Table of Contents

See Appendix EPAT1 – The Existential Patents
See Appendix EPAT2 – Existential Patents Quick Summary
See Appendix TECH – Technology Progress

"If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of everyone, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me.

That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density at any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. Inventions then cannot, in nature, be a subject of property." – Thomas Jefferson [1]

Learning to Make Fire: Isn't there something very odd about the nature of information – something profound and sublime that we have rediscovered over the last two centuries? That there can be more of something without anyone being lessened by it – sort of like procreation of life except that information doesn't have the same relationship apparently to the arrow of time. There is, of course, a well-established connection between life and information, that is, genes, learning, civilization, sensory processing, psychogenesis, and the abstractions of sapience and thus, in a – I guess – neo-Platonic sense, it is not surprising that they share the same properties.

✓ If I email you a document, I am not lessened by it, in fact, I may be better off, because if mine is accidentally deleted, you may return the favor rescuing me.

And as we discovered in the last century, information exists in a very different framework in our universe. Which probably means that we exist in a different framework in our universe as well. See additional discussion, 2 Expansion, pp. 890-897, *infra*, see also Order of Genesis discussion, 1 Order, p. 522, *supra*. It seems/feels like there is something about it right there in front of us, but we cannot yet grasp it.

Obviously, everyone learned to make fire eventually, and none were lessened for it, except perhaps those whose original power and position came from holding the exclusive secret of making fire and those who were careless.

✓ Our mythopoeic ancestors inherently recognized and tried to explain – in mystic ways – the nature of information. It is no light coincidence that there were ancient gods, spirits and such representing fire, knowledge, invention, light, teaching, education, craft. But rarely do we grasp or express the importance of this in development of civilization, rather, we tend to be *dismissive and derisive toward pre-monotheistic religions* when not presented as adventure-fiction trope (e.g., Jason and the Argonauts (movie 1963, miniseries 2000), Clash of the Titans (1981, 2010), Thor (2011), Ulysses (1954), etc.). Adventure-fiction stories are non-threatening and can be dismissed.

Ideas and information tend to be indifferent to long term monopolization. Ideas and information are not zero sum. Power of any kind that depends on exclusive knowledge is tenuous at best (as

Mr. Spock noted, military secrets are the most fleeting kind, ST:OS "The Enterprise Incident"); for example, high school students in Australia have manufactured Martin Shkreli's $750 per dose Daraprim using non-industrial school chemicals, processes and equipment, for just $2 per dose (Fiona Macdonald, "Students have made Martin Shkreli's $750 drug in their chem lab for just $2," sciencealert.com, December 2, 2016). The purity of their product was confirmed spectrographically in a lab, presented to the Royal Australian Chemical Society, and published online.[2]

> *"You can't connect the dots looking forward; you can only connect them looking backwards. So you have to trust that the dots will somehow connect in your future. You have to trust in something – your gut, destiny, life, karma, whatever. Because believing that the dots will connect down the road will give you the confidence to follow your heart even when it leads you off the well-worn path; and that will make all the difference."*
>
> – Steve Jobs, Stanford University Commencement Speech, June 2005
> (video available on YouTube)

Patent Prosecution: Patent Prosecution is the process by which the connectivity of all of the Applications in the Patent are tested on the Era Matrix.

➤ Connecting the Dots: During the final processing of the Patent Application, the Concierge will check to see if all of the Applications listed on the Patent Theory section (by location) are connected. Only unconnected Applications will be tested; previously connected Applications are ignored. The base chance of connecting any two Applications is 50%. The connectivity of all listed Applications will be tested on the Era Matrix even if the Patent ultimately fails. Once any two Applications are connected, they are permanently connected.

➤ Stamp of Approval: If all Applications on the Patent are connected on the Era Matrix, forming a line exactly in the order specified in the Theory (and approved by the Concierge), the Patent is successful and a new technology is introduced into the game. It is possible for a position to submit a Patent for links that have all already been tested, and thus have an automatic Patent (after Concierge approval), however, as indicated in the following Eras section, that may not always be a good strategy. A new Patent may be used on the Regular Turn after it is approved and also must serve as the Interpretation (but not published on the forums) for the Technology Power activation for the purpose of Patent Prosecution on the Regular Turn of the Patent's approval.

➤ Patently Baaad: The Patent will fail if any two Applications fail to connect. A failed Patent cannot be used as an Interpretation on that Regular Turn; instead, the News Event required when submitting a Patent, see Patent Process, 1 Patents, p. 728, *supra*, will be used. Connections established by the Patent check will not be lost by the failure of the Patent.

A failed Patent may be submitted again on any subsequent turn by *another activation of the Technology Power* for the purposes of Patent Prosecution. A position may alter or change the failed Patent prior to resubmission, and each Patent Application will be treated by the Concierge as a new Patent Application for review and balancing purposes. If a link between Applications is tried enough times, it will eventually connect, and the connection only needs to be made once.

- ✓ Modification and resubmission are necessary for players to be able to 'invent' new technologies to move the game. This game does not use a 'technology tree' and there is no 'ultimate,' final, top-level technology.

- ✓ Successful Patents are 'locked' and cannot be changed – ever – or disrupted.

➢ Back to the Drawing Board: A Patent prosecution is different from a Development Attempt in that it will not continue automatically from turn to turn until successful or disrupted. However, Patents don't cost RPs and cannot be disrupted.

> **Capt. Kirk:** *All right, Harry, explain. How did you get here? We left you in custody after that affair on the Rigel mining planet.*
>
> **Harry Mudd:** *Yes, well, I organised a technical information service bringing modern industrial techniques to backward planets, making available certain valuable patents to struggling young civilisations throughout the galaxy.*
>
> **Capt. Kirk:** *Did you pay royalties to the owners of those patents?*
>
> **Harry Mudd:** *Well, actually, Kirk, as a defender of the free enterprise system, I found myself in a rather ambiguous conflict as a matter of principle.*
>
> **Mr. Spock:** *He did not pay royalties.*
>
> **Harry Mudd:** *Knowledge, sir, should be free to all.*
>
> – Star Trek, "I, Mudd" (1967) **3**

Letters Patent: A Patent is the property of the position that created it and is available for the exclusive use of that position. A Patent is secret – not published on the forums (one of the advantages of having a Concierge run the game), and the successful Patent serves as the Interpretation on the Regular Turn of its approval (only). An approved Patent may never be changed by any position or destroyed and is unaffected by other game events (except *Uber Alles*); very few technologies have ever been permanently lost in the troubled course of human history.**4**

- ✓ If you search Google for 'lost technologies' there are a few dozen (mostly clickbait) sites that list 10-15 technologies that have been lost. Most famous of the lost technologies is Greek Fire of the Byzantium Empire, others include Damascus Steel and the method for making Stradivari violins. There is also an article on Gizmodo and forum discussions on Quora. Some point out that lost technologies may not really be lost, but exist in different forms in modern times, or that modern technology has already far surpassed them. Thus, it is not impossible in GGDM for this to occur, but rarely.

Patents may be affected by later Patents (such as COT Patents), and may become effectively obsolete (see Eras). Patents may be *stolen* by Special Operations Black-ops (see specific discussion in Fuzzy Ops, 3 Special Operations, pp. 1306-1307, *infra*), and may also be shared with other positions under the proper conditions (e.g., through MegaCorporations, see 2 Commerce and 2 Corporations, generally, *infra*).

- ✓ Due to the nature of information (which Thomas Jefferson pointed out, *ut supra*), Patents are not lost when 'stolen,' but rather, 'shared involuntarily.' Don't try to argue that in criminal court though.

If other positions reverse engineer or 'inadvertently' create similar Patents, their Patents are for their exclusive use, even if everyone has basically the same Patents. Even Existential Patents are

'exclusive' to their owners, and can be modified by COT or ET Patents so that the technology eventually differs from others.

- ✓ And of course, it is well known that the Soviet Union stole the atomic bomb information from Los Alamos (the Soviets had a whole spy network, there were about a dozen people involved); the Soviets exploded their first bomb in August 1949. How many billions did the Soviets save by stealing the design instead of doing it themselves? This issue is still being debated; the bomb was not stolen in one act, but was funneled to the Soviets in reams of technical information over several years. It took them years to build their own bomb when they had our information (partly, they lacked the material production infra-structure), avoiding the costly mistakes and dead-ends of our development process. What would have happened if the United States had retained sole possession of the atomic bomb for ten years before the Soviets matched? So much of the Cold War (e.g., bellicose behavior) is shaped by the fact that the Soviets got the bomb so easily and so soon.

"Act as if the maxims of your action were to become through your will a universal law of nature."

– Immanuel Kant, First Formulation of the Categorical Imperative

Patent Consistency: As all positions are governed by the same physical laws of the universe,[5] what one position can do with a Patent can be done equally by another. Once a Patent is success-fully prosecuted, the abilities granted by the Patent become a permanent part of the 'laws' of the game universe[6] (Sokal notwithstanding, see Alan Sokal feature quote, bottom of 3 Entropy, p. 249, *supra*) and are equally applicable to everyone who has a Patent granting those abilities, even if the Patent is secret. Another position could create a Patent to grant them the exact same, or very similar set of abilities by accident, observation or reverse engineering, though they may accomplish it in a different way.[7]

Creation in GGDM is like letting the genie out of the bottle – once loosed upon the game universe, that genie just won't go home; I suspect that God – by whatever name – has the exact same problem: Humanity must be so annoying. See genie discussion relating to nuclear weapons, Little Willie Won't Go Home, 1 Combat, p. 937, and the suitcase nuke discussion, 4 Combat, EN 14, p. 1002, *infra*. The Concierge will do his Kantian best to insure that the laws of the game universe remain constant, but entropy always wins in the end.

Whereas the physical laws of the universe are arguably the nearly perfect tyrant, in that they op-erate consistently, indifferently, every time, predictably, without fail, whether we understand them or not; but those same laws are not the ultimate tyrant, in that intelligent life finds ways to manipulate them, use them against each other, and ultimately circumvent them – we call it tech-nology – the application of engineering to theory.

Other Interpretations have the same effect of becoming a 'law' of the *game universe*, but in less permanent ways, in less universal ways, in *different* ways, than the Patent. See official interpre-tations at the conclusion of Five Types of Facts discussion, 1 Dreamtime, p. 137, *supra*.

- ✓ Patents are strong Nomic elements. The Nomic is a game designed by Professor Pe-ter Suber at Earlham College, Philosophy Department to demonstrate and explore the nature of "self-amending systems" and systemic logical hierarchies.

✓ Throughout GGDM, I point out that we are not placed here of our will, no one sought our consent (doing so is impossible) to be born. In other places, it is pointed out that things are created in GGDM by word, that the participants are universal legislators. GGDM has now reached the stage where participants are not only creating social interpretations, but creating the physical laws of the universe; you have reached the God-level where time and space do not matter (e.g., Robert Heinlein, Job: A Comedy of Justice (1984)). From there it follows that 'populations' in the game, the existence of the game universe, is not here by its own, or their own consent – you may think this is silly because they are not 'real' but that's another discussion moving into Tron (1982) movie territory – which pretty much just recreates the situation in which we – and all things we consider 'real' – find ourselves. That is the very essence of the simulation. When you were a child you dreamed of being a race car driver? But what you got was a trike or a bike with training wheels (or maybe a Big Wheel!).

"The received intellectual tradition has it that, in the sixteenth and seventeenth centuries, revolutionary philosophers began to curtail and reject the teleology of the medieval and scholastic Aristotelians, abandoning final causes in favor of a purely mechanistic model of the Universe."

– Ransom Johnson, Monte (2008), Aristotle on Teleology, pp. 23-24

Patently Off-limits: There should be no 'final,' 'ultimate,' or 'unbeatable' technology in the game. The Concierge and players should avoid viewing and treating game technology as a 'tree' or any sort of table, avoid the teleological view.**[8]**

✓ The game should also avoid 'freebees' (something from nothing) and retroactive effects of technologies in most cases; there must always be a cost, a limitation, and a counter (even if 'non-technological') or improvement to any technology in the game.

These are the 'what not to do with Patents' admonishments. It is offered in the same vein of the Keep the Sand in the Sandbox comments in 2 Dreamtime, p. 147, *supra*, to keep the game from veering into Monty Haul territory:

✓ "Mode: Monty Haul. Any campaign where the gamemaster doles out huge amounts of experience/treasure/power/other rewards. Usually becomes stupefyingly pointless after the player characters become the most wealthy/powerful beings in the universe." – Jason Sartin, The RPG Cliché List.

➢ Un-patentable: *Teleos* is Greek for 'final cause or end purpose'; the term teleology, coined in 1728 by Christian von Wolff, describes a process of defining things by their goal or purpose.

✓ For example, suppose you ask a young child, "what is a fork?" And the child replies, "It's for eating," or "It's for putting food in your mouth." These are teleological answers, instead of describing a fork as an eating implement, usually made of metal or plastic, about 6" to 8" long, with a thin metal handle, prongs at one end...

Teleology is thus the opposite of technical description employed by scientists and philosophers. Even calling a fork an 'eating implement' is a bit teleological as it describes the *end purpose* of the fork. But on some level, description of the end purpose is necessary; if I provide a technical description of something, you will ask what it is used for, to put it in context.

✓ Discussion of teleology in language (and avoiding such usages) is an attack, frankly, on the basic cognitive habits *relating to or taught by religion*. It is thus not surprising that little progress has been made against teleological speech outside of professional scientific journals. Teleology is really the first line of battle.

Perhaps the ultimate attack on teleological thinking (and the patronage system of Europe) is Voltaire's description of Professor Pangloss:

✓ "'It is demonstrable,' said he, 'that things cannot be otherwise than they are; for as all things have been created for some end, they must necessarily be created for the best end. Observe, for instance, the nose is formed for spectacles; therefore we wear spectacles. The legs are visibly designed for stockings; accordingly we wear stockings. Stones were made to be hewn and to construct castles; therefore my lord has a magnificent castle; for the greatest baron in the province ought to be the best lodged. Swine were intended to be eaten; therefore we eat pork all year round. And they who assert that everything is right, do not express themselves correctly; they should say that everything is best.'" – Voltaire, <u>Candide</u> (1759).

▪ See discussion of Gottfried Leibniz' 'best of all possible worlds', PANGLOSS DOESN'T VISIT OFTEN, 1 Fallen to Earth, p. 1495, *infra*.

In terms of in-game technology, the teleological view would be that there is an ultimate form of every technology that all preceding technologies existed to lead to the ultimate, final technology. This is the video game technology tree that GGDM rejects.

✓ I have determined that the purpose for which Microsoft products, especially MS Word and the Edge browser in the last few months, were created is to annoy me. Observe for instance that both programs freeze, crash, and do inexplicable things; therefore I get annoyed daily when using them, and that must be for the best end.

➢ Predecessor Technologies: The Existential Patents, which represent the base technologies of interstellar culture and which must be completed before progression to the 2nd Era (see Event Horizon, 1 Eras, p. 760, *infra*), function effectively as predecessor technologies for the 2nd and 3rd Era. Most or many of the 2nd and 3rd Era Patents will be improvements upon or related to 1st Era Existential Patents. For example, the 1st Era Warship is an Existential Patent that will serve as the predecessor (even though one is *not strictly required*) for the 2nd Era Warship Patent, even if no 1st Era Warships are constructed (and the game becomes a big group hug event). But at the same time, a position could skip the 2nd Era Warship Patent and possibly develop a new Era Warship in the 3rd Era. The Concierge should certainly take into account 'predecessor' technologies as appropriate, but structurally, GGDM is (intended to be) non-teleological.

✓ There is a technical argument for predecessor technologies used in the Stellar Conquest board game; e.g., copper metallurgy required somewhat advanced fire making ability and stone pottery, possibly charcoal production. Stellar Conquest also had 'predecessor discounts' – a mostly gamey gimmick to encourage players to follow one technology to the max (again, there might be some realistic argument, but mostly it was a design gimmick).

✓ The Chinese never had the wine press, thus never invented the printing press, though I am sure they could have if there was a pressing social need and a tinkering genius.

These are the sorts of arguments offered supporting technology trees in games. However, *not all pre-requisites are strictly technological*; it is notable for example, that the reusable rocket and vertical landing were developed by commercial space operators, not by NASA, or the EU Space Commission, or the Chinese space agency, it was developed because business minds realized how expensive and wasteful (and non-competitive) were one-use rocket lifters. As of 2018, I believe that no other space-capable nation has developed either commercial space providers, vertical landing or reusable rockets (in fact, Russians were mocking their own space program online after the FalconX Heavy launch).

> *"Teleology is like a mistress to a biologist: he cannot live without her but he's unwilling to be seen with her in public."* – J. B. S. Haldane

Patent Defect: Evolutionary biology is the area of study most plagued by and most aware of, the use of teleological language. Even when not intending to suggest teleology, the teleological concepts built into our language for millennia are nearly inescapable in evolutionary biology. As an anthropology student long ago, we were sternly warned to avoid and set aside teleological thinking as to the evolutionary process that led to humans; humans are not the 'ultimate' end or purpose, or even the inevitable result, of life and biological evolution on Earth, evolution didn't happen to create us.

The most common form of teleological thinking is the unspoken assumption of people that the purpose of life on Earth, and of all of evolution, *was humans* who are at the same moment, regarded as the final purpose and product of evolution. This is really just the merger of evolution with preexisting creationism; or the substitution of scientific evolution for the creation myth.

- ✓ "Many people who say they believe in God no longer mean a person, or a trinity of persons, but only a vague tendency or power or purpose immanent in evolution." – Bertrand Russell, "What is an Agnostic" (1953).

Humans need to continue to believe they are at the top of the heap, something special, without which, the Existential Void becomes so much more menacing (see Carl Sagan quote in Empirical Mythology, 1 Technology, p. 691, *supra*). Think about that.

- ✓ "We do not ask for what useful purpose the birds do sing, for song is their pleasure since they were created for singing. Similarly we ought not to ask why the human mind troubles to fathom the secrets of the heavens. The diversity of the phenomena of nature is so great and the treasures hidden in the heavens so rich, precisely in order that the human mind shall never be lacking in fresh nourishment." – Johannes Kepler, as quoted by Carl Sagan in Cosmos, Episode 13.

In respect to Mr. Sagan's scholarship, this is a good example of human-centric, teleological thinking, which is entirely consistent with the worldview (e.g., Voltaire's Candide (1759)), cultural milieu of Mr. Kepler's time and place in history. Though Mr. Sagan admirably avoids being teleological or overtly human-centric in his expressed views, he does echo throughout Cosmos, the idea expressed by Kepler of a wondrous universe that exists for humanity's intellect, a view with which I take some issue in 2112 Absurd Words, *supra*.

- ✓ See also Empirical Mythology, 1 Technology, p. 691, *supra*.

"Science, is stuff we understand about truths we only partially grasp. Religion is trying to get closer to truths we don't understand."

– Guy Consolmagno, as reported by Dennis Overbye, New York Times, December 22, 2014

Endnotes.

[1] Commentary: I wonder what Thomas Jefferson would think of Wikileaks? Having read this far in GGDM, you cannot dispossess yourself of it. You are trapped in the room with me. You have more, I do not have less.

[2] Commentary: Pharma-bro then cemented his already considerable reputation as a total jagoff by getting into a Twitter spat over their achievement.

[3] Commentary & Citation: This is an interesting issue that gets an occasional flyby in science-fiction adventure: Once the information is out there, and there is an environment of overlapping or open and widespread interstellar civilizations, what control exists on technology and knowledge? Even in situations where there is a homeworld and colonies in a singleton, it is likely that the homeworld may be (and must be able to) keep ahead of the colonies technologically (unless one of the colonies is in a position to discover a whole new technology).

✓ This plays into the discussion of Reverse Engineering, 3 Technology, p. 712, *supra*.

✓ Up to this point in human history – unless the ancient astronaut conspiracy theorists are correct – everything we have has been invented by humanity, all of our technology, scientific knowledge. Everything we know. What happens when not everything we know is about us, by us? Science-fiction authors play with this idea frequently, but rarely gets serious (e.g., Stargate SG-1 series) with the implications.

[4] Commentary: A lesson imparted on me by my mother at a very early age. I am not sure how or why it came about, but I recall my mother discussing with me in first or second grade, how ideas and inventions cannot be lost or destroyed, how, even when oppressed or suppressed, they surface again in other places and in later generations. In a modern example, LaserDisk was marketed in late 1978, two years after VHS VCR; VHS VCR eventually beat out LaserDisk and Betamax competitors and became the dominate video player for 15 or more years. LaserDisk however, developed into Compact Disk (CD) and reemerged in the 1980s, followed by DVD and Blu-Ray formats. VCR is now obsolete, of course; I had a DVR/VCR player, but now it's junk, it wasn't compatible with my new TV.

[5] Commentary: For example, the ***Law of Ka-plunk***: The probability of the occurrence of an inevitable Ka-plunk Event (K) (the sound of a cat jumping into an empty cardboard box) is a function of the size of the empty box (B), the proximity of cats (C) and time elapsed since placing the empty box on the floor (T). This natural law is easily verifiable, repeatable, and most of all, predictable. It is believed that cats share some sort of quantum link with nearby empty boxes, but it has yet to be experimentally verified.☺

[6] Citation: **Q:** [analyzing the cause for the *Bre'el IV* moon's trajectory] This is obviously the result of a large celestial object passing through at near right angles to the plane of the star system. Probably a black hole. **Lt. Cmdr. Data:** Can you recommend a way to counter the effect? **Q:** Simple. Change the gravitational constant of the universe. – Star Trek: The Next Generation, episode, "Déjà Q" (1990).

[7] Commentary: e.g., when I bought an Atari ST in 1989, it had a GUI interface and a mouse. IBMs were still using DOS Shell. The innovation did not win the market for Atari, yet all computers are now mouse-driven. Mozilla introduced tabbed browsing; IE didn't have it for a year. Mozilla innovated, but has not won the market from MS.

[8] Commentary & Clarification: For the first 7 or 8 years of the design (the 1990s), I started with and expanded the existing Technology Tables from Stellar Conquest, adding new levels. They expanded and expanded until finally they imploded under their own weight, left the universe and resulted in the current technology rules. As a side note, the Colleges also started as three tables, but operated somewhat differently (via cumulative investment, instead of levels) than technologies, but again, grew and grew. I was always uncomfortable with determining what is the 'final' or 'ultimate' technology for each table; at some point (2001-2002), I made a conscious decision to abandon technology tables and trees, and all teleological thinking, opening the system up to whatever the players can dream of and work towards in the game. Colleges went somewhat the same direction, becoming open to whatever mission might be named. The Patent format is what insures that technology is sufficiently defined for operational purposes.