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*"There can be small men in science just as there are small men in government or business. In fact it is one of the disadvantages of big science, just as it is of big government, that the availability of huge sums attracts a swarm of elbowing and contentious men to whom great dreams are less than protected hunting preserves."* – Loren Eiseley, "The Illusion of the Two Cultures" (1964)



**Intelligent Animals**: Technology is an organized body of knowledge about the physical universe that allows sentients to manipulate the physical universe to produce desirable results.[1] Technology is (a body of information about the physical universe) + (need) + (intellect) + (application to a practical problem), and (intellect) includes the mental qualities shared by all intelligent animals, including insight, imagination, and their own special brand of logic.

It is a fundamental assumption that all creatures share the same basic survival needs and that from this arises the desire to manipulate the physical universe for comfort. Technology is about *control*, the desire and will of intelligence to control its universe, the ability of the universe that gave rise to intelligence to be controlled, to a greater or lesser degree. It is also about looking.

Advanced technology[2] is the foremost, readily recognized aspect of the science-fiction genre (as the name clearly indicates) to the point where some have dismissed science-fiction *as being about* rocket ships, robots, lasers and gadgets:[3] These would be the same who a half century ago thought that reading comic books caused juvenile delinquency, people who mistake the symptoms for the causes.[4] It is true that very early science-fiction – the fiction of the Hugo Gernsback (who died shortly before I was born) era of Amazing Stories and Wonder Stories, was "a sort of animated catalogue of gadgets" (Frederick Pohl), because Hugo Gernsback was also selling electronics and radio equipment and promoting amateur radio and broadcasting through his other magazines, Modern Electronics and The Electric Experimenter.[5] But H.G. Wells' War of the Worlds (1898), predating Amazing Stories magazine by 30 years, was a social commentary on the late Victorian era society, and by 1940, science-fiction writers – with the crazy monumental events of the mid-20th century turning the future to dread, dreams of science utopia to ashes – had moved on from gadget fiction. Dystopia crept into science-fiction around World War II.

- ✓ "It was also bigger than any film I've done in its physical stature and the way it was designed. All the people were dwarfed by the system and the architecture; it shows how insignificant human beings could be in the future." – Sylvester Stallone interview regarding Judge Dredd (1995) in Uncut #135 (April 2008), p. 118.

This describes also the feeling of the original Bladerunner movie where non-police were referred to as "little people" by Capt. Bryant; will our engineering and technology (and social complexity) make us diminutive? This is the core of technological dystopia.

In science-fiction literature, technology becomes the setting, the means of projection, in which our world, us, we, are projected into the sky to look back down upon ourselves, or the future, or the past, where philosophical discussions, personalities, historical cycles, and social theories are played out on a grand scale. Science-fiction is literature, and all literature in any form is ultimately about us, as we have nothing else really, to talk about.

- ✓ Residents in big cities don't buy telescopes to look at the sky from their apartment windows. They buy them to look at people. Sky viewing in an urbanized area isn't good anyway because of the light pollution of the night sky.

- Hox Genes: Though mostly unstated in science-fiction stories, the assumption must be made that each Native Population Type, in addition to being sapient, must also possess ambulatory ability and sufficiently manipulative appendages or organs to produce technology, i.e. the morphology (homeobox genes, Hox genes) for technology. While sapience without physical manipulation is a fascinating discussion (or not[6]), it is here impractical for game purposes.
  - ✓ "[Christiaan Huygens] did imagine of extraterrestrial beings 'that their whole bodies, and every part of them may be quite distinct and different from ours.' 'It's a very ridiculous opinion,' he says, 'that it is impossible a rational soul should dwell in any other shape than ours.' ... But he then went on to argue that they didn't look all that funny, that extraterrestrial beings must have hands and feet and stand upright and have writing and geometry." – Carl Sagan, Cosmos, Episode 6 describing a 🕮 published by Huygens in 1690, 80 years after Galileo Galilei's *Starry Messenger* (1610).

  Among the higher orders of creatures on Earth the uniform arrangement is a trunk with five protrusions, one of which is the head. The rest is details – flippers, feet, wings, hands, paws, claws. Except for insects, arachnids, and such, this seems to be the universally successful form settled upon for life *on Earth*. We have no basis to conjecture that this is universal or that it is not. The easiest way to make a true monster- or truly-alien alien-of-the-week is simply alter the form, add or subtract protrusions from the trunk, put them in different or odd places, or change their functions (e.g., hands with eye stalks). Most of the time, the monster turns out looking insectoid, because...

  - ✓ In GGDM, the number of trunk protrusions and their uses have no obvious effect on the game unless it makes the creatures incapable of technology, it would be interesting if participants developed some way that it would actually matter in the game.
- Toolers from Toddlers: Toolmaking and tool use were formerly defined as the exclusive quality of humans, what makes humans able to overcome the physical world. Subsequently, however, many animals, sentient creatures such as birds and close and distant human relatives – that we do not consider to be sapient, have been observed in the wild either fashioning and using 🛠s (e.g., primates), or using sticks and stones to obtain food (e.g., primates, birds, sea otters). Long before the issue of toolmaking and use was discussed, it was known that some animals, such as beavers, birds, and apes, create artificial structures for various purposes. Thus building artificial structures has never exclusively been part of the definition of humanity or sapience. Can advance technology develop without sapience?

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*"It was suggested to me that I talk about the science content of science fiction, and I suspect that there are at least a few people in this room who think that such a title could properly only be followed by an hour of dead silence. And I'm prepared to agree that most of what we call science fiction – even 'hard' science fiction – is technology fiction at best. The scientific content, as a scientist would understand the term, is quite invisible. However, we do play around quite a bit with what we think of as scientific facts – or what we hope are scientific facts – and this gives us our cachet for using the label which Mr. Gernsback hung on us in 1929."*

– James Blish, The Tale that Wags the God (1987) (Kindle Loc. 485-490)

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**Neo-Luddites:** If it is not yet clear, GGDM is inherently a pro-technology setting, as is most mainstream science-fiction, whether literature or hack. It may be possible, with heavy-handed construction by the Concierge and players, to develop a Neo-Luddite, technologically decayed, or even technophobic setting. The classic example of this is Frank Herbert's Dune (1965), which was possibly inspired in part by the Imperial Chinese technological regression. Other such settings have included 'long night' scenarios such as Alfred Coppel's "Rebel of Valkyr" (1950), Gardner Fox's "Tonight the Stars Revolt" (1952), Julian May's "Duat Galaxy" setting,[7] and of course, Isaac Asimov's Foundation (1942) which directly address the coming Long Night.

However, the underlying problem (and the elephant in the room) of a Neo-Luddite setting is the question: Given their attitudes toward technology, how did they find themselves in an interstellar setting? In nearly all instances of interstellar science-fiction settings, the Neo-Luddite movement, group, attitude, or civilization is a post-interstellar reaction (or Long Night), stripping the civilization to the barest necessity of starship operation to keep it all going.[8] This is sort of a Neo-Ludditism with the addition of a precautionary principle.

- ✓ Back when I used to play AD&D in the late 1980s, I always wondered about the fantasy setting Neo-Luddite rule that 'barbarian' characters hated magic and would try to destroy magic items and wizards. Why? It cannot have always been that 'barbarians' feared and hated magic in any fantasy world (quite aside from the fact that 'barbarian' is a historically suspect archetype), otherwise, no one would have 'discovered' (or been granted) and developed magic (artefact)? And the means to make magic items (artifacts). I particularly hated it when players used it to just do dumb, counterproductive actions (probably also reflective of their mental lives and social behavior outside of D&D); some players seemed to take joy in exploiting classes and alignments to do dumb things while claiming they were role-playing their character's class and/or alignment. You know what I mean; no technology is required.

- Green Anarchists from Earth: Consider the problem of Green Anarchism (e.g., anarcho-primitivism, anarcho-naturalism): However much merit their ideas and criticisms may have, at this point, they are nearly impossible to implement. Thus, for example, while Ted Kaczynski's manifesto, published in the New York Times and The Washington Post in 1995, was well received (with care to distance the praise for the work from the criminal actions of the author),[9] as a creature of the early internet age, I would find it impossible to accept such ideas in actual practice. Everyone who makes the anti-technology, anti-science argument, whether it be the intellectual Ted Kaczynski's, the creationist/intelligent design turn-back-the-clock-three-centuries reactionaries, the Western Esotericism neo-pagans, or the anti-intellectual Sam Kriss-like bloggers of the world, forgets one important thing: It's too late to turn back.

  GGDM is a product of technology, and of the internet age, as are any participants to the game, and we have to make the best of it: True macro processes – whether macrosocial or macro-historical (Rhetorical Question: And what is the difference?) have a momentum, take on a 'life of their own' – and that frightens us in the same way as a lynch mob.

- Dark Ages: Carl Sagan suggests in the Cosmos television series that but for 'thousand year detour' of the Dark Ages (and return to mysticism) humanity's technology would be a thousand years more advanced and we might be headed to the stars now. Sagan's assertion is reflected, for example, in the following dialogue from Stargate SG-1, "Enigma" episode

(1998): "JACKSON: Yes. Umm...we'd be colonising space right now if it hadn't been for the Dark Ages. There was a period of over eight hundred years where science was heresy and anathema. Maybe they didn't have that set-back."

- ✓ The Dark Ages (476 to 800 A.D. or 500-1000 A.D.) – a term that is obsolete and maligned by scholars – occurred primarily in post-Roman Empire central and western Europe (the space-opera equivalent is the Long Night).
- ✓ Sagan's claim is fallacious unless one considers Europe and humanity to be congruent to the exclusion of the rest of the world (see Elder Race, 5 Diplomacy, p. 1153, *infra*).
- ✓ In fact, other people, especially the Chinese, made technological advances up to the end of the 11th or 12th Century then regressed technologically under the political, religious and cultural suppression of reactionary elites. The reactionary elements intensified after European ships reached Japan and China, and especially in shogunate Japan where technology and Christianity were threats to the domination of the Samurai.
- ✓ This Eastern regression had no connection at all to the European 'Dark Ages' and thus, there is no way to seriously suggest that the European spirit of tinkering, or the Enlightenment could have occurred, in say, the 6th or 7th Century Europe; rather, it was the emergence – Renaissance, the name that the people of the time gave to themselves, in fact means rebirth – from the Church-dominated, decentralized authority and culturally compartmentalized, desperately poor Europe of the 12th through 14th Centuries that made the Renaissance seem like spring had come. It was a reaction.

Will technology will continue indefinitely to progress exponentially – as it has appeared to do in the last two centuries, or is there a terminal point to technological development? Will the progress of technology slow when we have perfected all applications of classic physics and reach an intuition barrier in quantum mechanics? What will technology look like on Day Million, approximately 721 years from 2018? Will the difference between their technology and ours be comparable to the difference between our technology and that of the year 1293 C.E.?

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*"Grok means to understand so thoroughly that the observer becomes a part of the observed – to merge, blend, intermarry, lose identity in group experience. It means almost everything that we mean by religion, philosophy, and science – and it means as little to us (because of our Earthling assumptions) as color means to a blind man."* – Robert Heinlein, Stranger in a Strange Land (1961)

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**Grokking:** Merriam-Webster online dictionary at *grok*: to understand profoundly and intuitively. Notably the Wikiquote page shows a silhouetted couple in front of a large full moon. Whatever Heinlein thought, half a century later his term is used in IS, for example, "logstash grok pattern" and "Grok QS" on the StackOverflow forums.

"Grok" – a Martian word invented by Robert Heinlein in Stranger in a Strange Land (1961) means an understanding of the universe or anything in it that is beyond numbers and names; it is the level of understanding where numbers and names become a feeling, an intuition, an almost superlative, mystical edge understanding, without being mystical. It is perhaps what NOVΛ

writer Kate Becker seeks in "quantum intuition," (see full feature quote, 4 Colleges, p. 505, *supra*); quantum physics is currently just numbers and names; to 'grok' is to have an illustrative-intuitive understanding and *then go beyond that*. The vastness of the universe is not something that humans *grok*, the scale of it compared to the Earth and the brief-flicker lifespans of humans, leaves us out in the cold.



- ✓ Merriam-Webster online dictionary defines *technology* as: **1:a** the practical application of knowledge especially in a particular area, **1:b** a capability given by the practical application of knowledge; **2:** a manner of accomplishing a task especially using technical processes, methods, or knowledge, **3:** the specialized aspects of a particular field of endeavor.[10][Definitions]

Note that the dictionary definitions of technology (and most definitions of technology) *do not exclude* the use of 'magic' in most current fantasy or sci-fantasy world settings; that is, whatever 'magic' is or by whatever unknowable rules it operates, it only needs to be a knowledge that can be practically applied, a capability. Thus, magic in fantasy stories and games written by modern people usually substitutes for technology (e.g., non-fire illumination). And like substitute teachers in primary school, a few are very good, most are banal and benign, some are useless.

- ✓ One quality that I have always thought magic should have in a fantasy setting – to distinguish it from science and technology – is some capricious inconsistency; magic should be temperamental, like ancient gods, but display *just enough* consistency to make it worth the effort by those seeking power and to elevate practitioners above the masses. See Majik discussion in 3 Information, p. 1361, *infra*, and discussion of Clarke's Three Laws below.

Now compare the Merriam-Webster online dictionary definition of *technology* (above) to their definition of *science*: **1:** the state of knowing: knowledge as distinguished from ignorance or misunderstanding, **2:a** a department of systematized knowledge as an object of study, **3:a** knowledge or a system of knowledge covering general truths or the operation of general laws especially as obtained and tested through scientific method. Science then includes specifically the concept of 'systemized knowledge' which is absent from the definition of technology.

Thus, because technology only requires knowledge applied to a practical application (e.g., engineering, invention), such knowledge can be without context or system (e.g., bows and catapults did not require systemized knowledge, only observation of properties and practical application, what Kate Becker called classical physics intuition, 'naïve physics'); whereas science requires systemized knowledge with no practical application requirement (e.g., knowledge for its own sake). Thus, science-fiction literature can have 'technological barbarians' or 'barbarians with the Bomb.' However, given the historical context in which the term technology was coined (see EN 2, p. 697, *ut supra*), the modern common usage (and science-fiction assumption) does imply that technology is backed by systemized knowledge leading to practical application.

- ➢ Intonation of the Three: Perhaps this is a good place to solemnly recite Arthur C. Clarke's Three Laws. Put your left foot forward, raise your right hand, look up to the sky, and *solemnly repeat after me*...

  1. When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong;

2. The only way of discovering the limits of the possible is to venture a little way past them into the impossible; and most famously,
3. Any sufficiently advanced technology is indistinguishable from magic.

There is a corollary of Clarke's Third Law, of uncertain origin (sometimes credited to Niven, sometimes to Pratchett, and possibly from neither): Any sufficiently advanced magic is indistinguishable from technology, a variation of which is noted on TV Tropes and stated in a 2008 comic called "Genius Girl": Any sufficiently analyzed magic is indistinguishable from science!



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*"It seems to me that the most important scientific content in modern science fiction are the impossibilities."*

– James Blish, The Tale that Wags the God (1987) (Kindle Loc. 627-628)

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*"For a successful technology, reality must take precedence over public relations, for Nature cannot be fooled."* – Richard P. Feynman, U.S. Physicist [11]

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**Technopower:** The Technology Power must be activated to advance technology. The Technology Power must be activated for the following purposes:

1. Basic Research,
2. Develop Application,
3. Patent Prosecution,
4. Reverse Engineering.

Technology is a cultural effort and is never centered in any place (even if there is a College), therefore, a Scene is rarely required to activate the Technology Power and the Technology Power *cannot fail due to inactive Constructural Elements*. The exception to this is activation of the Technology Power for the purpose of Reverse Engineering, which is location specific and requires a Scene *but not an Act*. Activation of the Technology Power for the purpose of Research requires one Act and for the purposes of Development or Patent Prosecution, requires two Acts.

- Copenhagen Interpretations: The activation of a Writ based on the Technology Power by actualization of a Fuzzy Group may be used to satisfy the Interpretation requirement of a Technology Power activation on the same Regular Turn, for any purpose. A successful Patent must be used to satisfy the Interpretation requirement for the Technology Power on the turn that the Patent is successfully prosecuted, but may not be used for that purpose *at any subsequent time*. Of course, in the event of the failure of the Patent, or the unavailability of a Writ, the News Event is the default Interpretation and must be provided with the Regular Turn actions. Just in case. A Writ may not depend in any way on a Patent.
  - ✓ "Maxel, you know I love you and nothing can change that. But I do need to give you once a thorough head washing. So stand still. The impudence with which you assert time and again that the Copenhagen interpretation is practically universally accepted, assert it without reservation, even before an audience of the laity – who are completely at your mercy – it's at the limit of the estimable […]. Have you no anxiety

about the verdict of history? Are you so convinced that the human race will succumb before long to your own folly?" – Erwin Schrödinger, Letter to Max Born (October 10, 1960), quoted in Walter John Moore, A Life of Erwin Schrödinger (1994), p. 342.

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*"In the temple of science are many mansions, and various indeed are they that dwell therein and the motives that have led them hither. Many take to science out of a joyful sense of superior intellectual power; science is their own special sport to which they look for vivid experience and the satisfaction of ambition; many others are to be found in the temple who have offered the products of their brains on this altar for purely utilitarian purposes. Were an angel of the Lord to come and drive all the people belonging to these two categories out of the temple, the assemblage would be seriously depleted, but there would still be some men, of both present and past times, left inside."* – Albert Einstein

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**Temples of Science**: Like a hyperbolic cube, which exists in some direction other than the three dimensions we know, technology in GGDM civilizations exists in some other direction from the Public and Galactic Spaces. Technological development in GGDM takes place on two surfaces, the Public Space and the Era Matrix (generally hereafter, "The Matrix" or "Matrix"); Research Pieces are placed on the Public Space and migrate to Developments placed on the Era Matrix. Both eventually lead to the 'Technology Interpretation' of the game, Patents, which allow positions to do very interesting things and shape the physical laws of the in-game universe.

- ✓ "Marie Curie is, of all celebrated beings, the only one whom fame has not corrupted." – Albert Einstein (does Einstein think that fame has corrupted him?).
- ✓ "Meanwhile, a new industry began developing, based on radium. The Curies did not patent their discovery and benefited little from this increasingly profitable business. ... Having received a small scholarship in 1893, she returned it in 1897 as soon as she began earning her keep. She gave much of her first Nobel Prize money to friends, family, students, and research associates. In an unusual decision, Curie intentionally refrained from patenting the radium-isolation process, so that the scientific community could do research unhindered. She insisted that monetary gifts and awards be given to the scientific institutions she was affiliated with rather than to her. She and her husband often refused awards and medals. Albert Einstein reportedly remarked that she was probably the only person who could not be corrupted by fame." – from Wikipedia article, "Marie Curie," captured November 2, 2018.
- ✓ "Much has changed in the conditions under which researchers work since Marie and Pierre Curie worked in a drafty shed and refused to consider taking out a patent as being incompatible with their view of the role of researchers; a patent would nevertheless have facilitated their research and spared their health." – Nanny Fröman, "Marie and Pierre Curie and the discovery of polonium and radium," nobelprize.org, captured October 31, 2018.

*"At the dawn of religion, all the knowledge of a particular community fitted into a spiritual framework, based largely on religious values and ideas. The spiritual framework itself had to be within the grasp of the simplest member of the community, even if its parables and images conveyed no more than the vaguest hint as to their underlying values and ideas. But if he himself is to live by these values, the average man has to be convinced that the spiritual framework embraces the entire wisdom of his society. For 'believing' does not to him mean 'taking for granted,' but rather 'trusting in the guidance' of accepted values.*

*That is why society is in such danger whenever fresh knowledge threatens to explode the old spiritual forms. The complete separation of knowledge and faith can at best be an emergency measure, afford some temporary relief. In western culture, for instance, we may well reach the point in the not too distant future where the parables and images of the old religions will have lost their persuasive force even for the average person; when that happens, I am afraid that all the old ethics will collapse like a house of cards and that unimaginable horrors will be perpetrated. In brief, I cannot really endorse Planck's philosophy, even if it is logically valid and even though I respect the human attitudes to which it gives rise."*

– Wolfgang Pauli (1927), quoted by Werner Heisenberg in Physics & Beyond (1971)

**Empirical Mythology:** The nexus and commonality of all human religions is a set of mythopoeic stories and related philosophies separating us, shielding us from the Existential Void.

- ✓ "The big bang is our modern scientific creation myth." – Carl Sagan, Cosmos, Episode 10, see full feature quote, 4 Fallen to Earth, pp. 1552-1553, *infra*.

The current 'scientific' understanding of reality – Dark Matter, Higgs Boson 'God Particle,' Quantum Entanglement, Quantum Computing, String Theory, M-Theory, the Big Bang, that dominate the scientific news – is so divorced from the common perception of 'reality' that the scientific reality can be seen as an 'empirical mythology' of Western Civilization; that is, we know it is based on 'hard science' (would we think the same if it were based on sociology?) but for most daily purposes, it might as well be imaginary, yet at the same time, it is part of the Western worldview.[12] In this way then, why is modern science (esp. physics) different than religion? What is the difference between a molecule of Trinitrotoluene (TNT) and an ancient Greek myth to a 13th Century European Monk? What is the difference between the two to a late 20th century 8th grade student?

- ✓ Merriam-Webster online dictionary at *myth*: **1:a** a usually traditional story of ostensibly historical events that serves to unfold part of the worldview of a people or explain a practice, belief, or natural phenomenon, and **3:** a person or thing having only an imaginary or unverifiable existence.

Functionally, they are the same for *social purposes*, except that science offers material technology and not morality and afterlife (see also Why Not the Afterlife discussion, 4 The Streams of Time, p. 103, *supra*). They are also the same because a TNT molecule goes beyond physics that is intuitive to us (see Kate Becker feature quote, 4 Colleges, p. 505, *supra*). Anything beyond the human intuitive grasp gained from being born on the Earth is mystical, mythical. This is our cognitive barrier until, as Kate Becker may have suggested, we gain intuitive understanding (intuition) of things that are not everyday objects or experience on Earth.

- ✓ There was a slight tendency during the *early* Cold War (during the time of utopian dreams) to assume that scientific endeavor (presumably for the benefit of mankind's future) was inherently moral and to impute that morality individually upon the leading theorist, researchers and engineers of new technologies. I certainly got this impression in my youth. As the world has moved on (and I have moved on, grown ever crankier and more curmudgeonly), Cold War realization has separated technology and science as a tool of humanity from individual morality, both inside and outside of science (e.g., Einstein's "Temple of Science" quote, *ut supra*, p. 690), so I think the idea has faded into the background, but still sometimes emerges in modern movies about scientific and technological pioneers of the early and mid-20th Centuries.

To the people of the 18th and 19th Centuries, electricity, gravity, microbiology, evolution, geology and new chemical knowledge must have seemed this way, as well, near mystical concepts not relevant to their lives, scientific language describing esoteric nature not part of the common experience. ***Technology makes science the common experience***. Today, we have technology based on what was esoteric in the 18th and 19th Centuries, we nod our heads knowingly about electricity, electronics, car engines, cell phones, orbital satellites and rocket launches, going to the moon and Mars, but rarely have much grasp of the science and engineering behind them.

- ✓ "We live in a society exquisitely dependent on science and technology, in which hardly anyone knows anything about science and technology." – Carl Sagan.

Technology that affects people's lives on a daily basis at least cognitively 'normalizes' science within their cultural reality, even if not understood. Though it is difficult to understand what technology might come from understanding dark matter, "God particles," and such, the next frontier of mythology to technology seems to rest in quantum entanglement, when engineers find a use for it in computing and communications.

- ✓ "Do agnostics think that science and religion are impossible to reconcile? The answer turns upon what is meant by 'religion.' If it means merely a system of ethics, it can be reconciled with science. If it means a system of dogma, regarded as unquestionably true, it is incompatible with the scientific spirit, which refuses to accept matters of fact without evidence, and also holds that complete certainty is hardly ever impossible." – Bertrand Russell, "What is an Agnostic" (1953).
- ✓ See also discussion in Patent Defect, 3 Patents, p. 752, *infra*.

- ➢ Easter Bunny: While most Westerners don't believe in Santa Claus or the Easter Bunny after about 2nd Grade, most adults continue to believe in some mumbo-jumbo version of the afterlife, even while claiming to be educated, intelligent adults. This insistence is like a child insisting that they believe in Santa after finding his gifts hidden in a parent's closet before Christmas. If Santa Claus or the Easter Bunny were mentioned in the Bible, would you still believe in them? So what are we teaching our kids? 'Ha, ha, I know that Santa Claus and the Easter Bunny are lies and I am therefore an adult, but I still cling to the idea of the afterlife because the priests tell us so?'
  - ✓ "I think I've gone through quite an ordinary series of steps in life. I began as most children began, with God and Santa Claus and the tooth fairy and the Easter Bunny all being about the same thing. Then I went through the things that I think sensitive people go through, wrestling with the thoughts of Jesus – did he shit? Did he screw?

> I began to dare to believe that God wasn't some white beard. I began to look upon the miseries of the human race and to think God was not as simple as my mother said. As nearly as I can concentrate on the question today, I believe I am God; certainly you are, I think we intelligent beings on this planet are all a piece of God, are becoming God. In some sort of cyclical non-time thing we have to become God, so that we can end up creating ourselves, so that we can be in the first place. ... My own feeling is that relation to God as a person is a petty, superstitious approach to the All, the infinite." – Gene Roddenberry as quoted by Terrance A. Sweeney, God & (1975).

I believe Mr. Roddenberry is talking about an epochal process where humans become their own First Cause or Prime Mover. This contains a paradox that would need to be resolved. His 'empirical mysticism' was a belief in a human-centric ontological paradox. See Rose Tyler's "Bad Wolf" speech, Dr. Who "The Parting of the Ways" (2005), "I am the Bad Wolf, I create myself..."

- ✓ "After looking into the heart of the TARDIS, the Time Vortex itself filled Rose Tyler, who then temporarily became the Bad Wolf entity. She scattered the two words throughout time as a sign to herself that she was linked to the Doctor, *creating a looped ontological paradox*." – from Tardis Wiki article "Bad Wolf (entity)," captured August 22, 2019 (emphasis added).

- Biblical Miracles: A common argument that I heard many times in my youth was the dismissal of Biblical miracles by pointing out that we could do the same now with relative ease. Virgin birth? Can be done. Routinely if we wanted, we do it in animal breeding via artificial insemination. Destroying a city with a column of fire from the sky. Has been done. Twice.[13] Usually these arguments were offered in support of 'ancient astronaut' theories, but ancient astronauts aside, that doesn't mean they are not correct factual observations (and it is simply a matter of what we think they 'mean' and whether the meaning withstands scrutiny).[14]

  - ✓ Though I do not know the title, I remember reading a description of a near future sci-fi movie where a modern corporation conspired to create a second 'Virgin Mary' out of an unwitting teen girl to contrive and control a 'second coming' of Christ on Earth for their own marketing purposes. Talk about cynicism!

  In my youth, it was frequently discussed in UFO-conspiracy circles how virgin birth really isn't that amazing or difficult in modern terms; as most events described in the Bible, other than creation of the universe and the Earth, are now within our scientific and technological purview. Inevitably, people connected the atomic bombings of Japanese cities in 1945, for example, with the legendary destruction of Sodom and Gomorrah; 'fire and brimstone' destruction has been reinterpreted in modern terms as some sort of nuclear strike.

  Biblical literalist counter this modern 'explaining away' of miracles that they are still miracles because they happened well before humans had the ability to do the same, much less understand. They maintain that our non-technological ancestors could not have thought of these things if they didn't happen, and therefore, the stories are still true. This latter however, ignores the wild stories of other religions that are now considered myths (e.g., Greek and Norse mythology), and implies then that those stories must be equally true.

  But implicit in this argument is an admission that humans have by some measure, rapidly advanced to power that would have been (and was) considered god-like by our not-so-distant

ancestors: Any *non-human* destruction of all life on Earth or destruction over a massive area would be (and still is) called an 'act of God' (check your insurance policy, the words are probably in the fine print). Are humans and their actions not an act of God then? But see, that contradicts the creation stories. So we are not and have never been quite clear on that.



- Another Duality: It is of the greatest importance that science not become religion – something just a step or two beyond scientism (*Google it*); this argument is not about whether it is or is not, but about the phenomenon of modernity worldview that have effectively replaced one belief system with another, *sans* an intelligent creator (unless the Big Bang is/was).
  - ✓ "Science is not a perfectly rational system. It cannot be, it is a human construction of reality and, as such, must be imperfect. No scientific theory is absolute; none will ever arrive at 'truth.' All sciences are tentative interpretations of reality; there should be doubt and continual checking of empirical reality to discipline theory to better interpret and explain reality." – Frank Elwell, Macro Social Theory (2009), Kindle Edition, p. 21.
  - ✓ 'Intelligent design,' seemingly more palatable, is a branch of 'creation science' as identified by the Court in *Kitzmiller v. Dover Area School District* (400 F. Supp. 2d 707 (M.D. Pa. 2005)), also *Edwards v. Aguillard* (482 U.S. 578 (1987)), *McLean v. Arkansas* (529 F. Supp. 1255 (E.D. Ark. 1982)) re: teaching of 'creation science.'
  - ✓ Isaac Asimov probably had this same idea: "The barbarized inhabitants of the four kingdoms believe that the Foundation's technicians are magicians. Being unable to make these people understand the difference between magic and science, the technicians finally give up and allow themselves to be worshipped as holy men." – from Wikipedia article, "Church of Science" (about an entity in Isaac Asimov's Foundation (1951)). The unnamed religion of the Church of Science has been called *scientism*.

Science educators do a premier job – when anyone is listening – of distinguishing science from religion (and such farces as 'creation science') by pointing out that science, unlike religious beliefs, does not have predetermined conclusions to which the empirical evidence will either be molded or ignored, science must always be able to be questioned and reexamined, for if science becomes definitionally the same as religion, then the 'creation science' pundits can cry to have evolution removed from public schools as a violation of the Establishment Clause of the First Amendment to the Constitution (they try to make this argument anyway – a form of intentional failure to understand – but it falls on deaf ears).

- ✓ "But he (Galileo) was not an idiot,... Only an idiot could believe that scientific truth needs martyrdom – that may be necessary in religion, but scientific results prove themselves in time." – David Hilbert quoted by Constance Reid, Hilbert (2nd Ed, 1996), p. 92.

Yet, the problem of duality which began in ancient times, has seemed to ever widen, especially in the last four centuries. Science cannot answer the questions which have concerned humanity the most from the beginning, and religion cannot compete in arguments with science, but can at least provide comfort if not answers to humanity's basic question. The two seem to be talking past each other (i.e. Thrasymachus and Socrates in Plato's Republic):

- ✓ "Science and religion ask different questions about different things. *Where religion addresses ontology, science is concerned with ontic description.* Indeed, it is what

Orthodox theologian David Bentley Hart calls their 'austere abdication of metaphysical pretensions' that enables the sciences to do their work." – Michael Robbins, "Atheists Used to Take the Idea of God Seriously. That's Why They Mattered." Slate Magazine, July 8, 2014 (emphasis added).

Which is why the debate is so murky, bewildering and irritating. Will there be a point in the future at which a holism is achieved?



- ✓ "So, there is a sense in which we build meta-systems above ourselves to fill in the space that we previously populated with an entity that was supposed to be the intentional designer, the creator (even though there isn't one) and because we – I don't necessarily mean we in this room, but we as a species – design and create one and then allow ourselves to behave as if there was one, all sorts of things begin to happen that otherwise wouldn't happen. ... [lengthy Feng Shui discussion sadly omitted here] ...

  So, my argument is that *as we become more and more scientifically literate, it's worth remembering that the fictions with which we previously populated our world may have some function that it's worth trying to understand and preserve the essential components of*, rather than throwing out the baby with the bath water; because even though we may not accept the reasons given for them being here in the first place, it may well be that there are good practical reasons for them, or something like them, to be there.

  I suspect that as we move further and further into the field of digital or artificial life we will find more and more unexpected properties begin to emerge out of what we see happening and that this is a precise parallel to the entities we create around ourselves to inform and shape our lives and enable us to work and live together. Therefore, I would argue that though there isn't an actual god there is an artificial god and we should probably bear that in mind. That is my debating point and you are now free to start hurling the chairs around!" – Douglas Adams, "Is there an Artificial God?" speech at Digital Biota 2, Cambridge U.K., September 1998 (transcript and audio recording of the more than one hour speech are available free at http://www.biota.org/people/douglasadams) (emphasis added).

  - "[Douglas] Adams described himself as a 'radical atheist,' adding 'radical' for emphasis so he would not be asked if he meant agnostic." – from Wikipedia article, "Douglas Adams," captured March 7, 2019.

➢ Frankenstein: Mary Shelly's 1818 novel Frankenstein (combining science, occult and romantic themes) firmly entrenched in human consciousness (e.g., Public Space in GGDM), transformed religious suspicion into the idea that rapidly developing human science and technology was making humanity parodies of the *ancient gods*; WWII and the atomic bombs completed the process, the space race and moon landings[15] cemented it.

- ✓ "Man is by nature unable to want God to be God. Indeed, he himself wants to be God, and does not want God to be God." – Martin Luther, "Disputation Against Scholastic Theology" (1517), Thesis 17.

This is, of course, consistent with the contention that God made man in his own image (Genesis 1:27). We might assume then that God doesn't want to be and cannot be anything other

than or less than God, so why would man (which makes it perplexing that his son was a human)? And why would God want God to be God if he were man? Additionally, it is also no small matter that the Abrahamic God is mostly associated with punishment (i.e. damnation), so humans don't want God to be God. If, as Brian Aldiss argues, we accept Mary Shelly's novel as the first true work of science-fiction (Johannes Kepler's Somnium is also a candidate, but lacks an overt, intentional act), then arguably it follows that science-fiction's development is or has been an expression of this very same suspicion or idea about humanity's quest for godhood.



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*"In Nietzsche we find the full power and terror that atheism is capable of, for Nietzsche scorned mere unbelievers, who, [David Bentley] Hart writes, 'do not dread the death of God because they do not grasp that humanity's heroic and insane act of repudiation has sponged away the horizon, torn down the heavens, left us with only the uncertain resources of our will with which to combat the* ***infinity of meaninglessness that the universe now threatens to become.****'*

*Nietzsche's atheism is far from exultant – he is not crowing about the death of God, much as he despises Christianity. He understands how much has been lost, how much there is to lose. As he writes in The Gay Science: 'The event itself is far too great, too distant, too remote from the multitude's capacity for comprehension even for the tidings of it to be thought of as having arrived as yet. Much less may one suppose that many people know as yet what this event really means – and how much must collapse now that this faith has been undermined because it was built upon this faith, propped up by it, grown into it; for example, the whole of our European morality.'*

*Nietzsche realized that the Enlightenment project to reconstruct morality from rational principles simply retained the character of Christian ethics without providing the foundational authority of the latter. Dispensing with his fantasy of the Übermensch, we are left with his dark diagnosis. To paraphrase the Scottish philosopher Alasdair MacIntyre, our moral vocabulary has lost the contexts from which its significance derived, and no amount of Dawkins-style hand-waving about altruistic genes will make the problem go away. ...*

*The point is not that a coherent morality requires theism, but that the moral language taken for granted by liberal modernity is a fragmented ruin: It rejects metaphysics but exists only because of prior metaphysical commitments. A coherent atheism would understand this, because it would be aware of its own history."*

– Michael Robbins, "Atheists Used to Take the Idea of God Seriously. That's Why They Mattered.," Slate Magazine, July 8, 2014 (emphasis added)

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**Modernity Machines:** cf. Wolfgang Pauli feature quote, *ut supra*, p. 691 and Douglas Adams quote, *ut supra*, p. 695. Consider the following in light of Michael Robbins' characterization of "Nietzsche's atheism" (*ut supra*):

- ✓ "This idea of evil was almost entirely new. Before the Enlightenment, most theological and philosophical thinking about the nature of evil rested on the assumption that evil deeds are the product of strong passions – pride, ambition, envy, hatred. During the Enlightenment and into the 19th century, many Western thinkers suggested that evil grew less out of man's dark passions than from unjust social conditions, and many assumed that it would eventually be eradicated through social and political transformation. By [Hannah] Arendt's time, that confidence had been shattered by the terrors of Nazi-occupied Europe, Japanese-occupied China, and the Soviet Union. Secular intellectuals were left groping for new explanations, and to many it appeared that Arendt had found one. The killing fields of Cambodia, Rwanda, and Bosnia have

kept the question – and Arendt's answer – very much alive. 'We have a sense of evil,' Susan Sontag has said, but we no longer have 'the religious or philosophical language to talk intelligently about evil.'" – Stephen Miller, "A Note on the Banality of Evil," Wilson Quarterly, Autumn 1998 (available free online).

- See further discussion, 1 Special Operations, EN 9, pp. 1282-1283, *infra*.



Mr. Miller's assertions about the Enlightenment are supported and clarified by Prof. Lisa Feldman Barrett, one of the leading researchers of emotions:

- ✓ "The concept of 'Emotion' itself is an invention of the seventeenth century. Before that, scholars wrote about passions, sentiments, and other concepts that had somewhat different meanings." – Lisa Feldman Barrett, How Emotions Are Made: The Secret Life of the Brain (2017).
- ✓ "The word 'smile' doesn't even exist in Latin or Ancient Greek. Smiling was an invention of the Middle Ages, and broad, toothy-mouthed smiles (with crinkling at the eyes, named the Duchenne smile by [Paul] Ekman) became popular only in the eighteenth century as dentistry became more accessible and affordable." *Id.*[16]

It thus appears that the modern concept of 'evil' *coincides with* the development of the concept of 'emotions' which Prof. Barrett maintains were not exactly the same as "passions, sentiments and other concepts" on which previous ideas of 'evil' were based. Evil previously was immoral excess of passions expressed in acts (*actus rea*) without reference to emotional states (*mens rea*). This is similar to the parallel development of pinhead vs. godhead in Western literature; the idea of the Enlightenment is that we can shine light in previously dark places, and one of those places included what goes on inside people's heads. A very Christian concept that became modern mental sciences. Evil, emotions, godhead, enlightenment are all part of the bundle of *modernity*.

- ✓ See Godhead and Pinhead discussion, 1 The Sidereal Stage, p. 110, *supra*.
- ✓ See also discussion of the relationship of Christianity and mental health professions, Dream Police, 1 Dreamtime, p. 132, *supra*.

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*"Animals have come to mean so much in our lives. We live in a fragmented and disconnected culture. Politics are ugly, religion is struggling, technology is stressful, and the economy is unfortunate. What's one thing that we have in our lives that we can depend on? A dog or a cat loving us unconditionally, every day, very faithfully."* – Jon Katz

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Endnotes.

[1] Commentary: We do not consider birds to be sapient, but they definitely manipulate the environment for their comfort from nest-building to termite-fishing. Thus, the word "sentient" is used here instead of "sapient." While they may not be toolmaking – and that is probably a definition of technology, tool making – they are tool using.

[2] Commentary: The term 'technology' was first used in 1859 (Merriam-Webster dictionary), which approximately coincides with the beginning of the 'Age of Invention,' the modern scientific era and the industrial revolution. Science-fiction literature began shortly afterward. Technology has been retroactively applied to inventions from times long before the term even existed; inventions that ancestors certainly did not think of as 'technology.'

[3] Citation: "P.J. Snyder reviewed Saturn 3 in Ares Magazine #2 and commented that 'Saturn 3 is a sloppy, shoddy production, of the sort that someone out there thinks sf fans just eat up. One hopes the producers and directors

working the genre will realize this audience demands more than a leggy blond being chased by a robot. They may have such limited visions, but the audience doesn't.'" – from Wikipedia article, "Saturn 3," April 25, 2020.

[4] Citation: "Buck Rogers at that time was not taken seriously by adults, but the kids loved it. During the 1930s, people who heard the term 'science fiction' would often refer to sci-fi as 'that Buck Rogers stuff,' and immediately would think of ray-guns and rocket ships and robots." – JonnyBaack (narrator), "Everything you need to know about Buck Rogers in the 25th Century (1979)," JonnyBaack YouTube Channel, November 27, 2018.



[5] Commentary: The founder of the science-fiction magazine industry – after whom its most famous award is named (and which Spinrad denigrates as a "literal popularity contest") – was a poor author and a sleeze who stiffed his writers, *yet he is honored for the idea*, for trying to make a living at it, and for his hobby-electronics pioneering.

[6] Commentary & Citation: The discussion in Dalton Trumbo's 1938 book (and later movie) Johnny Got His Gun is definitely on the 'not' side; parts of the 1971 movie were used in the video for Metallica's "One" (1988).

- ✓ Science-fiction musing has occasionally ventured into the subject of sapience without ambulation or manipulative ability. I recall a Stargate SG-1 episode that featured sapient creatures that could form human faces out of their crystalline form, but apparently had no ambulatory means or manipulative appendages. In a creepy ending to the 2006 Dr. Who episode, "Love & Monsters" featuring ELO's 1977 song "Turn to Stone," one of the hapless mortals has their life force preserved in a pavement stone with a face capable of expression and a voice. Star Trek and other science-fiction stories have liked the concept of a sapient amorphous blob that can take humanoid form through sheer will. But they are limited to creature-of-the-week episodes.

[7] Citation: "Thousands of years before the action of the novels, the inhabitants of Duat developed interstellar travel, and colonized other planets in their native galaxy. These other planets came to be called 'Daughter Worlds.'... A series of wars and the passage of time cut off Duat.... Among the daughter worlds only Lene retained any form of space travel, and only very primitive reaction engines. The war left Duat with a wildly varying climate, and because of this, over a thousand generations on Duat, the race diverged into two separate races, the Tanu and the Firvulag. The Tanu lived in the open highlands and grew tall and lithe. They were metapsychically latent and developed and employed torcs to raise them to a limited form of metapsychic operancy. The Firvulag who dwelt in the dark and wet lowlands grew small and hardy and were naturally operant, but most were much more weakly powered....
The divergent races were hostile to each other and together developed a highly ritualized battle-religion to formalize the war between them. When science advanced enough to allow for interstellar travel once again (by the daughter worlds), Duat was rediscovered and while the original race was shocked at the divergence of the races there from their own, it was then discovered that the torcs also worked well on most but not all the inhabitants of the daughter worlds. Certain (female) members of Lene, known as Shipspouses, developed a symbiotic relationship with interstellar organisms known as Ships which were capable of superluminal travel....
When the daughter race demanded that the Tanu and Firvulag discard their ancient battle-religion and rejoin the rest of the race, a small number refused to and chose to fight a final apocalyptic war to the end. The daughter race intervened to prevent this, and so the remaining Tanu and Firvulag fled with a sympathetic Brede in her Ship into another Galaxy to fight their Nightfall war to the end. Earth was chosen as the best planet capable of supporting the lives of the two races that the Ship, now dying from the immense strain of the Intergalactic jump, could reach before its death." – from Wikipedia article, "Saga of Pliocene Exile," (early 1980s series by Julian May), October 29, 2018.

- ✓ If any of this sounds vaguely like Earth: Final Conflict television series (1997-2002) ... which literally ripped off the ending of The Dark Crystal (1982) as the Season 4 series finale ...

[8] Commentary & Citation: I remember reading a science-fiction short story about an Earth ship discovering an interstellar empire that was conquered by medieval people who boarded an alien scout ship that landed in Medieval Europe. It was a quirky and amusing idea so I remembered it, but don't recall the author or the name of the work.

- ✓ Discovered Later: It appears that I may have read part of or something related to Poul Anderson's novel High Crusade (1960). I know I never read the novel version, so it must have been an excerpt or summary version that was part of a sci-fi short story anthology, but I don't know what book it was in now.

[9] Citation: Information taken from Wikipedia articles, "Anarchism" and "Ted Kaczynski," December 6, 2018.

[10] Citation: Definitions of technology from other sources:

- ✓ Dictionary.com at *technology*:
  1. the branch of knowledge that deals with the creation and use of technical means and their interrelation with life, society, and the environment, drawing upon such subjects as industrial arts, engineering, applied science, and pure science.
  2. the application of this knowledge for practical ends.

3. the terminology of an art, science, etc.; technical nomenclature.
4. a scientific or industrial process, invention, method, or the like.
5. the sum of the ways in which social groups provide themselves with the material objects of their civilization.

- ✓ Collins 2012 (from Dictionary.com) at *technology*:
  1. the application of practical sciences to industry or commerce
  2. the methods, theory, and practices governing such application *a highly developed technology*
  3. the total knowledge and skills available to any human society for industry, art, science, etc.
- ✓ American Heritage Science Dictionary (from Dictionary.com) at *technology*:
  1. The use of scientific knowledge to solve practical problems, especially in industry and commerce.
  2. The specific methods, materials, and devices used to solve practical problems.

[11] Commentary: Consider this in the context of such tug-o-wars between public relations, ethics, and science as nuclear energy, human cloning, artificial reproduction, testing on lab animals, stem cells, genetic manipulation.

[12] Commentary: No one should construe this as any claim that these things are actually make believe, made up, myths or any other such; if you think this is what was said here, go back and read the section again.

[13] Commentary: This is not to suggest that the victims 'deserved it,' or that we doled out 'divine punishment.'

[14] Commentary: This falls into the vein of arguments that are unfalsifiable but irrelevant. The ancient astronauts arguments in which these things were usually appended has nothing to do with the fact that we can do them now.

- ✓ A recent example are the comments by Rep. Steven King (D-Iowa): "'What if we went back through all the family trees and just pulled those people out that were products of rape and incest? Would there be any population of the world left if we did that?' he said in Urbandale, Iowa, according to video posted online by the Des Moines Register, which was first to report on the remarks Wednesday." (Clare Foran, "Steve King questions if there would be any population left if not for rape and incest," CNN, August 15, 2019). "The remarks came as King was defending not allowing exceptions for abortion in cases of rape or incest." *Id.* While Rep. King's remarks may be factually unfalsifiable, it is hard to see how they are relevant to or advance the cause he was allegedly arguing: According to him we should not allow exceptions to anti-abortion laws in cases of rape or incest because no humans would be left on Earth but for rape and incest? This is not an existential issue for humanity, and suggests that no female has ever consented to sex. And that's just for starters; women's groups objected loudly that it legitimizes violence and exploitation of women.

[15] Commentary: My grandmother lived through and witnessed some of the most momentous events in human history; she was a teen when her older brothers went off to fight in WWII (she described to me how her brother was called out to the front yard from a draft list by a mounted officer with a corporal leading extra horses). She never really talked about WWII (e.g., she may not have actually remembered Pearl Harbor) and I am not sure how much awareness she had of it in those years, but she often talked about The Depression years, her childhood.

- ✓ One day when I was young, I asked her if she remembered the moon landing. I was shocked by her response, she informed me that it never happened, that it was a Hollywood movie. Some door-to-door Jehovah's Witnesses had got to her and convinced her that we never landed on the moon, it was all a Hollywood hoax. She seemed to think it was a movie like Planet of the Apes (which she hated). I'd heard this moon-landing-Hollywood-government cover-up conspiracy before. My grandmother said that she didn't remember watching it on television and that she may have been working when it happened; however, she retired from Sylvania and became a housewife around 1968 and the moon landing was in 1969. She may have meant that she was in the kitchen, the television was often on when she was working in the kitchen.
- ✓ Putting aside any of the arguments about whether or not the moon landing happened, one has to ask why some people want to believe or go about claiming that they believe we never landed on the moon? Is it perhaps that humanity must be contained to the Earth for their beliefs to work? That we must deny humanity's greatest technical achievements to keep us in our place submissive to religion and clerical power? Is it simply an exercise in power? Do they think they gain something against the secular authority of the U.S. government or the scientific worldview by claiming that these things have been disproven as hoax, never happened? They want to dial the clock back three centuries.

[16] Citation: cf. "The Duchesse d'Abrants said of the young Joséphine 'Her teeth were frightfully bad,' ... 'but when her mouth was shut she gave the appearance especially at a few paces distance of a young and pretty woman.' Because of her black teeth, Joséphine taught herself to laugh with closed lips." – from Encyclopedia of Trivia, "Joséphine de Beau-harnais," February 9, 2020.