of 'things to come,' but not those of mere men.

A real problem for the development of SF in ancient times (keeping the 'unfolding future' definition in mind) was that the Bible itself didn't provide much time for either the future *or* the past. Early Christian theologians, who read the Bible as an historical document to be interpreted as the literal truth rather than as a literary device teaching lessons of moral behavior in the form of allegory, arrived at numerous, different dates for Creation. But while these dates were different, they did share the common feature of not being all that long ago. Martin Luther argued for 4000 BC, for example, and in agreement (but much more precise) was the Calvinist James Ussher, Archbishop of Armagh and Primate of All Ireland. Ussher declared "that from the evening ushering in the first day of the world, to that midnight which began that first day of the Christian era, there were 4003 years, seventy days, and six hours." He further asserted that Man was created on the sixth day, which was Friday, October 28. He didn't say anything, one way or the other, however, about the possible complications caused by leap years.

As eminent as these men were, there were others who thought they could do better, and so by the early nineteenth century there were more than 120 dates for Creation, spanning the interval 3616 BC to 6984 BC. Their one point of agreement was that the remote past really wasn't very remote. Similarly, Biblical prophecy of the coming final confrontation between good and evil—the Battle of Armageddon—and the Last Judgment didn't offer much of a lengthy future either. Theology just didn't give much 'time room' for SF adventurers. That all changed with the discovery of *geological time*, the discovery that Earth isn't a mere few thousand years old but rather is *billions* of years old. This realization, which began at the end of the eighteenth century, provided Charles Darwin with just what he needed for the theory of evolution in the 1859 publication of his *Origin of Species*; namely, a past of such vast duration—a *chasm* of time—so enormous as to stupefy biblical scholars.

You can't snicker at the scholars' reactions, as a billion years *is* just too much for most human minds to really grasp. It is truly humbling to historians to contemplate how very little of the past is known. As one anonymous wit once put it, "History is a damn dim candle over a damn dark abyss." A bit more scholarly was H. G. Wells, who in his 1944 doctoral thesis wrote "A thousand years is a huge succession of yesterdays beyond our clear apprehension." Some thinkers actually had the imagination to ask if the past might be *infinite* in extent, but others objected that if that were the case then everything would

have already happened (!). Modern cosmologists think the Universe began about 15 billion years ago, with the famous Big Bang.⁹ A finite past started by God does encourage some theologians to wonder what God was doing *before* the moment of Creation (probably, cynics reply, creating Hell for those who would ask such a question).¹⁰

In any case, if the Biblical accounts of *Genesis* could be called into account, then why not as well the Biblically limited future? Could the future be vast, too? Perhaps even unlimited? It is no coincidence that such a realization was in-step with the rise of a new literature of *time* adventures into the future; even before H. G. Wells' Time Traveller and his time machine, Edward Bellamy (1850–1898) had the protagonist in *Looking Backward* simply sleeping from 1887 into the future of the year 2000. Well, no matter how they got there, there was now a *place* for such temporal adventurers to go. As Alfred Tennyson wrote in his 1835 poem "Locksley Hall,"

*"For I dipt into the future, far as human eye could see,
Saw the Vision of the world, and all the wonder that would be"*

Today we label stories that speak of that Vision as science fiction.

2.3 Early Theological SF

It is always risky to state that some story is a 'first,' but I think there are two possibilities, the first not as strong as the second but still compelling enough to keep it in the running. It is the *Inferno*, the first part of the epic poem *The Divine Comedy* by Dante Alighieri (1265–1321). It is the story of Dante's descent into the earth (where most people who believe in Hell imagine its location) through the nine circles of Hell, with the Roman poet Virgil as his guide. Dante of course wrote more with theology and poetry than science in mind, and the journey is an allegory on the human soul's path to salvation and eventual eternal paradise with God—with *lots* of sinful temptations vividly described along the way.

⁹ Just how brief is the length of mere human history is nicely illustrated by the so-called 'cosmic year.' If we imagine that the entire history of the Universe from the Big Bang to today is compressed into just 1 year, and that our present *now* is midnight of December 31, then dinosaurs were walking the Earth until the middle of yesterday, and Christ died on the Cross 4 s ago.

¹⁰ This is not a joke, and quite serious modern thinkers continue to ponder the issue; see, for example, Brian Leftow, "Why Didn't God Create the World Sooner?" *Religious Studies*, June 1991, pp. 157–172.

The one ‘scientific’ aspect of *Inferno* occurs when Dante reaches the Earth’s center, which is described as the *frozen* center of the Ninth Circle and *not* as the lake of fire and brimstone that has terrorized centuries of Sunday school kids. (It’s amusing to note that a common saying for an event with no chance of occurring is that it will happen “when Hell freezes over.” According to Dante, at least part of it already has!) Hell’s center is where Satan is held in bondage as punishment for the ultimate sin of treachery against God, and where Dante discovers that gravity reverses direction. This is correct; I do find it curious, however, that Dante overlooked another interesting (and far more obvious) physical characteristic of the center, namely the immense pressure there. It is ‘Hellishly high,’ in fact, and you can only wonder at the additional, awful torments Dante could have delivered to sinners with it!¹¹ Two present-day SF writers (Larry Niven and Jerry Pournelle) revisited *Inferno* in 1976, in a new take (with the same title) on Dante’s journey.

For my second, and much stronger, candidate for the claim of being the first religious SF story, I offer the 1881 tale “Hands Off.” It appeared under an anonymous by-line when *Harper’s New Monthly Magazine* published it, but its author was the Unitarian minister Edward Hale (1822–1909), best known today as the author of the 1863 story “The Man Without a Country.” Hale wrote “Hands Off” in an attempt to promote some theological debate (which it didn’t), and it is certain he would be surprised to learn his tale is remembered today as a pioneer in SF. Hale was no neophyte in early SF as years earlier, in October 1869, *The Atlantic Monthly* had started publishing (as a serial) his “The Brick Moon,” a tale of the first artificial satellite (a hollow 200 foot diameter sphere made of bricks).

“Hands Off” opens with the mysterious words “I was in another stage of existence. I was free from the limits of Time, and in new relations to space.” These words are spoken by an unnamed narrator who seems to have just died and who finds himself, in his new ‘form,’ observing “some twenty or thirty thousand solar systems” while in the company of “a Mentor so loving and patient.” Under the guidance of this Mentor (probably an angel), in attempt to ‘improve’ history, the narrator alters the Biblical account of Joseph and his imprisonment in Egypt on one of these systems.

At first, subsequent history *is* better, but then humanity sinks into irreversible depravity. In the end the narrator watches the last handful of humans kill each other at a particularly symbolic place for the Christian world: “The last of these human brutes all lay stark dead on the one side and on the other side of the grim rock of Calvary!” On this world there would be

¹¹ You can find an analytical treatment of Earth’s interior gravity in my book *Mrs. Perkins’s Electric Quilt*, Princeton 2009, pp. 186–214. In particular, on pp. 200–203 the pressure at the center of the Earth is calculated. (For the curious, it’s 25,000 tons per square inch.)

no Crucifixion and Resurrection for the salvation of humankind, an outcome which naturally disturbs the narrator. But the Mentor calms him, saying “Do not be disturbed, you have done nothing.” It has, you see, been just an experimental world, an alternate Universe, and so the narrator has learned the lesson of “Hands Off.”

Hale’s idea of a multitude of worlds created by God (of which ours is but one) sounds very much like the many-worlds view of reality that many find implicit in theoretical quantum mechanics. That view is a seemingly outrageous idea first put forth seriously *in science* by the physicist Hugh Everett III (1930–1982) in a 36-page, 1957 Princeton doctoral dissertation titled “On the Foundations of Quantum Mechanics.” In the many-worlds interpretation, the entire Universe splits at the occurrence of every decision by every sentient being *everywhere* (on Earth, on the fourth planet orbiting the triple star system Rigel—if there is such an inhabited planet—, on *all* the inhabited planets in *all* of the galaxies, etc.), to always provide a distinct Universe for every possible sequence of decisions from The Beginning of Time to The End. Want to split the universe? Decide whether to blink your right eye or your left eye! (You can see why the word *outrageous* is used.) Outside of theoretical physics, the many-worlds concept had already appeared in an SF story—*without* Hale’s theological nature—two decades before Everett, in Murray Leinster’s 1934 tale “Sidewise in Time.”¹²

The many-worlds idea had appeared *in art* 40 years before Hale, with almost certainly a theological twist, in a beautiful, fantastic illustration in the 1844 book *Un Autre Monde (Another World)*. Known either as “The Infinity Juggler” or “The Juggler of Worlds,” it was the work of the French artist Jean-Ignace Isidore Gérard (1803–1847), who published under the name ‘Grandville.’ The juggler—Grandville’s version of Hale’s Mentor—appears as a court jester who is clearly having fun manipulating his multitude of worlds, while the man (humanity?) in the foreground watches. The man appears to be simultaneously fearful and fascinated, involved yet clearly impotent. Is Earth one of the worlds among which the Jester stands, or is it one of those flying through space? Or is Earth, perhaps, simply the unfortunate world ingloriously stuffed down the front of the Jester’s pants? (That surely would explain a lot!) If born a hundred years later, Grandville would have easily found work as an artist in the imaginative world of the SF pulps.

¹² ‘Murray Leinster’ was the pen-name of William F. Jenkins (1896–1975).



Grandville's Infinity Juggler

The idea of a multitude of worlds, expressed in Grandville's art and in Hale's story, continued to fascinate long after their appearance. In a short essay (it really isn't a real *story*) by James Gunn (born 1923) called "Kindergarten," for example, we learn that God made the Solar System as a school assignment when just a youngster in his kindergarten (!) class. He is the *slowest* youngster in the class, in fact. The piece ends with an on-going argument between the Teacher who is clearly an entity beyond God (whatever that might mean) and His parents (whatever that might mean) on whether or not to destroy Earth as a flawed effort. The theology in all this is more than just a little bit beyond curious, to be sure, but I include Gunn's effort here because it is a multi-world creation tale published in a relatively recent pulp (the April 1970 issue of *Galaxy Magazine*). But I can't help but wonder—just what are the *other* kids in that kindergarten class now doing?

Years later, as another example, in the much deeper 2000 novel *Calculating God* by Robert Sawyer (born 1960), we learn that God has been an

experimenter in evolution when multiple alien civilizations discover that all the great historical extinctions experienced on Earth also occurred *at the same time* on their worlds, as well. So, here we have God as scientist who apparently learns-as-He-goes from experience—pretty much like the rest of us!

Returning to the start of the twentieth century, the idea of time travel (which I'll discuss in far more detail in Chap. 7) was already afoot in early SF, mostly because of Wells' *Time Machine*. Although a pioneering work in time travel fiction, *The Time Machine* contains essentially no discussion about the consequences of paradoxes, the heart-and-soul of this sub-genre of SF. The closest Wells comes is during the dinner party, in the opening of the story, when the Time Traveller attempts to convince his friends of the possibility of a time machine. One of them observes that such a gadget "would be remarkably convenient for the historian. One might travel back and verify the accepted account of the Battle of Hastings, for instance." To that another guest replies "Don't you think you would attract attention? Our ancestors had no great tolerance for anachronisms." The Time Traveller has no reply to that (because, I think, *Wells* had no reply).

It didn't take long for another writer to fill that gap, however, with the 1904 publication of *The Panchronicon* by Harold MacKaye (1866–1928). An Edwardian time machine with style, the Panchronicon is a large container that swings, on a rope tether, around a steel pole erected at the North Pole. By "cutting the meridians" faster than does the sun, it (and its occupants) travels through space and time from 1898 New Hampshire to the London of three centuries earlier.¹³

In the course of Mackaye's novel we follow the adventures of the time travelers as they encounter such puzzles as changing the past and meeting yourself, situations that would receive a great deal of attention from SF writers in years to come. The often made, incorrect assertion common in early SF (even into the 1930s), that a backward-moving time traveler would grow ever younger, is refuted. Most impressive of all, I think, is the novel's clever treatment of an *information loop in time*. Specifically, we learn how a Shakespeare who is bedeviled by writer's block nevertheless came to write one of his plays: one of the time travelers simply whispers the magic words she has memorized (for her literary club meetings) into his ear. Does this make Shakespeare a plagiarist (of himself)? More to the point, however, is *this* question: in whose brain were those 'magic words' created? This is a question that still excites a lot of debate among physicists and philosophers.

¹³ MacKaye might have been inspired to use this idea from a reading of Edgar Allen Poe's 1841 story "Three Sundays in a Week," in which a bit of amusing turmoil is caused by a character moving across time zones. That story is, however, not SF by any interpretation. (Poe's 1835 "The Unparalleled Adventure of One Hans Pfaall," of a voyage to the moon, is a better candidate and I'll say more about it in Chap. 6 when we discuss aliens in SF.)

Before MacKaye, and even Wells, other writers tried to find additional twists to time travel. One alternative to simply invoking a *time machine* with which to observe the past was to imagine a faster-than-light rocket (this was before the theory of special relativity said you can't do that); with such a rocket one might, at least in principle, look backward in time by traveling out into space and then watch the light from the past that your high-speed trip had outrun. The French astronomer Camille Flammarion (1842–1925), for example, had made this dramatic idea a centerpiece in his 1887 novel *Lumen*, which describes how a man just dead (in 1864) instantly finds his spirit on the star Capella where he watches the light then arriving from the Earth of 1793 bearing images of the French Revolution.¹⁴

By the beginning of the twentieth century the idea of watching the past by outrunning light had drifted down into juvenile literature. For example, the French writer Jean Delaire (1888–1950) used this idea of outrunning light in her 1904 novel *Around a Distant Star*, in which a man builds a spaceship that can travel at 2,000 times the speed of light. With it he and a friend travel to an Earth-like planet 1,900 light-years distant and then use a super-telescope to watch the Crucifixion and resurrection of Jesus.

The use of religion in SF made a dramatic appearance in the July 1939 issue of *Astounding Science Fiction*, the pulp edited by John W. Campbell, Jr. The story "Trends" was the first sale by Isaac Asimov to that magazine, and it concerned the imagined social *resistance* the builders of the first moon rocket might experience. Asimov later recalled that it wasn't the moon trip itself that fascinated Campbell (that was an old, much used idea by 1939), but rather the idea of religious opposition to space travel. In the story the leader of the Twentieth Century Evangelical Society (as well as the League of the Righteous) declares, any such attempt to leave Earth would be "profaning the heavens" and to "defy God." The only reward the rocketeers would receive would be "Divine vengeance." That is because "It is not given to man to go wheresoever ambition and desire lead him. There are things forever denied him, and aspiring to the stars is one of these. Like Eve [the rocketeers wish] to eat of the forbidden fruit, and like Eve [they] will suffer due punishment therefor."

The story reads as "incredibly naïve" (Asimov own words) today, now that we know just how difficult it is to build a moon rocket. The first rocket is sabotaged, but an eventually successful second rocket is built in secret by a handful of men in the backwoods of northern Minnesota. And all ends well when the religious leader dies, the rocket trip succeeds, and the rocketeers are acclaimed to be national heroes. Although technically simplistic to the point of being a juvenile

¹⁴ As a point of fact, Capella is 42 light-years from Earth, which is at odds with the 71 years between the man's death and the French Revolution. You'd think an *astronomer* wouldn't make a mistake like this!

fantasy, “Trends” was nevertheless a daring story, too, one that risked condemnation from powerful religious organizations that could easily have taken offense at being portrayed as irrational to the point of committing violence. That didn’t happen—perhaps because religious leaders didn’t read SF!—but still, it was a gamble that both Asimov and Campbell took.

Two years after “Trends” appeared, Asimov was inspired by Campbell to write another story with a very strong religious nature to it. It would be a near-parody of Biblical prophecy; it would be, in fact, what Asimov felt was the best piece of short fiction that he ever produced. Asimov recalled years later that the premise for “Nightfall” originated in Campbell’s mind when, during a visit by Asimov to *Astounding’s* offices in March 1941, Campbell read a quotation from Ralph Waldo Emerson: “If the stars should appear one night in a thousand years, how would men believe and adore; and preserve for many generations the remembrance of the city of God . . . !”¹⁵ Those words prompted Campbell to ask Asimov what he thought would happen if the stars actually did appear only for brief times after long intervals of absence. When Asimov had no reply, Campbell gave him the story idea: men would go mad.

The way Asimov set this interesting idea into story form was to imagine a technical civilization on the planet Lagash, which is in orbit around a cluster of six stars. Nobody on Lagash has ever seen the night sky, as there is always at least one sun above the horizon. SF writers have found such multiple-star systems intriguing, perhaps in part because the orbit of a planet in the complicated, ever evolving gravitational field of a star-cluster would be highly convoluted, offering lots of interesting story angles. In Stanislaw Lem’s novel *Solaris*, for example, the planet Solaris is in a double-star system; the only ‘inhabitant’ of the planet is its mysterious ocean, which seems to have the ability to stabilize what would otherwise be a highly variable orbit. (I think Asimov’s six-star system holds the SF record!)

In “Nightfall” Lagash’s *eight*-body (remember, the *total* system consists of the planet, the six stars, and the Lagash’s moon) orbit¹⁶ is such that, every 2,049 “years” (what a “year” is on the planet, in Earth-years, is not given), the only star of the six that is in the sky at that time is eclipsed by Lagash’s moon. That moon has not actually been observed because the “eternal blaze of the two [major] suns . . . drown it out completely.” Its existence is suspected, though, because the

¹⁵ The quotation is from the opening of Emerson’s essay *Nature*, written in 1836. “The city of God” is a clear reference to the universe, itself.

¹⁶ To appreciate just how wild this planet’s orbit could be, see the discussion of mere *three*-body orbits in my book *Number-Crunching*, Princeton 2011, pp. 131–217. A nice exposition on the calculation of the ‘habitable zone’ (water exists in liquid form) in a simple two-star system is by Su-Shu Huang, “Life-Supporting Regions in the Vicinity of Binary Systems,” *Interstellar Communication* (A. G. W. Cameron, editor), W. A. Benjamin 1963, pp. 93–101.

observed orbit of Lagash is not in accordance with the inverse square law of gravitation. (The physical scientists of Lagash are apparently at the same stage of development as were Earth scientists at the start of the twentieth century; that is, in possession of Newton's theory of gravity but not of Einstein's general theory of warped spacetime).

Further calculations using the inverse square law have shown that theory and observations can be brought into agreement with the additional presence of a supposed moon, and *that if it exists this moon will soon produce an eclipse*. Asimov's clever idea was to have these calculations motivated by a *Book of Revelations*, central to a religious cult on Lagash. That *Book* contains the story of something mysterious called the "Stars" and, as one character explains, "The Cultists said that every two thousand and fifty years Lagash entered a huge cave, so that all the suns disappeared, and there came *total darkness all over the world!* And then, they say, things called Stars appeared, which robbed men of their souls and left them unreasoning brutes, so that they destroyed the civilization they themselves had built up. Of course they mix all this up with a lot of religio-mystic notions, but that's the central idea."

The Fifth Chapter of the *Book of Revelations* describes what happens in some detail once the 'cave' is entered (Asimov, who had a reputation for being a pretty irreverent fellow, must have had a lot of fun writing *this!*):

"And it came to pass that in those days [one sun] held lone vigil in the sky for ever longer periods as the revolutions passed; until such time as for full half a revolution, it alone, shrunken and cold, shone down upon Lagash. And men did assemble in the public squares and in the highways, there to debate and to marvel at the sight, for a strange depression had seized them. Their minds were troubled and their speech confused, for the souls of men awaited the coming of the Stars. And in the city of Trigon, at high noon, Vendret 2¹⁷ came forth and said unto the men of Trigon, 'Lo, ye sinners! Though ye scorn the ways of righteousness, yet will the time of reckoning come. Even now the Cave approaches to swallow Lagash; yea, and all it contains.' And even as he spoke the lip of the Cave of Darkness passed the edge of [the sun] so that to all Lagash it was hidden from sight. Loud were the cries of men as it vanished, and great the fear of soul that fell upon them. It came to pass that the Darkness of the Cave fell upon Lagash, and there was no light on all the surface of Lagash. Men were even as blinded, nor could one man see his neighbor, though he felt his breath upon his face. And in this blackness there appeared the Stars, in countless numbers, and to the strains of music of such beauty that the very leaves of the trees cried out in wonder. And in that moment the souls of men

¹⁷ In early pulp SF, people of the far future or of alien origin commonly had single names followed by a number. Remember Ralph 124C 41+ (that is, 'one to foresee for one') that I mentioned in the opening section of this chapter? It was all to lend a flavor of 'SF oddness' to the story.

departed from them, and their abandoned bodies became even as beasts; yea, even as brutes of the wild; so that through the blackened streets of the cities of Lagash they prowled with wild cries. From the Stars there then reached down the Heavenly Flame, and where it touched, the cities of Lagash flamed to utter destruction, so that of man and of the works of man nought remained.”

This all sounds quite mysterious, of course, until the inverse square law calculations explain it in terms of mathematical physics. That doesn't mean all is okay, however, because as one story character says “This is not the century to preach ‘The end of the world is at hand’ . . . You have to understand that people don't believe the *Book of Revelations* anymore, and it annoys them to have scientists turn about face and tell us the Cultists are right after all—.” To that a scientist replies “While a great deal of our data has been supplied us by the Cult, our results contain none of the Cult's mysticism. Facts are facts, and the Cult's so-called mythology *has* certain facts behind it. We've exposed them and ripped away their mystery.” The religious sect isn't at all happy about this development of a scientific explanation for their *Book*. As the sect's leader complains to the scientists, “Your pretended explanation backed our beliefs, and at the same time removed all necessity for them. You made of the Darkness and of the Stars a natural phenomenon and removed all its real significance. That was blasphemy.” In other words, having a ‘mystery’ is preferred over having an explanation, a condition that many would argue is not at all uncommon today.

What is particularly unnerving about the Fifth Chapter is that it nicely fits together with the current archaeological theory that says Lagash's history has a cyclic nature. As one scientist explains it, “This cyclic character is—or rather, was—one of the great mysteries. We've located series of civilizations, nine of them definitely, and indications of others as well, all of which have reached heights comparable to our own, and all of which, without exception, were destroyed by fire at the very height of their culture. And no one could tell why. All centers of culture were thoroughly gutted by fire, with nothing left behind to give a hint as to the cause.”

There would always be a few who would survive each such calamity, of course, and that would further explain the origins of the *Book of Revelations*, itself. As we are told by one of the scientists, “The very insensitive would be scarcely affected—oh, such people as some of our older, work-broken peasants. Well, the children would have fugitive memories, and that, combined with the confused, incoherent babblings of the half mad morons, formed the basis for the *Book of Revelations*. Naturally, the book was based, in the first place, on the testimony of those least qualified to serve as historians; that is, children and morons; and was probably edited and re-edited through the cycles.” (As with “Trends,” Asimov took a real chance at offending powerful, established religious

institutions with this transparent mocking of their Holy Books but, as before, he got away with it.)

And so Lagash is plunged into total darkness, the stars come out for as long as the eclipse lasts and, as Campbell wanted, Asimov has everybody on the planet go insane. Perhaps with good reason, too, as we learn that “Lagash was in the center of a giant cluster. Thirty thousand mighty suns shone down in a soul-searing splendor that was more frighteningly cold in its awful indifference than the bitter wind that shivered across the cold, horribly bleak world.” As Asimov’s last paragraph eerily describes the start of the eclipse (and the start of the next cycle), “The awful splendor of the indifferent Stars leaped nearer to them. On the horizon outside the window, . . . a crimson glow began growing, strengthening in brightness, that was not the glow of a sun. The long night had come again.” (This really strikes me as a glaring—no pun intended—weak-point in the story because if Lagash is in the center of such a massive star cluster the night sky would actually be pretty bright and the surface of Lagash would not be at all dark.)

Well, forget *my* reservations; the fact is that editor Campbell loved “Night-fall” and so did his magazine’s readers (the story appeared in the September 1941 issue of *Astounding*). Part of the fun readers had was being *in* on an inside-joke Asimov had woven into his tale. Near the end of it one scientist says he has developed a “really cute notion” about what the *Book*’s reference to “Stars” might be all about. As he explains, “Well, then, supposing there were other suns in the universe. I mean suns that are so far away that they’re too dim to see. It sounds as if I’ve been reading some of that fantastic fiction, I suppose. . . . During an eclipse, these dozen suns would become visible because there’d be no *real* sunlight to drown them out. Since they’re so far off, they’d appear small, like so many little marbles. Of course the Cultists talk of millions of Stars, but that’s probably exaggeration. There just isn’t any place in the universe you could put a million suns—unless they touch one another. . . . And I’ve got another cute little notion. Have you ever thought what a simple problem gravitation would be if only you had a sufficiently simple system? Supposing you had a universe in which there was a planet with only one sun. The planet would travel in a perfect ellipse and the exact nature of the gravitational force would be so evident it could be accepted as an axiom. Astronomers on such a world would start off with gravity probably before they even invented the telescope. Naked eye observation would be enough.”

When asked if a ‘one planet, one sun’ system would be stable, he replies “Sure! They call it the ‘one-and-one’ case. It’s been worked out mathematically, but it’s the philosophical implications that interest me. . . . Of course, there’s the catch that life would be impossible on such a planet. It wouldn’t get enough heat and light, and if it rotated there would be total Darkness half of

each day. You couldn't expect life—which is fundamentally dependent upon light—to develop under those conditions.” One of his friends tries to be supportive, saying that even though all that *is* pretty crazy stuff, still “It's nice to think about as a pretty abstraction—like a perfect gas, or absolute zero.” Asimov's intent with including this little exchange in the story was, of course, so *Astounding's* readers could condescendingly smile to themselves with their ‘superior knowledge’ that such a thing *is* possible.

Looking back at the early days of magazine SF, one modern author and critic could write “I used to moan over the fact that pulp magazines were printed on pulp paper and steadily decompose back towards the primordial from which they sprang. I am beginning to feel that this is a bit of a good thing.”¹⁸ Asimov (who had a doctorate in chemistry from Columbia University), however, had based “Nightfall” on real, solid science, and that story (as well as those of Robert Heinlein that Campbell was also starting to publish in *Astounding*) showed that the critic who once described early magazine fiction as “science that was claptrap and fiction that was graceless”¹⁹ had to admit, as SF moved into the 1940s and more modern times, that things were definitely starting to look-up.

Of course, in 1941 there were still a few rough spots in “Nightfall.” For example, early in the story one character says, to show that the sophisticated elite weren't being taken-in by either the Cultists or the scientists, “Investors don't really believe the world is coming to an end, but just the same they're being cagy with their money until it's all over. Johnny Public doesn't believe you, either, but the new spring furniture might just as well wait a few months—just to make sure.” It's simply astonishing how ‘1940s, New York City wise-guy-like’ that inhabitant on far-away Lagash sounds—but you can't *really* have expected SF pulp to have completely changed overnight. Don't forget, when he wrote “Nightfall” Asimov was just 21 years old, as well as that he lived in New York City and already had a reputation for being just a bit of a wise-guy himself.

There were other hurdles, too, for early SF to jump, with a really big one being what to do about girls and sex. Sexual behavior, in particular, attracts the attention of religious theoreticians and, since young men are a major fraction of the SF readership, this is not a trivial issue. Of early pulp SF, Anne McCaffrey (1926–2011), a highly successful SF author, wrote the following in a hilariously funny essay: “Prior to the '60s, stories with any sort of love interest were very rare. True, it was implied in many stories of the '30s and '40s that the guy married the girl whom he had rescued/encountered/discovered

¹⁸ Harry Harrison, “With a Piece of Twisted Wire . . .,” *SF Horizons* 1965 (no. 2), pp. 55–60.

¹⁹ See the editors' introduction to *Famous Science-Fiction Stories* (R. J. Healy and J. F. McComas, editors), Random House 1957.

during the course of his adventures. But no real pulse-pounding, tender, gut-reacting scenes. The girl was still a ‘thing’ to be ‘used’ to perpetuate the hero’s magnificent chromosomes. Or perhaps, to prove that the guy wasn’t ‘queer.’ I mean, all those men locked away on a spaceship for months/years at a time. I mean . . . and you know what I mean even if I couldn’t mention it in the sf of the ‘30s and ‘40s.”²⁰

Later, when we get to Chap. 6 and the possibility (or not) of interstellar space travel to meet alien beings, one of the stories discussed is Robert Heinlein’s 1941 “Common Sense.” It is set on a so-called ‘generational spaceship’ in which generation after generation of people are born, live their lives, and die as the ship makes its enormously long voyage to a distant star. (The story makes the implicit admission that faster-than-light travel à la *Star Trek* is not possible.) In that society men (even if clearly morons) are the ‘natural’ superiors of women, and the physical abuse of women (including getting teeth knocked out) when they need ‘discipline’ is described as being acceptable. Providing even more support for McCaffrey’s thesis of how shabbily some early SF treated women is the description in the story of women being ‘natural’ physical cowards while men (even if clearly morons) are uniformly brave. One critic, commenting on the 1930s pulps that specialized in romance stories for young women, observed that the heroes and heroines in such tales often displayed the “mental equipment of a banana split.”²¹ That would not have been a valid characterization for the majority of the science-oriented readers of pulp SF, but the fact that Heinlein published the sometime cartoonish “Common Sense” in *Astounding Science Fiction* magazine shows that he clearly appreciated the occasionally socially immature teenage male audience for which he was writing. Heinlein was prone, too, to stroking the often inflated egos of his young readers by implying that *they*, as readers of science fiction, also understood actual science better than did the readers of those ‘other’ pulps.

In “Common Sense,” for example, he wrote “space ship ballistics is a very simple subject, being hardly more than the application of the second law of motion to an inverse-square field. That statement runs contrary to our usual credos; it happens to be true.” No, that *isn’t* true, as anyone who has actually worked through the mathematical physics of the ‘mere’ three-body problem (of calculating the orbits of three massive bodies, with each moving in the combined fields of the other two) soon comes to appreciate.²² Perhaps, however, my criticism is a bit unfair to Heinlein as he was, after all, in the business of

²⁰ See “Hitch Your Dragon to a Star: Romance and Glamour in Science Fiction,” in *Science Fiction, Today and Tomorrow* (Reginald Bretnor, editor), Harper & Row 1974, pp. 278–292.

²¹ Margaret MacMullen, “Pulps and Confessions,” *Harper’s Monthly Magazine*, June 1937, pp. 94–102.

²² See my book *Number-Crunching*, Princeton 2011, pp. 131–217.

telling a good story, not that of teaching science. And perhaps some of his readers, intrigued by his casual dismissal of difficult topics, were intrigued enough to study them and, in fact, to become real scientists.

2.4 Theological Maturity

Two literary events, as the decade of the 1950s came to its end, showed the world beyond science fiction that SF could provide deep, serious treatments of religion. These were the appearances of the 1958 novel *A Case of Conscious* by James Blish, and the novel *A Canticle for Leibowitz* by Walter M. Miller, Jr. (1923–1996) which appeared the very next year. Both novels were the result of combining several linked short stories that their authors had published a few years earlier in the pulps (Miller in the *Magazine of Fantasy & Science Fiction*, and Blish in *IF: Worlds of Science Fiction*). Both are today recognized as classics (each won the prestigious SF Hugo award for best novel of the year), with Miller's using only the first of the common elements of SF (space travel, aliens, or some fantastic gadget like a time machine), while Blish's makes use of the first two. I'll discuss Miller's book (which, unlike much of religious SF, is quite sympathetic to the Church) here, and *A Case of Conscious* later in the book (Chap. 6).

The 1959 *A Canticle for Leibowitz* opens in a post-apocalyptic world in the American desert, six centuries after a nuclear war (called the "Fire Deluge") has destroyed much of civilization. It is a science fiction sequel to Nevil Shute's 1957 *On the Beach* (assuming people had survived that novel's world-wide atomic radiation). When Brother Francis, a novice at the remote Leibowitz Abbey accidentally discovers the ruins of an ancient fallout shelter that contains a human skull with a gold tooth (a skull that glows in the dark from residual radiation), he begins to suspect he is into something extraordinary. He soon *knows* that is the case when, in the ruins of the shelter, he stumbles upon a rusted box containing numerous strange items, including an ancient paper bearing the words "CIRCUIT DESIGN BY: *Leibowitz, I. E.*" He has discovered legendary relics of the beatified founder of his religious Order, Isaac Edward Leibowitz!

After the Fire Deluge, murderous mobs of simpletons who had survived the war begin to kill scientists, teachers, and technicians, along with all the other educated people they can find, people that the mindless hordes have decided deserve to die for having helped to destroy the world. It is a reign of terror called "The Simplification." For the literate, the only available escape is the Church, which takes them in, vests them in monk's robes, and hides them away in monasteries and convents. Many are thus protected, but many others

are still discovered; the fate of those poor unfortunates is either to burn in a fire or to hang at the end of a rope. Isaac Edward Leibowitz manages to avoid both of those grim outcomes for some years, and he becomes a priest and founds his new Order with the blessing of the Church. But, in the end, he is betrayed²³ and he, too, dies a martyr's death at the end of a strangulation noose while hanging over a fire.

Along with people, the Church has attempted to preserve human history and knowledge, much as it did in the Dark Ages. The material it gathers becomes known as 'The Memorabilia,' and while it soon fades into being beyond understanding to the monks, the preservation of it all is a sacred mission. The monks will honor that duty, if required, for the next 10,000 years. Before then, it is hoped, a means for rediscovering the secrets of The Memorabilia will appear. Besides securing what original books they can find, the monks of Leibowitz Abbey hand-copy them, too, illuminating algebra texts with "cheerful cherubim surrounding tables of logarithms," and faithfully reproducing blueprints of electrical apparatus right down to every detail (including what might only be "the stain of a decayed apple core" left accidentally on the diagram by some long-dead draftsman).

The rest of the novel, as the centuries pass, follows both the Order of Leibowitz and the Church. More than a thousand years after Brother Francis' find of the fallout shelter, humanity has again gone full circle. Leibowitz, long since canonized, is the patron saint of electricians, and the technology of nuclear weapons has been rediscovered. However, a repeat of the Fire Deluge has been avoided long enough for the secret of the interstellar starship drive to be discovered and so, when atomic war does again threaten, escape is possible.

The novel ends as the horror of nuclear war erupts once again, but this time the Church is ready: it has anticipated the coming disaster and has activated contingency plans for escape. As "the horizon became a red glow" and "the visage of Lucifer mushroomed into hideousness," monks and sisters board themselves and children into a starship. As the last monk to enter the ship pauses at the hatchway before sealing it shut, he looks at the glow in the sky and says *Sic transit mundus* ("thus passes the world"). And then the starship thrusts itself heavenward, like the collective soul of all humanity departing a corpse, towards salvation somewhere beyond Earth.

²³ The reader slowly learns, as the novel progresses, that Leibowitz had been a weapons scientist (perhaps an electrical engineer) who had sent his wife (who had a gold tooth) to the shelter under the pretext of carrying secret documents to safety. In reality, those documents were nothing but routine papers; it was all just a ruse to convince her to seek shelter.



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