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*See Appendix AGE – Aging Out*

*“If everyone is thinking alike, then somebody isn’t thinking.”*

– George S. Patton, Jr.

*“Where all think alike, no one thinks very much.”*

– Walter Lippmann, *The Stakes of Democracy* (1915)<sup>1</sup>

**Knaves:** Or in the converse: “If there were neither fools nor knaves in the world, everyone would be of one mind” – Spanish proverb cited by Joseph Addison in “Mischiefs of Party Spirit” (1711). So, if everyone isn’t thinking like me, it must be the fools and knaves in the world! ☺

**Foresight:** Foresight acts as a kind of ‘do-over’ in comparison to what the actor would have or might have done ‘blindly’ in the situation without it. In the Tetris-like falling tile game Hashira, there is a ‘preview’ on the right side of the next three tile set that will enter the board. It acts as sort of a rear view mirror for what is coming up behind, allowing the player to make better decisions on where to place the current falling tile group – sort of a do over before the deed is done. Seeing what is coming next helps maximize play on the board or avoid ‘mistakes’ when I have the choice between similar tiles in two sets or deciding which tile is on top when they land. The result is an improvement in play by small percentages early in the game; however, the preview is less useful as the game progresses, after the board is about half filled, there isn’t time to look at the previews (due to space and speed) and it also doesn’t help any when the computer is cheating, skewing the ‘random’ tile generation (you can’t play tiles that the computer refuses to give you). That is, it is a question of when you fall off the table and the board fills up.

- ✓ Foresight allowed human ancestors to survive in situations in which they would otherwise have perished, even animals have foresight, anticipating the seasons, the movement of prey, when to seek shelter based on behaviors and sensory input coded as instinct. Humans’ foresight went beyond instinct to intuition, discernment, expression of understanding in the form of the myth.
  - Hindsight is foresight after the fact. ☺
- ✓ A level of foresight that seems almost magical, impossible, is called *second sight*, e.g., “Patton had developed tank warfare into an art, and understood how to handle tanks brilliantly in the field. I feel compelled, therefore, to compare him with *Generalfeldmarschall* Rommel, who likewise had mastered the art of tank warfare. Both of them had a kind of second sight in regard to this type of warfare.” – *Generalfeldmarschall* Albert Kesselring.
- ✓ This is a potential area of effect if psychic abilities are introduced to the game, see discussion *Farsight*, 3 Information, p. 1362, *infra*: Psychic abilities might be an Enlightenment.

A strong theme of post-WWII science fiction literature was the concept that the world – human civilization – needed a ‘do-over,’ a big red reset button. How could this be accomplished in fiction? You know already. As Vernor Vinge commented in 1983:

- ✓ “To write a story set more than a century hence, one needs a nuclear war in between ... so that the world remains intelligible.” Big - red - reset button.

- See The Vinge Rule, 2 Technology, p. 705, *infra*, for full feature quote.

Nuclear wars, alien invasions, and to a lesser extent, meteors (thanks to the then evolving understanding of the extinction of the dinosaurs) or other cosmic catastrophes (e.g., Planet Mongo in Flash Gordon), were the natural available reset buttons both to restart current civilization from scratch and to avoid having to address seemingly infinite exponential technological progress.

Because, how else would civilization get a ‘do-over’? Continue reading...

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*“So if we buy the sociological trends that our ambition and happiness wane in our middle age – key years for promotion to senior levels – then are younger and much older leaders best? Not really. A 2011 study found that while there is a correlation between wisdom and effective leadership, there is no correlation between wisdom and age – or between age and effective leadership.”*

– Kristi Hedges, “Why You’re Losing Ambition As You Age,” Forbes Magazine, July 16, 2014 (available free online)

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**Faculties:** In economic terms, the marginal utility of living wanes in middle age. Each time Regular Turn actions are processed for the position, Colleges will automatically attempt to produce Faculties. Faculties are the effects of the College on society, empowering the position to act, or to act more effectively, to achieve superior results. Faculties include the training of the next generation, the dissemination of knowledge and understanding throughout society.

Faculty as used in GGDM, relates most closely to the Merriam-Webster online dictionary definition of *faculty* at **1**: Ability, Power and more specifically, **1a**: innate or acquired ability to act or do. Any apparent references to the teaching profession in the context of the game rules for Colleges is intentional lexical irony.

- ✓ Read it on a t-shirt: “Irony is the opposite of wrinkly.”

And since we are here....

- ✓ Merriam-Webster online dictionary at *culture*: **2**: the act of developing the intellectual and moral faculties especially by education; **4a**: enlightenment and excellence of taste acquired by intellectual and aesthetic training, **4b**: acquaintance with and taste in fine arts, humanities, and broad aspects of science as distinguished from vocational and technical skills; **5a**: the integrated pattern of human knowledge, belief, and behavior that depends upon the capacity for learning and transmitting knowledge to succeeding generations.
  - ✓ “Think of what we learned from parents, from people who have experience. You’re learning from generations that lived before us. It makes you feel you are part of a continuum. You’re not just here alone, so it makes you a deeper person and maybe even gives you that great thing called wisdom.” – Doris Kerns Goodwin, Master Class video trailer.
- **My Generation:** At the **end** of each Regular Turn, each College will attempt to generate Faculties if the College’s Host World is not captured and if enough Endowments remain to fulfill the current Per Turn Endowment of the College. Faculties are received for each successful College Try. The number of College Tries allowed for each College is the total population of

the position (including Converted, but not Captured populations) divided by the total number of colonies, divided by ten.<sup>2</sup>

- ✓ So, a position with 300 eligible population on five colonies, gets six College Tries per College per turn ( $300 \div 5 \div 10 = 6$ ).

The chance of success of each College Try is the Per Turn Endowment (RPs) divided by the total number of colonies divided by ten (or put another way, 1 RP per Turn Endowment per colony equals a 10% chance of success).

- ✓ So, a College with a 10 RP per Turn Endowment and five colonies would have a 20% chance of receiving a Faculty for each College Try.

Note that the math here rewards urbanization and stability; expanding and establishing new colonies, and conversion of colonies, can dilute the chances significantly.

‘Faculties’ are therefore the ‘game unit’ of Enlightenment in a position’s civilization; just as RPs are the non-monetary economic unit of the game. And like RPs, Faculties are considered to both exist generally throughout the civilization and are simultaneously applicable locally, within limitations, to accomplish the task at hand (quantum mechanics again...).

- **Tuition & Tenure:** Regardless of how many Faculties are received, the *per-turn* Endowment is subtracted from the Endowment of the College each Regular Turn it operates. All Faculties generated by a College are kept in a “class” for that College and a running tally is kept on each College’s current Charter. Immediately prior to Faculty generation (i.e. College Tries) each Regular Turn (or Turn Cycle if Regular Turn Actions are not submitted or processed) after the operation of Institutes and Enlightenment, half of the Faculties in each College’s ‘class’ will retire (i.e. ‘age-out’ like RPs in the Treasury). Faculties in a College’s ‘class’ are not immediately lost if the College’s Host Colony is captured or if the College ceases to function or closes for any reason, but of course, without replenishment, they will eventually dwindle away, losing half each Regular Turn. Or put another way, the half-life of a Faculty is one Regular Turn if not used.

- ✓ Old math teachers never die, they just reduce to their lowest common denominator.

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*“Without ambition one starts nothing. Without work one finishes nothing. The prize will not be sent to you. You have to win it. The man who knows how will always have a job. The man who also knows why will always be his boss.”*

– Ralph Waldo Emerson

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**Echoes of Aristotle:** Emerson was perhaps echoing Aristotle: “for he that can foresee with his mind is naturally ruler and naturally master, and he that can do these things with his body is subject and naturally a slave.” (*Politics*, 1:2, 2) Assuming the translation is meritorious, it appears that Aristotle was arguing in favor of slavery as a natural state of some part of humanity, and separation of the mind and body, as Carl Sagan argued in the *Cosmos* television series.

I can imagine in Europe before the 20<sup>th</sup> Century when there was both a class division in education and classical education was preeminent – at least among the upper classes – that Aristotle’s quote above was widely known and was purposed for justification of hereditary rule and nobility

over less educated or uneducated workers and peasants. This is one of the reasons possibly for the 20<sup>th</sup> Century decline in classical education.

Unfortunately, the justification also became a sense of entitlement and a right to be useless (see Arrears in Aristos discussion, top of 2 Entropy, p. 234, *supra*) while the print and industrial revolutions gradually changed society and social attitudes over three centuries. The reactionary hereditary nobility and aristocracy failed to understand or even foresee their own doom:

- ✓ “When enough nobles forgot that their positions were not guaranteed by invisible forces... the Imperium was doomed” (Dave Neilson, see full feature quote starting the *Noblesse n’oblige plus* and *Nobless Oblige* discussion, 4 Movement, p. 869, *infra*).

The nobility of France, England, Russia, Germany, Italy, were lost and we know the results.

➤ Discipline & Distractibility: Discipline is what happens when it is no longer about you; it is a vital part of unit (in the military) or social cohesion (aka ‘asabiyyah’). And parenting.

- ✓ When you live by a philosophy, whether it is the dictates of a world religion or Kantian Imperatives, it is no longer about you. If you are being true.

Ayn Rand may argue about the virtue of selfishness, but no one who matters has ever argued the virtue of being undisciplined. Discipline is selfless focus.

- ✓ “What lies in our power to do, lies in our power not to do.” – Aristotle.

The argument can be made that, unfortunately – with regard to GGDM, a huge sprawling overreaching, over-ambitious simulation game – I have not shown much ‘design discipline.’<sup>3</sup> I have allowed myself to be led wherever, dragged along, by the dog I walk.<sup>4</sup>

- ✓ “Quality is not an act, but a habit” – Aristotle.

I blame the spirits of Victor Hugo, Charles Dickens, Leo Tolstoy and Fyodor Dostoevsky.☺

- ✓ “‘The neurotransmitter dopamine has repeatedly been associated with increased cognitive flexibility in the past,’ says Dr. Erhan Genç from the Bochum Department of Biopsychology. ‘This is not fundamentally bad but is often accompanied by increased distractibility.’ ... Whether someone tends to postpone tasks or tackle them directly depends on the individual’s ability to maintain a specific intention to act without being distracted by interfering factors. Dopamine could be crucial here. In previous studies, the neurotransmitter has not only been associated with increased cognitive flexibility but also seems to make it easier for information to enter the working memory.” – Ruhr-University Bochum, “How procrastinators and doers differ genetically,” ScienceDaily, July 11, 2019.<sup>5</sup>

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*“Talent is relative, effort is not. They love this guy because he works hard and every day you know you will get everything he’s got.”*

– Pittsburgh Pirates broadcaster, May 7, 2019

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**Enlightenment:** The success or failure of any action or the successful resolution of any situation depends on the quality of the people ‘on the ground,’ that is, the people who are actually involved in performing, leading, or evaluating the task.

Enlightenment in GGDM should not be confused with the historical era from which the term derives its more general application here. Enlightenment are that package of qualities that lead to what professional sports calls execution (effort) and talent.

- ✓ “Praxeology also emphasizes that human action is personal action. In other word[s], every economic and social behavior must be ultimately traced back to the actions of individuals. There is no ‘collective mind’ or collective entity that takes action independently of the actions of the individual members comprising the collectivity. When we say that Germany invaded Poland, or when we say that the government established a social security program, or that Apple is launching a new iPad, these expressions are all shorthand to describe the actions of *individual persons* within those organizations. That emphasis on personal action is often called methodological individualism. This concept may seem obvious but, in the mid-nineteenth century, it was common to believe in collective spirits embodied in ‘the nation’ or, under Hegelian and Marxist influence, in other collectivities such as ‘the bourgeoisie’ or ‘the proletariat.’” – Michael Accad, M.D., “An introduction to praxeology and Austrian school economics,” [alertandoriented.com](http://alertandoriented.com) (blog), April 13, 2016 (emphasis added).
  - See also discussion of Nationhood Proficiency, 3 Culture, p. 393, *supra*. As part of the de-Nazification of Germany in 1945, the message to the German people was ‘you did this.’ Not Germany did this.
  - See discussion of Romantic Nationalism and National Mysticism, 3 Government Titles, p. 618, *infra*.

Like our daily lives – each of us – the daily life of a civilization consists of attempting, starting and/or completing or not completing innumerable tasks. “No man is an island,”<sup>6</sup> that is, each of us carries with us, to our daily tasks, our part in the life of civilization, all of the mental tools and cultural baggage, and material goods (logistical support) and services of our times, our culture, our civilization, for good or ill. This is the reason – will, discipline, training, equipment, cohesion,<sup>7</sup> purpose, leadership,<sup>8</sup> heroics – settled upon by military historians that explains why, for example, Greeks and later Roman armies were able to defeat opposing forces many times their size, or why 180 Spaniards were able to capture the *Sapa Inca*.<sup>9</sup> It is this package, this bundle of qualities – the wisdom pool of civilization distilled into the individual<sup>10</sup> – that individuals on the ground carry to their daily tasks or into any situation that are the Enlightenment.<sup>11</sup> Ultimately, daily lives, the course of our lives and civilizations are about decision making and outcomes.<sup>12</sup>

- ✓ Consider the opposite case: In *The Book of Eli* (2010), Carney sent a pack of vicious, undisciplined illiterates to find a specific book with predictable results and mayhem.
- ✓ Christine Hensler, John Kaag and David O’Hara have argued in *The Chronicle of Higher Education* that the emphasis on STEM (which Carl Sagan championed in *Cosmos*<sup>13</sup>) which became pronounced around the turn of the millennium with the push for gender equality in STEM fields, has come at a cost of decrease in humanities education which has contributed to current social problems in lack of leadership, sexual harassment, and other ills.<sup>14</sup> Christine Hensler notes, that other than philosophy and religious studies, there is an equal opposite gender gap in the humanities and humanities teachers – mostly women – are not well paid in public education.
  - See 2 Culture, EN 11, pp. 377-378, *supra*.

- Pool of Radiance: All of the Faculties currently in the “classes” of all of a position’s Colleges are part of an imaginary pool called The Enlightenment (similar to the Treasury as an imaginary pool of RPs available to the central interstellar government). These Faculties are available for use to affect die-rolling situations during the turn and/or to operate Institutes (see Institutionalized, *et seq.*, 3 Colleges, p. 487, *infra*).

Whenever a position intends to use Faculties to affect die rolls, they must be assigned in the Regular Turn Actions submitted, in other words, the decision to use or apply Faculties to die-rolling situations that might occur during the turn must be made *before the turn is processed* (i.e. foresight, because of the way the game processing operates). Faculties designated to affect die rolls are not available for operation of Institutes during the same Regular Turn.

- ✓ The Enlightenment is a singular, unique game object, and should not be pluralized in GGDM (e.g. “Enlightenments”). Additionally, Faculties, as game units, should not be called “Enlightenments,” as it blurs the concepts in GGDM play.
- Nightlight: Faculties designated to support die rolls in the position’s Regular Turn Actions are subtracted one from each College’s class until enough Faculties are gathered to satisfy the Faculty commitment. Faculties will be taken from the oldest College first, and then one by one to the newer Colleges, until all Colleges have given one Faculty, and if more are needed, the process starts again with the oldest College. Whenever a Faculty is used for a reroll, it is expended, removed. Faculties are designated to support a specific Power Activation.
  - ✓ Faculties from classes of *suspended Colleges* remain available until they ‘age-out.’

Enlightenment is about doing in the game. Because Enlightenment must be designated for either specific Power Activations or Combat Rounds, they cannot be used to affect non-Power Activation effects of the game, such as Reformations, Kairotic Moments, or News Events or usually acts of other positions, hostile or otherwise.

- Web of Night: Faculties must be applied to specific die-rolling situations. So, for example, Faculties cannot be used to affect Census and Taxation, but can be used to affect the Loading of population on Colony Ships, or to affect Combat.<sup>15</sup> Enlightenment can only be used to affect situations occurring on the Public Space – remember that the Public Space at any moment also includes all places in the Galactic Space where the position currently has ships or sovereign populations located. Besieging a Host Colony has no effect on Faculties from either Colleges located there or any other College. Similarly, Faculties from a College have no special effect on or any extra meaning to the colony Hosting the College.

About 20 or 30 years ago, I heard the term “the why factor” in an intro sociology class in relation to group cohesion, an exploration of why some groups cohere well and others do not. The term does not seem to be current in use, searches for the term in relation to sociology or group cohesion come up empty of useful results, and the top results are all related to a BBC program, with one entry for a Workforce Institute book.<sup>16</sup> Still, the ‘why factor’ term as I heard it decades ago fits well into the idea of Enlightenment use in GGDM and possibly was the inspiration. In this sense, GGDM Enlightenment – in the form of leadership and depth of understanding – is the local group cohesion and informal structure, why it gets the job done.

A die roll in GGDM should be thought of as representing the collective result of hundreds of small activities, tasks, and actions, sometimes over an extended time period (sort of like at

bats, pitches and plays collectively in a baseball season). Occasionally, a die roll may represent the result of a momentary act by one or two individuals in a crucial situation (like in a baseball game). Thus, GGDM's scale is different from what is commonly seen in science-fiction movies and books where individual heroic characters drive the action (see related discussion in *Buzzing Lightyears, et seq.*, 4 *The Streams of Time*, p. 101, *supra*).

Faculties are assumed to come from and apply to the position's sapient, biological population, especially in reroll situations. Because of so many unknown and currently unknowable, speculative possibilities, GGDM makes no comment on whether or when Faculties apply to tasks performed solely by machines or artificial intelligences (the question of what is 'artificial' about a machine's intelligence is another interesting issue), for example, can Faculties be applied to Hazard Rolls for purely robotic Scout Ships (see *Then Never Comes*, 3 *Expansion*, p. 907, *infra*), or must we assume that Scout Ships have a biological sapient crew? What if Fighters (see *Fighters*, 1 *Carriers & Fighters*, p. 1046, *infra*) are just sophisticated drones? There may be a tendency for technology in the game to develop in the direction of crewless warships and machine interstellar combats; participants will need to decide what this means in the game.<sup>17</sup>

- ✓ See discussion of Scout Ships as drones, *Imperial Interstellar Scout Service*, 3 *Movement*, p. 855, *infra*.
- ✓ See also *The AI Problem* (excerpts), *Corporations*, *infra*.
- **Vampire Suicide:** In life, there are (usually) no “do-overs” when it matters, but what if you didn't do it wrong to begin with? What if there was a ‘back’ or ‘undo’ button on the Keyboard in the Sky? (Norman Spinrad, 1990). For each Faculty used, the position gets one reroll of a failed die roll as if it never occurred.<sup>18</sup>
  - ✓ **Lain(w):** I can delete their memory of being peeped on. I can delete the information. **Deus:** Sure. Try it. You were born to be able to do it. **Text:** Deleting... – Serial Experiments Lain, from Lain Wiki, “Layer 08 Script,” captured December 1, 2018.

The Enlightenment reroll will be applied to the first failed die roll. A position may only reroll each die rolling situation *once*, at the moment a die roll fails, no matter what kind of die roll it is, or whether or not the die roll is important. Multiple Faculties may be committed to situations where there may be multiple die rolls, but whether used or not, any committed Faculties are not available to operate Institutes. Unused Faculties will be returned to the Classes at the end of the turn, before aging is processed. Faculties committed to Combat, used or not, **will not be returned** at either the end of the Round or at the end of the Combat.<sup>19</sup>

- ✓ “Any object – ship or colony planet – that does not have an active Epistemological Constructural Element may not (50% chance) be able receive the effects of College Faculties (whether for use in die rolls, including Combat, or Institutes on that colony).” See Skool Tyne, 2 *Constructural Elements*, p. 190, *supra*.

This should not be confused with failure to obey Power Activations due to inactive Constructural Elements, e.g., the unit may obey the Power Activation but be unable to receive the effects of College Faculties, a different function. One of the most significant possible uses of Enlightenment is to reroll situations where a ship or colony (i.e. unit in the game) fails to



obey or execute a Power Activation due to inactive Constructural Elements (see 2 Constructural Elements, p. 193, *supra*). Thus, Enlightenment can somewhat offset inactive Constructural Elements, but then will not be available for later in the Regular Turn. It's a hard life.

➤ Harsh Mistress: “Failed die roll” in GGDM means any die roll result that is less than the optimal, best possible result. Thus for any die roll where the result determines the value of X (rather than hit or miss, success or failure), whenever the result is not within 10%<sup>20</sup> of the best possible X (e.g., funding rolls in Research Attempts), a Faculty will be used to reroll and the result of the reroll, even if worse than the original, will be applied. Positions should thus take care in committing Faculties to rerolls in situations where the die roll is to determine a value and an optimal result is not required or worth the risk or expenditure of Faculties.

- ✓ In situations where the die roll is to determine a success or failure, hit or miss, or whether or not a colony or ship will obey the Power Activation (see Power Off, 2 Constructural Elements, p. 193, *supra*), with no other possible result in between, the failure is a “failed die roll” which will trigger a reroll using available Enlightenment.
- ✓ In situations where the die roll is to determine the value of X (*ut supra*), Enlightenment can be a harsh mistress (something courted or beloved, but a harsh respondent) as only optimal results prevent rerolls and the rerolled result can be worse than the original.
  - “Jerry’s [aka Lucifer] brother [Yahweh] was speaking. So who’s complaining? You want I should put on my Jesus hat and prove it? The fact that some of them make it proves it ain’t too hard – Seven point one percent in this last batch, not counting golems, Not good enough? Who says? The old boy in the black hat [Loki] said, I count anything less than fifty percent a failure.” – conversation between Yahweh and Loki after the Rapture in Robert Heinlein’s Job: A Comedy of Justice (1984).

➤ Army of Light: Application of Enlightenment in combat is the same as for any other situation. All participants in the combat may commit currently available Faculties with the orders sent for each Combat Round. As explained in Relativity, 2 The Streams of Time, p. 85, *supra*, combats operate semi-independently of Regular Turns, that is, combats operate on their own schedule and may continue for many Turn Cycles, depending on how quickly the participants wish to resolve the combats. As a result, it may be possible for a fresh set of Faculties to be supplied to a combat after each Regular Turn by each side.

Faculties assigned to Combat carry to the end of the combat, see Combat Resolution, 3 combat, pp. 976-977, *supra*; unused Enlightenment *is not lost* at the end of each Combat Round. Faculties used in combat *may never be used to affect the other side’s die rolls*, that is Faculties cannot be used to make the opposition reroll a successful die roll in combat or Special Operations,<sup>21</sup> thus, Faculties may not be helpful while executing retreats from combat (that is, zagging when you should have zigged).

- ✓ The key then is creating game situations where die rolls are necessary – even in situations where the basic rules do not allow die rolls – so that Faculties can be used. For example, some technology or doctrinal template (see Combat Formations, 4 Colleges, p. 503, *infra*) could be introduced where the retreating player gets what Dungeons & Dragons used to call a “saving throw” if hit. The downside of this is, the demand for Faculties increases drastically.

However, in Fighter attacks in Combat, the position may decide each Combat Round that Faculties committed to Combat will *not be used* for Fighter attack rerolls – *this is simply a game mechanical concession* as Fighter Combats use lots of die rolls and are processed first in the Combat Round, therefore, could easily use all of the Faculties committed to the Combat Round before the other ships execute their attacks. This may be an important decision.

- ✓ See Encounter With Bright Lights, 2 Carriers & Fighters, p. 1057, *infra*.
- ✓ Enlightenment should not be applied to Ship Missile attacks, see Fire & Forget, 4 Carriers & Fighters, p. 1080, *infra*.

Inactive Constructural Elements do not affect actions or die rolls in Combat except that inactive Epistemological Constructural Elements may affect application of Enlightenment to individual units in the Combat.

- ✓ At the Battle of New Orleans, Lt. Col. Mullins' 44<sup>th</sup> Regiment was charged with bringing ladders and fascines needed for the British attack on the elevated American breastworks. He bypassed them and was not present to lead his unit in battle. When the British columns arrived before the American lines, they were stranded in a kill-zone, unable to effectively attack without ladders, taking heavy losses standing there. Lt. Col. Mullins was blamed for the loss and was court-martialed and cashiered.

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*“Although events like the Bay of Pigs, Cuban Missile Crisis, and the Space Race have typically dominated the narrative of the Cold War in current history textbooks, the 1983 nuclear false alarm similarly holds importance in assessing Cold War tensions. If Petrov would have made a different decision – determining that the United States intentionally planned to attack the Soviet Union – it is likely that the false alarm would have initiated nuclear war. Petrov ultimately prevented nuclear disaster and appeased some tension during already grave times.”*

– Madeline Bradshaw, “1983 Nuclear False Alarm,” Stanford University, November 9, 2017 ([large.stanford.edu](http://large.stanford.edu))

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**Three Minutes:** I am happy to see a young person who understands the gravity of what has been so quickly forgotten.

Thanks to Soviet Officers Col. Stanislav Petrov (on September 26, 1983) and Vice Adm. Vasili Arkhipov (Cuban Missile Crisis, 1962) and many others who had to exercise human judgment, *within three minutes or less* (and no do-overs!) to avoid potential nuclear war during the Cold War – you are here reading this today.

- ✓ Vasili Arkhipov was the second in command on the Soviet Foxtrot-class submarine B-59 in October 1962 and refused to agree to launch a nuclear torpedo at two pursuing U.S. Navy destroyers that were harassing them, which certainly might have started WWII (see pre-delegation of nuclear weapons authority, 4 Combat, EN 23, p. 1004, *infra*). The fact that nuclear weapons were even considered for such a trivial matter (in the big picture) is evidence of the level of tension during the Cuban Missile Crisis. Oddly, Vice Adm. Arkhipov was also, the previous year, the executive officer onboard the Soviet submarine, K-19, aka Widowmaker (e.g., movie, K19: The Widowmaker, 2002; Vasili Arkhipov was fictionalized as Captain 3<sup>rd</sup> Rank Mikhail

“Misha” Polenin), when it suffered a near nuclear meltdown (i.e. runaway nuclear reactor) on its maiden voyage.

- ✓ Col. Stanislav Petrov was the duty officer during the September 1983 Soviet Nuclear False Alarm Incident, when Soviet sensors incorrectly indicated that ICBMs were coming toward the Soviet Union from the United States. It was actually a reflection off clouds.

He was suspicious that the system was only showing the approach of a few missiles when the expected attack would have involved hundreds of incoming missiles. He had only a few minutes to decide whether to alert his superiors, reaction time was a critical element of the nuclear defense or deterrence. We all know, of course, the United States will not launch a first strike ... but he could have been wrong. Maybe the missiles were real and his doubts were expected to allow the missiles through to their targets? He could have been very badly wrong. He was reprimanded later for not taking proper notes during the crisis. But because he was right, and the world was still there, they could not find his conduct wrong.

To put this in context, the nuclear war movie, *The Day After*, aired on November 20, 1983; Nena’s protest song, “99 Luftballons,” was released in Germany in the summer of 1983, and the television mini-series, *World War 3* aired in two nights in January 1982. Tom Clancy’s Red Storm Rising was also published in 1983. I remember all of them. November 1983 was also the time of the infamous Operation Able Archer.

I was in 11<sup>th</sup> Grade. My town probably would not have been the target of a strike in any case, but wouldn’t have mattered because 40% of the U.S. population lived within 300 miles of my house and the entire North East and the Great Lakes cities are within 400 miles, probably representing half of the U.S. population. Do the math.

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*“The name we use for the period implies an answer to the question: If we call those events ‘The Butlerian Jihad,’ we side with the historians who define as ‘great’ those individuals who move the mass of humankind in a new direction; if we use the term ‘The Great Revolt,’ we ally ourselves with those who see ‘leaders’ as simply the front rank of a humanity moving in the direction the masses determine.” – Willis E. McNelly, The Dune Encyclopedia (1984)*

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**A Long Time Ago:** In 1985, my white-haired 12<sup>th</sup> grade English teacher (who probably went to college in the early 1950s, the time when science-fiction musings were becoming fact) informed me that I could not do a book report on Dune (1965) because science-fiction isn’t literature. I was stunned by such a statement – since I had no doubt that science-fiction was literature, though I’d never thought about it and could not have provided a definition of literature if asked. I was hardly in any position to argue (in hindsight, I don’t think he liked me much either), such is the oppressive power of teachers over students.

- ✓ Merriam-Webster online dictionary at *literature*: **1a(1):** writings in prose or verse especially: writings having excellence of form or expression and expressing ideas of permanent or universal interest.

Even though Professor McNelly had begun writing essays arguing the science-fiction genre is literature in the 1960s, published his main book, Science Fiction: The Academic Awakening in

1974, and published anthologies in 1971, 1972, and 1975, consistent with the observations of Thomas Kuhn, the old guard was never convinced. A sci-fi “*Butlerian Jihad or Great Revolt*” against the English literary establishment – like the Beat Generation vs. Poetry Establishment (see feature quote and Beat Down, 1 Culture, pp. 357-358, *supra*)?

*“The acquiring of culture is the development of an avid hunger for knowledge and beauty” – Dr. Jesse Bennett <sup>22</sup>*

## Endnotes.

<sup>1</sup> Commentary & Citation: Compare Patton and Lippmann quotes. Patton would have been about 30 years old in 1915 and probably might have read Lippmann’s book, read about it, or heard about it.

<sup>2</sup> Commentary: By the way, Peter Townsend, and *his* generation, are old history.

<sup>3</sup> Commentary & Citation: I am perhaps using the term design discipline in the sense of restraint. A Google search for the term ‘design discipline’ on December 8, 2018 generates results headed by Design for Business East website ([www.d4be.org.uk](http://www.d4be.org.uk)) defining the Design Disciplines as Architecture, Engineering, Exhibition and Display, Fashion & Textile, Graphic, Interior, Multimedia, Packaging, and Product Design fields. Game design is not included! Darn. But the following may be applicable to the discussion of GGDM as a design:

- ✓ “In their previous work, the authors have demonstrated that the discipline of design has been superseded by a condition where conventionally set design disciplines have dissolved. In this age where design is typified by fluid, evolving patterns of practice that regularly traverse, transcend and transfigure historical disciplinary and conceptual boundaries, the authors have argued that globalization and the proliferation of the digital has resulted in connections that are no longer ‘amid,’ cannot be measured ‘across,’ nor encompass a ‘whole’ system. In short, this ‘disciplinary turn’ has generated an ‘other’ dimension – an alternative disciplinaryity. Moreover, this reliance on the ‘exhausted’ historic disciplines has become obsolete as the boundaries of our understanding have been superseded by a boundless space / time that we call ‘alter-plinarity.’ The fragmentation of distinct disciplines has shifted creative practice from being ‘discipline-based’ to ‘issue- or project-based.’ Consequently, this paper presents a manifesto for the future design discipline that emphasizes disposing carefully of what you know, teaching what you do not know whilst always taking design seriously, protecting us from what we want, objecting to sustaining everything, designing without reproach, ensuring that objects are invisible but designed with care and within history whilst exploring design as an idea rather than an ideal.” – Paul A. Rodgers (Lancaster University, UK) and Craig Bremner (Charles Sturt University, AU), abstract from “The Concept Of The Design Discipline,” *Dialectic*, Vol. 1, Is. 1, Winter 2017 (Michigan Publishing, University of Michigan Library).
- ✓ Arguments about the division of disciplines and classes are about boundary control, and who is let in is determined by degree- or certification-granting institutions, government regulations, and professional, trade, and scholarly organizations. See discussion of Asymmetric Advantage, De-Mystification, 3 Information, pp. 1364-1365, *infra*. Fortunately, my Game Designers Union Card fell into the shredder one day.

<sup>4</sup> Commentary: I have personal experience at this: In 3<sup>rd</sup> Grade that I thought I could take the St. Bernard for a walk, the dog walked me wherever she wanted to go, and I could only try hang onto the leash.

<sup>5</sup> Commentary: Closing the circle. I have always had *very good memory*, my memory was described as encyclopedic in my youth, and I have always had good *cognitive flexibility* within a range that didn’t include math. My cognitive flexibility has seemed to mature with age, round out, but my memory has lost its edge in recent years. I also seem to be more easily *distracted* which I have felt is a result of fading *discipline* as I age, but on the other hand, I seem to as I have aged, been able to imagine and hold together *holistic understanding* better than in my youth.

- ✓ As Dr. Genç said (*ut supra*) it’s not fundamentally bad, but the distractibility has been an issue of debate in the final edit of GGDM. I discover some new, fascinating angle or line of thought, reading and thinking about it for days or a week. I get frustrated that I am not making straightforward or linear progress in editing through the last sections, yet at the end of the ‘distraction’ evolution, the new discovery has worked

into GGDM and developed a new aspect of the game. So I can't say it's bad being distractible, but it is frustrating.

- I read a very short science-fiction story once where alien invaders were coming to Earth and the world's top bio-geneticist was tasked with designing a superhuman warrior race to defend the Earth. Unfortunately, the old fellow got distracted and instead ended up designing a fly that could fly through the open half of a half-open window.
- ✓ It is distinctly possible that I am addicted to games like Freecell and computerized Mahjongg (and the falling tile game Hashira) because they are focus games – any game that involves timed puzzle solving is a focus training device. I can have incredible focus while playing, for a few minutes, whereas in completing tasks, I often feel distracted. I also usually do not feel (and get frustrated) that I play well at the game club, I get too distracted by the interactions and socialization whereas I used to play very well in PBEM games.

<sup>6</sup> Citation: “No man is an Island, entire of itself; every man is a piece of the Continent, a part of the main.” – John Donne, Devotions Upon Emergent Occasions (1624).

- ✓ “Mel Gibson often describes the character as a sort of a closet human being who denied his humanity because he thought it wasn't conducive to survival. And we said, well this is really a story about Max coming out of the closet. And because it's a story like that, it has a softer nature. ...

And Mel Gibson suddenly said to me in Mad Max 2, he said you know what he is? He's a closet human being. And it really pretty well sums up Max for me. He's someone who denies his humanity, and sometimes it's going to come out, somehow. So I think he's sort of a pretty sad figure from that point of view. And yet, you have a sense that he's wise enough to learn. He finally learns, slowly, that you can't live by yourself. You're part of the community, like it or not. That we're all sort of vaguely responsible for each other, and he sort of understands that. There are purposes outside of the individual's life or existence. I think [Max] somehow understands that, and it probably makes him more compassionate – at the end of Mad Max 3, at least. That might be the difference; maybe he has compassion ultimately, in spite of doing all these sort of fairly brutal things.” – George Miller as quoted by Anne Billson, “George Miller Talks about Mad Max, Heroes & Tina Turner: The 1985 Interview,” previously unpublished interview published on Multiglom: The Anne Billson Blog, May 12, 2015.

<sup>7</sup> Commentary & Citation: Every military person knows the military version of the Why Not question discussed in 2 Disruption, p. 269, *supra*. It's called fragging. The answer to the Why Not question in military terms is unit cohesion, discipline, will or purpose, duty, acceptance of authority and chain of command. In these senses it is not greatly different than the answers to the question in civil society, but under different, more extreme circumstances. The most memorable fragging scene occurred in the movie The Siege of Firebase Gloria (1989) as a result of the unfit commanding officer whose condition and incompetence made him a danger to his command facing enemy attack, such that there was no answer to Why Not and the tough-as-nails Sgt. Maj. soon arranged his medevac exit.

<sup>8</sup> Commentary: A leader is the most civilized person in any situation, but not necessarily the most civil person.

<sup>9</sup> Commentary: And here, the reader is asked to divorce any moral indignation and view the subject objectively, that is, I am not condoning what was done by anyone to anyone, merely, I am objectively discussing qualities of a civilization. One reason that has been offered for the fall of the Aztec Empire to a handful of Europeans (leading an army of local tribal allies) is that the Aztecs just didn't comprehend the concept of total war, whereas, the Spaniards came from a culture emerging from and a land devastated by centuries of genocide and religious warfare. Another, more potent reason is smallpox, which neither culture understood; and is incidentally, the only major disease we have eradicated from the wild.

<sup>10</sup> Commentary: In litigation, I have seen economic expert reports that, on an autocatalytic or virtuous circle (positive feedback loop) theory, assigned greater economic or currency value to parenting services of college-educated parents. This is a contested subject in economics, but the implication of greater value to the children (in long term results) from college-educated parents is clear. There are many articles easily found on the internet discussing the economic value parents impart on their children, for example, “The Economics of Stay at Home Moms,” (Investopedia, Forbes Magazine, May 10, 2011) discussing salary value or “Tiger moms and helicopter parents: The economics of parenting style” (Matthias Doepke, Fabrizio Zilibotti, Vox [CEPR's Policy Portal], October 11, 2014), discussing parenting styles choices and education value in the context of economic inequality.

<sup>11</sup> **Commentary & Citation:** Or consider the opposite: “The violence and dissonance of their lives is all they need. They only want to be what they are; unproductive, destructive, stolid. They simply exist. They simply ... are.” – Denny Daley (art by Michael Saenz), “Punk Zone,” *Epic Illustrated*, October 1981, p. 67.

- ✓ Sounds like the town where I grew up, a sleepy dying river city that can only hold onto long lost glory days (and old mansions turned into apartment buildings), whose natural resources are gone, suffering from severe brain drain, a place where progress is retarded at every turn by unenlightened entrenched interests despite the fact that everyone knows things must change; they only want to be what they are, stupid, pedestrian, backward, selfish, and shortsighted and forgotten by the world. The only thing going on in center city now, which was vibrant and bustling in my youth, are politicians, drug dealers, and bored kids who have nothing better to do than drive around in circles all night. Not an encouraging sign.
- ✓ The first meaning of the word “punk” that I learned, as an early 1980s teen, was rotted, decayed wood (Merriam-Webster online dictionary, **3** punk (n) at **1**) while logging firewood with my grandfather, rotted wood was described as being “punk”; this at the time I was hearing about music called punk rock and being called a punk from time to time. Thus, punk became associated with rot, and I eventually formed the idea that punk – as in youth and music – meant social decay. My view is more nuanced now, but the base idea remains that what we call sapience, humanity includes strongly a desire to be more than what we are individually and collectively, and that non-sapient animals – and we cannot know what they may want – are incapable of being more than what they are – can they want to be anything? This remains the most basic view of humanity globally.

<sup>12</sup> **Citation & Commentary:** **Joseph Simmons:** Listen, we weren’t on the Green this morning with the intention of fighting. **Adam Cooper:** Why did we have our guns? **Joseph Simmons:** To show them we had them. And that we would fight if need be. But there wasn’t a man there fool enough to think he could stand up against the British Army face to face. – *April Morning* (TV movie, 1987).

- ✓ Though the movie makes it clear that the *fictional character* Solomon Chandler, sneaking around the edge of the Green unknown to the combatants, fired the first shot at Lexington that led to the massacre and that all of the deaths on both sides that day are on him, the movie presents an interesting situation in which many decisions taken are the blame: the arrogance of the British, the decision of the British commander not to march past the Lexington militia and avoid confrontation (reminiscent of what Sir Lancelot said to King Arthur during their duel in *Excalibur* (1981): “You sir, would fight to the death against a knight who is not your enemy for a stretch of road you could easily ride around.”), and the decision of the committee to form the Lexington militia on the Green to confront the British column. Solomon Chandler, a firebrand revolutionary agitator, who seems to have appointed himself captain of the militia after the initial fight, and who was an inept weapons smuggler, a poor liar, and probably had an exaggerated reputation, degrades as a character during the last half of the movie as he seems to enjoy the killing. He, of course, dies in the end (‘live by the sword, die by the sword’) with a suitably patriotic message for the Cold War audience (this was a Hallmark production and made-for-TV movie) that I would have inhaled headily if I had seen this movie when it first aired in the late 1980s and exhaled slowly with a deep star-struck sigh for the youthful beauty of Meredith Salenger as Ruth Simmons.
  - History does not know who fired first, e.g., Derek W. Beck, “Who Shot First? The Americans!” *Journal of the American Revolution*, April 16, 2014 (available free online).

<sup>13</sup> **Commentary & Citation:** From all that I have seen and read in relation to Carl Sagan, it is fair to say that he had lesser respect for – and some disdain for – the humanities; he certainly considered them inferior to science and empiricism (just like my high school in the 1980s). This is not a personal criticism, but rather, I see it as part of the tussle and tow, to and fro, in the struggle of forces in civilization. There are people equally on the other side in the humanities, but it is more difficult with technology triumphant in the modern world.

- ✓ Although Neil deGrasse Tyson does not share Carl Sagan’s sunny view of the universe, e.g.:
  - “Every account of a higher power that I’ve seen described, of all religions that I’ve seen, include many statements with regard to the benevolence of that power. When I look at the universe and all the ways the universe wants to kill us, I find it hard to reconcile that with statements of beneficence” – Neil deGrasse Tyson, at the University at Buffalo, Q & A session, April 9, 2010, video is available on YouTube as of September 2018.

... he too has made some comments disparaging philosophy majors (e.g., The Nerdest Podcast, March 2014) that stoked an uproar on the ‘other side of the aisle’ in the epistemology ascendancy struggle. From Wikipedia article, “Neil deGrasse Tyson,” December 8, 2018.

- ✓ You think there is not an epistemological ascendancy struggle? Then I am from the English-speaking donkey planet “revolving around Sirius” (J.B. Bury, 1913). Wait... I take that back, because someone might investigate and find out its true!

<sup>14</sup> Commentary: Pharma-bro (aka Martin Shkreli) is a classic example of a compounding or snowballing positional error. He took money that he was not authorized to take, used it to make investments and lost the money. He probably figured that he would win big, pay back the money and no one would notice or all would be well. But he lost. He then raised the price of a critical medication that he controlled to regain his losses. This attracted a media outcry and political attention during the run-up to an election. He also involved himself via social media in the presidential election. But his first and most enduring error, as any respectable Roman senatorial or equestrian would say, was in cultivating an obnoxious, juvenile rich frat boy persona while also being a corporate officer, responsible for other people’s investments. He was arrested in December 2015 and charged with securities fraud and found guilty by a jury in August 2017 of securities fraud and conspiracy for a ‘Ponzi-like’ scheme, his bail was revoked in September 2017 for inflammatory speech not protected by the First Amendment. He claimed that he was being persecuted for his personality and wealth, and baited by the media, however the feds may have already been investigating him previously, but he clearly failed to anticipate the climate and adverse reactions to whatever he did and had to play catch up until it all caught up with him.

- ✓ Although he claimed during sentencing that it was never about the money, clearly something was driving him along (and the fact that it made him a multi-millionaire must have been very satisfying), and if not money, then it must have been about ‘winning’; getting away with something over everyone else, that was everything to him. This aspect seems to appear most often in relation to corporate and finance situations. Our society doesn’t exactly discourage that but does occasionally ticket speeders (e.g., Michael Milken).

<sup>15</sup> Citation & Commentary: “Those far distant, storm-beaten ships, upon which the Grand Army never gazed, stood between it and domination of the world.” – Alfred Thayer Mahan (The Influence of Sea Power Upon the French Revolution and Empire, 1793–1812 (1892)).

- ✓ The stunning British victory over the combined French and Spanish fleets at Trafalgar in 1805 is the classic study of the combination of the war college and superior technology both in naval tactics and in strategic naval power. The British ships, though fewer in number, were faster, more maneuverable, the British naval personnel were better trained, more experienced and determined, the British guns were firing two shots for every one received, they were probably more accurate and aimed at the waterline. In the light breeze of that day, the French and Spanish fleets moved very sluggishly and were taken by surprise by the British tactics of cutting their line in two places. In the end, the French and Spanish had lost half of their ships, the British lost none. Afterward, no nation challenged British naval superiority (even in the War of 1812) for over a century. Defeating the British at sea, or the Americans and British at sea (the comparable American naval victory is the similarly much studied, Battle of Midway), has been the first-order requirement for any nascent global power (or colonial resistance) for the last three centuries of world history.

<sup>16</sup> Commentary: This is an inherent problem with Google searches, their program believes the most current, newest, most popular, viral, is always the most relevant result, and thus bands, albums, songs, television programs, YouTube videos, movies, celebrities and bad people dominate top search results if any word related to them vaguely matches the query. Google is always about the hip, the shallow, and the now, like the society that made it. The problem is not likely fixable and not likely to be fixed anytime soon if it is, because that would change the nature of Google.

<sup>17</sup> Commentary: According to Memory Alpha wiki, the Star Trek universe did have a Dreadnought-class ship, the USS Vengeance in the Kelvin Timeline (ST: Into the Darkness, 2013), which was designed as a pure warship, with minimum crew, and AI heavy. It was designed so that the captain could fight and operate the ship without any crew, using AI, while sitting alone on the bridge. This design reflects the modern sense of AI possibilities but is not the baseline assumption of GGDM, which follows the old well-trodden paths of sci-fi.

- ✓ The complement of the Battlestar Galactica was 2000–2500 (Wikipedia, “Battlestar (reimagining)”) or 2,500 to 3,000 during the show (about 5% of the remaining human population), ranging up to 5,000 during the first Cylon War (Battlestar Galactica Wiki, “Galactica-type battlestar”), and operated understaffed without hindrance during the show.

- ✓ Again, according to Memory Alpha wiki, the USS Enterprise-D (ST:TNG) had a crew of 1,014 including civilians and families, while I recall from ST:OS mention of around 400 crew on the Enterprise and according to Memory Alpha, there were eight crew sleeping in bunks in each quarters (not the luxury apartments of ST:TNG). Memory Alpha wiki article, “Constitution-class,” shows crew numbers between 200+ and 400+ for the original Enterprise and the refit, Enterprise-A. So advance of technology between ST:OS and ST:TNG did not result in reduction of the complement of the successive Enterprises, but rather, they added civilians and family.
- ✓ According to Andromeda wiki, the pre-fall crew complement of the Andromeda Ascendant was 4,500, which included a regiment of Lancers, plus fighter pilots (thus the Andromeda Ascendant was hybrid mission ship, a warship, transport, and carrier). Yet, the ship operated for much of the series, with significant AI assistance, with half a dozen crew and hundreds of androids. The fighters were remotely operated as drones from the bridge by Tyr Anasazi during combat. The ground landing force during the series were a handful of sophisticated, heavily armored, AI operated Planet Defense Bots.

Some questions to be answered in GGDM is what is the relationship between ship building cost and sophisticated AI systems, and if the ship is mostly AI, what support is required from Log Ships (see Logistical Support Ships, 3 Movement, p. 860, *infra*) for the minimum crew?

<sup>18</sup> Commentary & Citation: In the Forever Knight episode, “Last Act” (1992), Erica, a 17<sup>th</sup> Century playwright and tri-centennial vampire, commits suicide at the beginning of the episode by sitting on a park bench to watch the sunrise. She was tired of darkness, and missed seeing the sun.

- ✓ I’ve always wondered how and why all of those vampires ended up in modern Toronto?
- ✓ If a vampire can be killed by exposure to sunlight, is it because 1) the sun has some mystical power that makes it the natural arbiter of what is ‘right and natural’ on Earth (i.e. the image of the old sun gods), or 2) there is something about the vampire’s physical being that makes it susceptible to sunlight, like old thermal printer paper, or 3) simply because they and the population believe it to be so?
- ✓ I later watched Interview with the Vampire (1994) in late 1995 at college; I did not dislike the movie, but I thought it was slow, I remember I was having a difficult time staying awake (I was very tired likely), and I really didn’t care for the anti-climactic silliness of the scene where he finally met the European vampires. I might think differently of the movie now if I re-watched it 25 years later.
- ✓ Oddly, some of the sadness of being a vampire that Roger Ebert commented on in his review of Interview with the Vampire (November 11, 1994), crept into Dr. Who in Series 8 (2014), and people didn’t like it, said the series lost its joy, that Peter Capaldi wasn’t connecting with the audience as the Doctor (e.g., see Neil Midgley quote, X-Factor, 2 The Streams of Time, bottom p. 87, *supra*).

<sup>19</sup> Citation & Commentary: According to Wookieepedia (information captured February 3, 2017), the complement of the original Death Star (DS-1) was about 1.2 million people, including 343K Imperial Army and Navy and 26K Storm Troopers. That is approximately the population of Dallas, TX in 2010. So, Luke’s torpedo in the vent was equal to a couple of nuclear weapons hitting Dallas, TX in 2010 (found on [http://www.citymayors.com/gratis/uscities\\_100.html](http://www.citymayors.com/gratis/uscities_100.html)). Star Wars fans have no problem with this apparently. If the assumption is made that the complement of the Death Star naturally contained the best and brightest of the Empire’s personnel, the loss of the Death Star (to such a simple design flaw) is a particularly staggering blow (similarly, the Roman Republic lost hundreds of galleys, three entire fleets, to storms at sea during the Punic Wars, significantly taxing their resources and manpower). Likely, the unfinished second Death Star (DS-2) at Endor, though larger than the original Death Star, had only a fraction of the crew when it was destroyed, but again, those would have included the remainder of the Empire’s best personnel, officers, technicians. The Romans prevailed, the Palpatine Galactic Empire crumbled.

<sup>20</sup> Commentary: This percentage can be adjusted to suit when the game is set up, in primary school grading, 90% is considered excellent. Adjustment to 15 or 20% will cause greater consumption of committed Faculties. Dynamics.

<sup>21</sup> Commentary: Or as is commonly said in sports, play within yourself, focus on what you can do, what you do best, do your job. The opponents are going to do what they can do. And that’s the contest, the sport.

<sup>22</sup> Citation: Dr. Jesse Bennett performed the first successful Caesarean Section operation in North America on his wife in 1794 in Virginia. Bennett also appears to have later declined to join the Burr Conspiracy against the United States.