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See Appendix AGE – Aging Out
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*“Ocean’s dying, plankton’s dying... it’s people. *Soylent Green is made out of people.* They’re making our food out of people. Next thing they’ll be breeding us like cattle for food. You’ve gotta tell them. You’ve gotta tell them!”*

– Soylent Green (1973)

There’s a Signpost Up Ahead: Consider that very few in our population can now hunt or fish effectively, few would know how to butcher and clean the meat properly, and many don’t even know how to cook. Many would be inept at making fire and shelter. And the part of our population that farms for a living is shockingly small and much of the arable land has disappeared in the last 50 years, turned into malls and suburbs (and probably unrecoverable as arable land). In a catastrophic and long term disruption of the food production, processing and distribution systems, there is not enough wildlife left to meaningfully support the population and canned, processed or frozen foods would be gone within six months to a year. A Malthusian catastrophe of sorts would soon reduce the population to a fraction of the current levels.

Resources: It is assumed that all colonies are basically self-sufficient, being as they are, isolated islands separated by vast interstellar space.¹ But all colonies also desire goods and services from other places and will work to make a profit.

- ✓ If you are importing all or most of your food, you’d better have an export that everyone else cannot do without – and a strong navy to insure the food shipments arrive.

Nascent interstellar politico-economics are projected to be similar to those of feudal Europe: Each community centered around a stronghold, castle, or town was essentially self-sufficient in terms of food, survival, essentials – they had fields, serfs or peasants, skilled tradesmen, cattle, oxen, a mill, housing or huts, a member of the clergy who doubled as a medical doctor many times, burial places – with some traffic along rivers, old Roman roads, or rutted dirt tracks and bridges depending on location, providing outside goods, culture and communication.

It is also assumed that colonies must look first to their own infrastructure, civil safety and order, and domestic subsistence, therefore, the amount received in taxation from the colony or any resources carried away in trade activities represents the *excess* production of the colony, ***above and beyond current culturally accepted levels of comfortable living***² that is available for the building of an interstellar civilization.³

- ✓ “Diet helped determine peasant status as well. Most likely the peasant and his family ate less nourishing and less varied food than his grandparents had. Certainly the family ate less meat, and the caloric content of its porridge and bread was below sixteenth century standards. However, variations were great from country to country and region to region. English renters ate better than French sharecroppers, and a Polish serf or Sicilian day laborer would have considered the diet of a Dutch truck farmer as positively princely.” – Raymond Birn, Crisis, Absolutism, Revolution: Europe 1648 to 1789 (2nd Ed., 1992), p. 26, discussing domestic subsistence in 17th Century France.
 - Small Beer or Table Beer is believed to have been developed for and provided an important nutritional supplement to lower class diets from the Middle Ages onward to the 18th Century; it was consumed with meals by males and females of all ages due to the low alcohol content.

- ✓ “... doubtless some societies would be willing to receive inputs of goods without reciprocating through exportation, but this is obviously difficult to achieve in a world of shortages. Probably the contemporary society that comes closest to this is North Korea, as it lacks a market economy, and can afford comparatively few exports, as the goods of the sort it produces are generally needed at home.” – Kenneth D. Bailey, “Boundary Maintenance in Living Systems Theory and Social Entropy Theory,” *Systems Research and Behavioral Science*, Vol. 25, Is. 5, pp. 587-597, January 7, 2009.

- Inescapable Logic: The resources available to a civilization are always a cash flow type problem: Production → Processing (+ initial distribution/transport) → Secondary Distribution/Transport to markets → Consumption/Demand. A society can never consume more than it produces, has and/or brings to market at any given moment (through production, storage and/or importation); that is just inescapable logic. Thus, if aliens peacefully conquered the Earth and prohibited all forms of human transport and travel of more than ten miles, humanity would be limited to what they can produce locally and our systems would collapse.

It is also likely that some resources must be produced regardless of the cost and time, thus great efforts might be spent transporting over long distances or on high end processing for a small return. GGDM does not look at the star system/colony resource process; the game only looks to see what is available to the interstellar government from each planet/colony under its control without questioning the processes – whether equitable/inequitable, wasteful/efficient, polluting/clean, nor the politics or necessity (there is much room here for the Concierge to operate). The distribution, transportation and importation of resources on the interstellar level is addressed in the Commerce section generally, *infra*.

- ✓ “The art of taxation consists in so plucking the goose as to obtain the largest [number] of feathers with the least possible amount of hissing.” – Jean-Baptiste Colbert, Comptroller General of Finances, First Minister of State under Louis XIV of France.
 - Other shortened versions of this include “pluck the goose with a minimum of screeching”; Colbert may have got this idea from Albrecht von Wallenstein, an imperial mercenary commander in the service of Ferdinand I of Austria-Hungary who devised a new system of funding the war by levying ‘war taxes’ on subjugated populations.
- What You Got, When You Get: The ‘money’ of the game, the resources immediately available for the use of the interstellar government, are measured in the form of Resource Points, hereafter, “RPs.” While RPs do share many of the same functions as money in the real world, it would be a mistake to think of RPs as simply ‘money’ in the traditional sense. RPs represent instead, all of the kinds of resources available, from raw materials to intellect to time and the faith of the population. RPs represent some things that cannot be obtained with money (such as intellect and population) while ‘money’ only represents the holder’s potential to obtain the resources available at that time in his society, and a rough relative measure of the value of one resource against another. Resources are whatever a culture needs to do a job. Resource Points without people is a pile of rocks in the middle of a field of ragweed. For game convenience, RPs are always measured, added, subtracted, and used in whole units, any fractional units are lost. **RPs must always either be in the Treasury or on a Cargo Ship** (or in some cases, reserved for a specific purpose, but still technically in the Treasury).

- ✓ Fans of Star Trek: TNG refer to the 24th century as a ‘resource based economy’ in a meaning that is likely very similar to GGDM’s concept. This discussion was played out in the conversations between Captain Picard (who doesn’t actually use the term) and Ralph Offenhouse, a 20th Century money-obsessed human who had been awakened from cryogenic sleep in the episode “The Neutral Zone” (1988). In any event, ST:TNG was always very anti-capitalist in reaction to the 70s and 80s ‘material me money first’ Western culture, and seemed to try to suggest other ways of living and working; Star Trek fans should like GGDM’s resource economy concepts.
 - For many, of course, this borders on socialist-communist messaging; and there is no doubt that the future represented by Star Trek: TNG near the end of the Cold War was implicitly socialist in nature. Unlike many ideologues and pundits, I don’t see any great conspiracy in that suggestion, but I can see why the right has always painted Hollywood as left leaning.
 - Though I watched Star Trek TNG in the early 1990s, I cannot say for certain that it was the inspiration for GGDM’s resource economy. The original Stellar Conquest board game (1975) had Industrial Points (IPs), which I changed to RPs sometime after 2000. I don’t remember why I changed it, but I am sure that Intervention Potentials (IPs) were not added until after 2015, so that was not the reason. Once I changed them to RPs, I naturally began forming the resource-economy arguments to define its meaning in the game. Thanks to Amazon Prime and YouTube, in 2019, I became re-familiarized with Star Trek’s arguments long after I had already formed the resource economy arguments for GGDM.
- Treasury: RPs collected during Taxation are kept in an *imaginary* floating pool of resources called the Treasury. The Treasury is purely fictional, it has *no actual location* and it can’t be captured, looted, or robbed (unlike Ft. Knox).
 - ✓ I used to play a computer game called Lords of Conquest back around 1989-1990. Each position had a Treasury that had a location on the board, if your Treasury was captured, it was looted and added to the conqueror’s Treasury. I am not a big PC gamer, but I think that is the only game I have seen with that mechanic.
 - See also, Avar Ring discussion, 1 Resolution, p. 1466, *infra*. The concept of the Treasury in GGDM is the opposite of the legendary Avar Ring.

The Treasury represents the flow of the economy, the ability to trade information on developments and technologies, the work ethic of the population, and the ability of goods and services to flow along a developed infrastructure in the way that makes a nation and a civilization. Resources from the Treasury are used for activities when Powers are activated, such as for cultural traits pieces, endowing Colleges, researching technologies, and planetary development. However, there are limits to which the resources from the Treasury can be channeled to any particular colony due to the local limitations of time, manpower, and the arrival of materials. Thus, a colony cannot build 500 RPs of ships in a single Regular Turn because your position has 500 RPs in your Treasury! Time and planning are necessary to this game.

- ✓ As a general guide, positions must have RPs in the Treasury before most Power Activations that require RPs because most actions are processed before Taxation in the normal Regular Turn Actions processing sequence.

- ✓ Unlike in the real world, ‘taxes’ in GGDM are paid in resources. You cannot pay the U.S. government taxes in resources; only U.S. currency is accepted for payment of taxes, and this is one way in which the government enforces use of currency (not that it really needs to, the system is self-perpetuating now). Note however, this was not always the case; until a century or two ago (before paper money), even in systems that had metal coin currency, taxes could be paid with goods and services, e.g., it was common through most of history for farmers to pay their lord with part of their crop.⁴
 - Commodities futures allegedly began when Samurai sold future harvests at reduced value for money in the present to cover costs and exigencies.
- ✓ [Interview] “The poll tax was a means of getting the young Zulu men to go and find employment in the mines or construction. Because the Zulus were actually farmers, they didn’t need money, so there was no point in them going to work because they had everything they needed, and also, there were other taxes as well, there was a hut tax, there was a dog tax you can imagine and there was also taxes to man which was actually out of proportion.” – Aurelian Mndaweni (Research & Education Officer), Fort Eshowe Museum, Zululand, from Bhambatha: War Of The Heads (documentary, 2009).
- Aging Resources: Resources don’t last forever; you have 50 apples today, a month from now you will have 50 rotten apples crawling with bugs. While resources are accumulated as ‘points’ in an imaginary pool called the Treasury, at the end of each Regular Turn (or Turn Cycle if Regular Turn Actions are not submitted or processed), between 10% and 30% of RPs *in the Treasury* will be automatically lost due to various general entropic effects (this is not a Concierge Intervention).⁵ Five percent will be added to the loss for each disrupted Government Title at the end of the Regular Turn. Even ‘money’ while it arguably lasts forever, will eventually decrease in value due to natural inflation. It may be wise and necessary to accumulate some resources, but the universe is a waiting pool of *nearly infinite resources* – so no need to hoard or go to war – and if we ever get out there, that will be why we go.
 - ✓ RPs on Cargo Ships do not ‘age-out’ so it is possible to end-run the aging process by storing RPs on Cargo Ships. Presumably, they represent hard RPs, not soft RPs, however, RPs loaded onto Cargo Ships become immediately less useful (e.g., you cannot use them to fund Technological Research or recruit Special Operations Missions). If this becomes an abuse in the game (and players should never seek to abuse the mechanics of the game), there are ways of dealing with it in-game, e.g., Interventions.

As automatic entropic effects are already built into the game system through aging of resources, the Concierge should act cautiously in applying Interventions against position Treasuries (e.g., to simulate corruption). Additionally, direct loss of RPs from the Treasury should probably not be allowed as effects in adverse News Events, for the reasons cited above, plus that it is problematical based on the abstract concept of the Treasury. This does not mean that catastrophes cannot happen to good planets, locally affecting RPs.

- ✓ Unlike money, resources are not redeemable or transferrable for anything; you must have the correct resources in the right place at the perfect time. GGDM is intentionally rather blurry on that subject, using a very expansive definition of RPs and generally assuming that the resource conditions are correct when RPs are used for Power

Activations. Thus, RPs seem like money in the game, but there is room for interpretation and Interventions. Additionally, RPs in GGDM age, whereas money never does generally (it isn't around long enough!).

*“Economists, however, have a language all their own when it comes to money. They define it as something that serves as a **medium of exchange**, a **unit of accounting**, and a **store of value**.... In other words, economists largely define money by the functions that it serves. It need not be green and made of paper, and it need not be little metallic discs – money is anything that fills those three essential functions. Now, the best money is also highly convenient – it is light, easy to carry, and can be broken into smaller units for easy exchange.... But most important, it must serve as a medium of exchange, a unit of accounting, and a store of value.”*

– from “Money: The Economic Definition,” retrieved from shmoop.com, November 24, 2017 (emphasis in original text)

Hrimata Eleison!: Although resources are and must be the basic economic standard of the game rules, players are free to develop whatever interstellar currency exchange systems they choose, and to bring to the game or develop, whenever practical and workable (and such that value is added to the game, without bogging it down in financial minutia), any of the complex financial systems of the real world. It may also be assumed (unless otherwise specified) that cultures beginning the game have developed and are comfortable with their own monetary systems, which are used to measure and transfer monetary value internally.

- ✓ “Lysander amassed a huge fortune from his victories against the Athenians and brought the riches home to Sparta. For centuries the possession of money was illegal in Lacedaemonia, but the newly minted navy required funds and Persia could not be trusted to maintain financial support. Roman historian Plutarch [Life of Lysander] strongly condemns Lysander’s introduction of money; despite being publicly held, he argues its mere presence corrupted rank-and-file Spartans who witnessed their government’s newfound value for it. Corruption quickly followed; while general Gylippus ferried treasure home, he embezzled a great amount and was condemned to death in absentia.” – from Wikipedia article, “Lysander,” captured July 3, 2019.

There are a number of moving parts to the Spartan situation:

- ✓ It implies that coins were being minted and in wide circulation around Greece (and likely most of the Mediterranean) by 404 B.C. and that the practice was known in Sparta but prohibited for some unknown reasons, perhaps to avoid accumulation of wealth by helots and lesser Spartan families or to avoid Spartan wealth being carried away by *perioikoi* (free traders) and foreigners. Or to avoid naked wealth disparity.
- ✓ The victory in the Peloponnesian War was a cultural-economic kairotic moment in Spartan society; their newfound wealth was mainly expressible in coinage and precious metalware (jewelry, etc.) they took from Athens, food and crafts and labor tribute from Athens allies would come to Sparta instead, easing their food shortages, shifting their economy.
- ✓ Out of political-military, cultural and economic necessity, Sparta was changed by their victory over the Athenians. This is possibly Plutarch’s way of expressing the ‘evils of war’ if he considered Sparta to be an ideal model of civilization.

In the end, what is money, but a number that we use to assign relative economic value to goods and services? An unfortunate side effect is that it is frequently used to assign value to people. Money cannot be used to make anything, other than paper airplanes or to start a fire. Money cannot buy resources that are not there. Money cannot be used to obtain resources that the owner is not willing or able to part with for any amount (though you may well use money to convince others to forcibly take the resources for you). Money cannot be used where the concept doesn't exist. Only resources count, money is just the ability of individuals, governments and groups to command and acquire the resources and goods available in a place and time; their relative 'share' of the pool of available resources. Some pools and shares are bigger than others though.

- ✓ The discussion of money, trade, and interstellar currencies continues in 2 Commerce p. 1205, *infra*. For all game purposes, RPs are used.
- ✓ “Everyday a new sensation, While a million creatures, See their soil turning to dust, *Hrimata Eleison!*” – Xandria, “Nightfall” (2014).

“But [French-born Simon de Brion, Pope] Martin [IV] underestimated the Sicilians’ hatred of the French, and especially of Charles [I of Anjou, King of Sicily, Prince of Achea, Senator of Rome], who ruled from Naples rather than Palermo, where he could have seen the suffering caused by his officials. Charles’ island officials were far removed from his oversight; he did not see the avarice, the rape, theft and murder, nor did he see the high taxes levied against the meager possessions of the peasants, which kept them impoverished, but made no improvement in their lives.”

– from Wikipedia article, “Sicilian Vespers,” captured November 21, 2018 ⁶

The Taxman Cometh: Taxation is the process of ‘making’ the colonies produce RPs for the Treasury for use in other activities (or collecting RPs from colonies for use in other activities).

- **Resources from Population:** All population factors (native or alien) on all colonies owned by the taxing player, *except* for **Conquered Colonies** (see Colony Politics, *et seq.*, 2 Order, pp. 538-539, *infra*), produce 1 RP for every five factors of population on colonies. Resources from population factors generally represents ‘man hours’ and non-material mental resources rather than the kind produced by hard core Industry, but for the purposes of the game, they all go into one undistinguished pool of resources. Income from populations are calculated per colony (colonies cannot combine); odd or leftover factors are dropped (truncated) and produce nothing. Therefore, a planet with 62 population factors would produce 12 RPs, which then go to the Treasury.
- **Resources from Industry:** The production of Industry is based on the state of the position’s industrial technology (measured in RPs produced per Industrial installation) as of the end of the last Regular Turn (that is, a position may not use improvements in industrial technology in the *current turn* to boost industrial output during Taxation).

Unlike population, all of the Industry of the position (excluding Conquered Colonies) is totaled and then multiplied by the production value per Industry and that amount is added to the Treasury in RPs. So, if a position’s current Industry Patent (with COTs that improve industrial production, see Continuous Operational Technology, 2 Patents, p. 740, *infra*) allows Industry to produce .5 RPs per Industry installation, and that position has 30 industry, then

the position receives 15 RPs from Industry during Taxation. Industrial production depends entirely on development of technology and the industrialization of colony worlds.

- Resources from Special Planets: Colonies on Special Planets produce more RPs because there is something special about their planet that allows them to produce something unique and vital to the interstellar civilization. On a Special Planet, production of RPs is increased by 30 to 50%. As players will note, Special Planets are often Hostile Planets and/or are difficult or dangerous to colonize, thus they may require development of Controlled Environment Technology (see Colony Cans and Building Up, 1 Expansion, pp. 879-880, *infra*). The Concierge may impose other requirements.
 - ✓ Special Planets should not be confused with Specialized Colonies, which are described in 4 Expansion, p. 925, *infra*. It is possible though that Special Planets may be the site of or require Specialized Colonies.

Some planets may be ‘special’ because they contain evidence of alien civilizations with cultural artifacts and/or technological devices (useful for Reverse Engineering, see 3 Technology, p. 712, *infra*). In one of my favorite cartoons, Hagar the Horrible returns from raiding Paris with a present for his wife, a faucet he looted in Paris. The faucet doesn’t work – absent the plumbing it was attached to, and he says, ‘I don’t understand, it worked in Paris!’ This would be the functional equivalent to H.G. Wells using his time machine to steal a cell phone from 2017 and wonder why it doesn’t work in 1898. So, when assessing alien technological or cultural artifacts, participants should be cognizant that the artifacts are probably part of a system; that technology has in recent decades, developed into global systems rather than self-contained items, for example, the “internet of things” has connected common household items to the global network.

- Red Planet: It is possible during taxation to make a planet produce or ‘give’ more RPs than it normally would. This would take away from the comfort level of the population⁷ and deprive the colony of resources for maintaining and building infrastructure, education, civil security, etc.⁸ Because the game system is based on resources and not money, the only means of ‘deficit spending’ is to take resources from the domestic subsistence of the colony in the now; to essentially take from the present and future of the colony in the present, as the colony’s infrastructure will deteriorate and will have to be replaced at greater expense later.

The likely result would be an increase in entropy (see Barrowing the Future, 2 Disruption, p. 276, *supra*). In this sense, Domestic Subsistence is substantially identical to the lowest level of Abraham Maslow’s Hierarchy of Needs.

- ✓ For example, during the Great Chinese Famine (1958-1961), farmers harvested rice only to watch it being hauled away in trucks by the government for sale on the international market so that the government could acquire foreign currency. The Maoist leaders accused the peasants of hiding food and dismissed reports of mass starvation. See The Illusion of Superabundance discussion 4 Commerce, p. 1231, *infra*.

Note that there is a limit even to this, as you cannot take resources that are not there or are not ready; so each colony has a finite level of resources that can be taken by the interstellar government in any case.

It is also possible for the ‘thiev’n grub-ment’ to take less ‘taxes’ than are due from colonies, but there is no guarantee that such measures would result in a reduction of entropy, as materialism, corruption, sloth, wealth disparities, and other similar factors might still erode the social and economic systems.

- ✓ “We live in difficult times, Marquet. This famine has prevented people from paying their proper tribute to the Church. I raise their taxes, only to be told there’s nothing left for me to tax. Imagine!” – Bishop of Aquila, Ladyhawke (1985).

“Sci-Fi Writers Have No Sense of Scale: The economy of the world seems built on mining deep space, despite the fact that the asteroid belt in the solar system alone would fulfil Earth’s needs for millions of years. An asteroid belt is not a place where you actually have to manoeuvre between rocks to avoid collision, since it’s still pretty damn empty. The world was clearly built to allow for the plot, not to be logical from the logical point of view. It’s also justified in that most of them want to be far, far away from Earth for various reasons. It’s further justified in that the planet was recently cracked open, so the debris hasn’t had a chance to re-coalesce.”

– from TVtropes.org, “The Gap Cycle,” (Stephen R. Donaldson)
captured July 21, 2019

Mining Operations: However, were humanity to discover a means of FTL, do you think that having sufficient resources in our own asteroid belt would keep us from expanding to the stars?

In GGDM there is no provision or mechanic where a planet or system becomes ‘mined out,’ though that is an ‘exhausted resources’ trope used in science-fiction, reflecting the wood-framed ghost towns of the American Old West period.

- ✓ “Well, students, at one time, Devron was a boom planet; that is to say, the people who came here did so with a rampant enthusiasm and sense of hope. There were precious ores to be mined. Of course, that was a number of years ago. Now the planet is that harsh little ball your visi-screens depict ... ill-equipped to offer sustenance to its meagre population of settlers. ... They were originally hard-bitten individualist bent on making easy fortunes. But their dreams were strip-mined with the ore. ... Exhausted of adventure, they are content with tilling the land (what’s left of it) and carrying on light trade with the more prosperous federation worlds.” *Id.*

The collection of RPs by Taxation Power Activations is non-specific, it may or may not, or may likely, reflect some aspect of mining in the system. If a game is played where certain very rare resources are of paramount importance, participants could use the Special Planets and/or Specialized Colonies to reflect mining of that specific resource, and if it something that can be mined out, then the Concierge could impose a maximum number of Taxation Power Activations at that location as part of the Special Writ.

- **Mining Ship:** If participants desire, they may create specialized ‘mining ships’ by use of Patents (see Patents generally, *infra*); there is no Existential Patent in GGDM for mining ships, or anything relating to mining. It is an entire subject that has only been lightly touched upon in science-fiction video; the singular most impressive mining ship in video science-fiction is depicted in Star Trek 2009 (the only thing impressive in the entire loud, colorful mess); the

alien ship in Independence Day: Resurgence (2016) was also massively impressive. The only screen visions after that are world-destroying things like the Lex or Galactus.

- ✓ The 2007 card game, Race for the Galaxy depicts mining ships, though it is difficult to tell their scale. Mining, represented by brown goods, is a strong element in Race for the Galaxy play.

- **Sit-n-spin:** It is possible, of course, for a Homeworld or Lost Colonist position, to decide not to colonize any planets during the game or to colonize only planets in their home system (the ‘sit-n-spin’ or ‘cement mixer’ strategy). This is not automatically wrong. It could be viable. It’s just a matter of scale (i.e. consumption rates); the sit-n-spin position would be like homesteaders, finding whatever they need in their own system and making everything they need. There are plenty of resources here in our own system to last thousands of years potentially; it just depends on the rate of consumption and production (i.e. population demands),⁹ and whether there might be other ores on exoplanets that are not available in the home system.

But GGDM’s resource (and sociocultural) assumptions in the long term are based on the idea of interstellar access to resources and living space. Thus, the Concierge would need to determine when or if the Homeworld or system depletes its resources and the position would need to proactively address the potential situation with technologies and social developments. This is not the same as not having Stardrive technology, not like a Minor Race exactly.

- ✓ As an aside ... I remember reading a short story long, long ago about a future where every inch of the United States is paved. The presidential candidates made a campaign promise that people would be able to drive anywhere they wanted. It was definitely a story written for the very young audience, I think it might have been in our ‘Environmental Adventures’ book in 8th grade. But in science-fiction settings, there have been advanced, huge overpopulated worlds like Trantor or Coruscant where the entire surface has been covered by cities (obviously, vulnerable to Malthusian catastrophe because they depend entirely on massive food imports from farming worlds), and this is likely the situation that would develop in a sit-n-spin strategy in GGDM.

“Socialism is defined by the government controlling the means of production and the distribution of goods and services – not simply by high taxes and the rich sharing their wealth with the poor. In fact, our own system, via the graduated income tax, already leads to the wealthy subsidizing the poor through higher income taxes – and taxes in general.”

– Aaron Blake, “Donald Trump Jr. vows to take half of his daughter’s Halloween goodies in a bad lesson on socialism,” *The Washington Post*, November 1, 2017

Political Will: The numbers presented in this section for production of resources are baseline numbers used in the game system.

Collecting or taking more or less resources than normal during Taxation can only be accomplished by activation of a Writ (based on the Taxation Power) during Taxation that also acts as the Interpretation accompanying the Power Activation. Activation of the Writ (for example, emergency war powers) to take additional resources during taxation will result in an increase in entropy because machines and infrastructure are not maintained and repaired, or education suffers, or civil order is not maintained – any number of ‘breakdowns’ due to the lack of resources.

Conversely, it is also possible, by use of a Writ, to take less during taxation than normal, leaving more resources for the colonies (i.e. ‘bread & circuses’) – but if the position doesn’t need the resources, it’s probably better to save the Fuzzy Group and the Acts, and not activate the Taxation Power until the government needs the RPs.

- ✓ “Now that no one buys our votes, the public has long since cast off its cares; the people that once bestowed commands, consulships, legions and all else, now meddles no more and longs eagerly for just two things – Bread and Games!” – Juvenal (Decimus Iunius Iuvenalis, 1st – 2nd Centuries A.D., Roman Empire).
 - ✓ “The evil was not in bread and circuses, *per se*, but in the willingness of the people to sell their rights as free men for full bellies and the excitement of the games which would serve to distract them from other human hungers, which bread and circuses can never appease.” – Marcus Tullius Cicero (106 B.C. – 43 B.C., lawyer, politician, orator in the late Roman Republic period).¹⁰
- Crunch: Studies by the University of British Columbia demonstrate that the psychological pressure of poverty diminishes cognitive abilities in the population due to worries about finances and subsistence (see Lori Culbert, “Poverty Clouds the Brain: UBC Prof.,” Vancouver Sun, August 30, 2013). Depression is a kind of poverty. This research on poverty also dovetails nicely with Self-Actualization Theory and with the general idea in anthropology that human culture started when humans no longer had to struggle for daily subsistence.
- ✓ “The government doesn’t care if you have water or electricity, there’s nothing at all. They don’t care. It’s too bad. Too bad. The people work hard. They don’t have enough clothing. No one complains. You know why? You complain if you can compare. If you come from Europe, you can compare, but if you live in misery all your life, nothing will move you.” – Gadalla Gubara quoted by Nadja Kornith in “The Omega Man – Gadalla Gubara and the half-life of Sudanese cinema,” Bidoun (bidoun.org), Issue 20, Spring 2010 (complaining about Sudan).
- Catastrophe: In classic human history, emigration and immigration have been the outlets for population suffering from a lack of resources, or overpopulation of an area. When the planet in question is a colony world that is either overpopulated or starving for resources, where is the population going to go, unless either they or the interstellar government provides colony ships? In extreme cases, a planet may be reduced to subsistence culture, a Malthusian Catastrophe, with loss of population and industry, and spawning Intervention Potentials Plus (IP+). As history shows, Malthusian Catastrophes can be externally imposed by force, siege, raids, ‘poisoned wells’ and ‘scorched earth’ policies and/or planetary civil war. The movie *Soylent Green* (1973) describes a classic, self-imposed, creeping Malthusian Catastrophe.
- ✓ “Violations of individual property rights (for instance through government taxation, regulations, etc.) will make property owners value *present goods* increasingly more highly than *future goods* – a conclusion which follows from the law of diminishing marginal utility. Violations of individual property rights thus raise peoples’ time preference, increasing consumption at the expense of savings and investment, thereby reducing (or even reverting) the pace of capital accumulation. An interventionist-socialist societal order will therefore *necessarily* lead to impoverishment relative to a free market societal order, in which there are no *systematic* violations of individuals’

property rights.” – Thorsten Polleit, “What Can the Law of Diminishing Marginal Utility Teach Us?” Mises Institute, February 11, 2011 (emphasis in original).

- Cyberia: Technology (i.e. Patents) cannot be used to directly improve the resource production of population factors during Taxation. All of the means by which production is increased, including automation, personal computers, cyborg implants (if your species is into that sort of thing), telecommunications, transport systems, and such, are classified under the *Industry Existential Patent*; therefore, Industry Installations on colonies do not only represent ‘factories’ and production centers, but the entire infrastructure by which a civilization produces the raw materials, food, manufactured goods, and services needed. However, it is possible to temporarily increase the resource production of population factors by use of Writs, College effects, and possibly other Interpretations, which address non-technological, non-material subjects, such as beliefs, ethics, education, organization, and national and social will.
- ✓ For example, during WWII, idle Russian factory workers in cities under German siege built homemade tanks to aid in the defense; some of these homemade tanks were quite effective and left the German intelligence baffled. There was no new technology required for this; the workers simply had the will, resources, equipment, knowledge and creativity, and nothing better to do. In one spectacular night attack by factory-worker homemade tanks, the Russian forces overran a position, hooked up and towed away a battery of German 88mm anti-tank guns.

The basic game division that is being created here is the separation of pure biological ability (in the form of RPs from Population) from all of the various technological enhancements (in the form of RPs from Industry). While one might argue that biological engineering, being jacked into a global network, or cybernetics would increase population capability, in GGDM terms, those are placed on the side of Industry improvements, even if they are biological. It’s a game artifice that allows improvement to the Industry Existential Patent without need to specify exact areas or technologies of improvement. And that is the best my wetware can do.

“But when a billionaire avoids paying taxes, he breaks a law that ought to be self-policing: the law of basic human decency.... Doing something because you can is no reason to do something. If a crazed libertarian became president and somehow legalized murder, I assume that we wouldn’t all start doing it?, right. The human conscience, which religious conservatives insist is the voice of God, would suggest otherwise....

Capitalism is supposed to inculcate morals. It assumes that people will honor deals, that a product is as good as the seller says it is, that theft is wrong. Capitalism and democracy work well together because authoritarian states undermine private property and distort the market. But a state is necessary – always necessary – to enforce the law and make sure the market works along agreed lines. In other words, by failing to pay taxes [THE BILLIONAIRE] not only did something bad in and of itself – he also did something that weakened capitalism by weakening the state. You can’t have good capitalism without good infrastructure, effective courts and well-trained cops.”

– Timothy Stanley, October 3, 2016

Endnotes.

¹ Commentary & Citation: That is, each colony is a Wallerstein “world system” that becomes a “mini-system” in relation to the larger (probably ‘world empire’ type) interstellar world system. In this view, colonies will more or less be outlying districts from which goods and services are extracted (e.g., Taxation in GGDM) to a capitalistic center. See Frank Elwell, Macro Social Theory (2009), pp. 45-46.

- ✓ This is the assumption of nearly all science fiction on this subject. The question is whether or not this assumption is made simply because it is an extension of the world in which we live and we cannot imagine any other (e.g., the epic failure of Marxist evolution) or is it an assumption based on inconvertible fact?

² Citation: “To return from a short digression, we must note further that a nation with a low standard has no reserve to fall back upon; it lives on the margin of subsistence, which may easily fail in war-time, especially if much food is imported when conditions are normal. It can hardly be an accident that in this war the nations with a high birth-rate broke up in the order of their fecundity.... The sacrifice of comfort to numbers, which we have seen to be possible by maintaining a low standard of living, not only diminishes the happiness of a nation, and keeps it low in the scale of civilisation; it may easily prove to be a source of weakness in war.” – Dean William Ralph Inge, Outspoken Esays, “The Future of the English Race” (The Galton Lecture, 1919), available for free on the Gutenberg Project.

- ✓ Though this remains very generally true, as it was written in 1919, it does not anticipate the vast advances of technology which have allowed maintenance of ‘comfort’ as long as the resources remain to continue it (see Joseph Tainter’s ‘technological optimist’ discussion, Resources Proficiency, 3 Culture, top p. 397, *infra*). This is similar to the way that world energy crisis calculations in the early to mid-20th Century (e.g., the backstory for the Fallout video game series) were upended by the invention of the transistor, miniaturization, and vast improvements in automobile mileage and overall energy efficiency (and nuclear power plants) such that greater energy consumption does not automatically imply higher technology.
- ✓ See also discussion of the Inge Process, 5 Diplomacy, p. 1161, *infra*.

³ Citation: “Prior to Boltzmann, entropy was understood as a measure of the proportion of energy in a system that can be used for useful work. ... the useful work performed by that increase in entropy [from the moment of the Big Bang] includes the formation of galaxies, stars, planets... indeed, the entire process of evolution.” – Matt O’Dowd (City University of New York), “Are You a Boltzmann Brain,” PBS Space-Time Channel, April 26, 2017.

⁴ Commentary: Particularly interesting in this is Queen Game’s title Shogun (2006), where players collect rice from areas they control. However, two factors limit rice taxation: 1) the farmers get mad and may revolt, and 2) rice cannot be stored from year to year (which is probably how *sake* was invented), but you need to feed your people each year.

⁵ Commentary: A real world example applicable to the game: One of the victims of the September 2013 Washington Naval Yard shooting rampage was a top, very experienced naval ship designer, shot in his office.

⁶ Commentary: The Senate of Rome is arguably one of the oldest continuous existing ‘legislative bodies’ in the world, if one accepts the continuity of existence from the Senate of the Roman Republic to the Senate of the Republic of Italy in Rome. The Roman Senate declared Odoacer King of Italy (476 A.D.), thereby legitimizing the coup d’état that deposed the last Roman Emperor and separated the West from the Eastern Roman Empire. In this, the Roman Senate, as it had done many times before, acted as a legitimizer of authority, a role later taken over by the Popes because the Holy See was more politically palatable to the rest of Europe than the Roman Senate. Charles I of Anjou (of Naples) was a Roman Senator, but appealed to the Pope (everyone was playing the Pope cards) to adjudicate and legitimize his authority over Sicily during the War of the Sicilian Vespers (1282-1302), instead of the Senate of Rome.

- ✓ The War of the Sicilian Vespers is the ‘world war’ of the medieval Mediterranean world, based on their capabilities. It is a great unexplored gaming area; in the right hands, I think a really deep and fascinating (and educational) board game could be based on this smoldering 13th Century Mediterranean conflict. I do not think any games have been published on this particular subject. It would be a good card driven war-game.

⁷ Commentary: A story I saw in a documentary video is that Eva Braun, Hitler’s mistress, got wind of a plan to reduce production of women’s clothing and cosmetics due to wartime demand. Though normally demure, she stormed into a meeting of Hitler and his ministers in protest and asked them if they wanted German women to be thought the ugliest women in the world? Though they would not give in to Eva in person, the planned reduction was quietly crossed off the list and delayed a year; she knew which buttons to push.

- ✓ This story apparently was related by Speer, and is included in two sentences on the Wikipedia biographical page for “Eva Braun.”

⁸ Citation: “Alexei Larionov, the first secretary of the Ryazan Obkom, announced a very ambitious goal of tripling the amount of meat produced in the region within the next year. The promise, in spite of being unrealistic, was confirmed at the regional party conference. On October 12, 1958 Larionov delivered the promise to Khrushchev in person, who became excited.... On January 9, 1959 the promise was published in Pravda, the official party newspaper....publication was rushed by Khrushchev in spite of objections from the Agricultural Department.... The challenge was met by several other regions.... In order to meet the promise, the region had to slaughter all the bovine herd of 1959, as well as a considerable part of its dairy stock. In addition, all cattle reared by kolkhoz farmers in their private households was appropriated ‘temporarily.’ As the collected amount was still not enough to meet the target, obkom had to buy meat in neighboring regions by relocating funds from other sources, such as the purchase of agricultural tools and construction. On December 16, 1959, Ryazan obkom was able to announce that the region delivered 150,000 tons of meat to the state, which was three times the amount delivered the previous year. On top of this, the regional authorities promised to deliver 180,000 in the next year. On December 27, 1959 the success was announced by Khrushchev himself at the CPSU Plenum....

Larionov was awarded the title of Hero of Socialist Labor. However, in 1960 production of meat in Ryazan oblast plummeted to 30,000 tons, since mass slaughter had reduced the amount of cattle by 65% in comparison to the level of 1958. To make matters worse, kolkhoz farmers whose private cattle were ‘temporarily’ appropriated the year before refused to process kolkhoz land. This halved the amount of grain produced in Ryazan oblast. By the fall of 1960, it became impossible to hide the affair. In September 1960 Larionov was dismissed from his post, stripped of the title of Hero of Labor.... On October 10, 1960, he committed suicide.” – from Wikipedia article, “Ryazan miracle,” October 5, 2018.

⁹ Commentary & Citation: The historically significant 1983 anime *Dallos*, which I immediately recognized as being spun off Robert Heinlein’s 1966 novel *The Moon is a Harsh Mistress*, does a very good job telling the story of a Lunar mining colony rebellion against Earth oppression.

- ✓ “On the dramatic front, the storytelling sets up a remarkably thoughtful approach to a colony growing into a rebellious state as time passes. While the earlier generations are willing to tolerate being answerable to Earth, as they feel that they have a great debt to repay to the Earth for it funding the establishment of the lunar colonies, the younger generation who knows nothing of Earth has no such sense of loyalty and so chafes under what they see as Earth’s oppression and Earth prospering on the backs of their labor.... In fact, whether intentional or not, the whole scenario gives off a vibe not too dissimilar from the American colonies in the days leading up to the Revolutionary War.

Over the course of four episodes we see characters either grow into revolutionaries or desperately cling to their ideals, like Shun’s father, who stubbornly insists that ‘someone has to get the work done’ even in the face of widespread strikes, or Alex’s fiancée Melinda, who firmly (and likely naïvely) believes that people on Earth will not turn a blind eye to the grievances of those in Monopolis even as most other characters regard her skeptically. There’s also some bureaucratic scheming going on, too, as Alex’s cocky attitude has not made friends amongst his allies.” – Theron Martin, Review of *Dallos* (Eastern Star DVD), Anime News Network, March 9, 2014.

The story is bleak, existential, political, and somewhat choppy, but they did a very good job of presenting multiple viewpoints on the rebellion, e.g., pointing out that the police suppressing the rebellion were also born on Luna and think that the Earth administrator doesn’t understand (which is why Federation military forces were deployed). And in the middle of all of it is the titular seemingly dormant alien artifact near the colony ... probably a fingerprint left behind when the Concierge used an Intervention Potential on the Moon. It really is the final ten minutes that make the entire story worth it, but you have to play it out to get to that place and time.

¹⁰ Citation & Commentary: The box-office juggernaut *Hunger Games* (2012) was based on this entire idea of bread and circuses. *Panem* means bread in old Latin (e.g., “*panem et circenses*” means “bread & circuses”), and *Panem* has little bread.

- ✓ In the semi-cooperative board game, *Republic of Rome* (1990), players representing ambitious senatorial and patrician class families in Rome could (and always needed to) woo and distract the population by sponsoring bread & circuses while fighting multiple foreign wars.