

## Table of Contents

<b>Things to Build</b> .....	665
➤ Cloverleaf Interchange.....	665
➤ Industry .....	665
➤ Get to Work! .....	666
➤ Steep Road.....	666
<b>Orbital Platforms</b> .....	666
➤ Orbital Shipyard .....	667
➤ Orbital City.....	667
➤ Orbital Defense Base .....	668
<b>Deflection Dilemma</b> .....	669
➤ Skylab is Falling .....	670
<b>Manzikert</b> .....	671
➤ Need & Complexity .....	671
➤ Friends & Enemies .....	672
Endnotes.....	672

*See Appendix CON – Writ & Construction Example*  
*See Appendix EPAT1 – The Existential Patents*  
*See Appendix EPAT2 – Existential Patents Quick Summary*

*“No house should ever be on a hill or on anything. It should be of the hill. Belonging to it. Hill and house should live together each the happier for the other.” – Frank Lloyd Wright, An Autobiography (1932)*

*“Man is a phase of nature, and only as he is related to nature does he matter, does he have any account whatever above the dust” – Frank Lloyd Wright <sup>1</sup>*

**Things to Build:** So perhaps Man is Phase III of Nature and the awakened Ants are Phase IV?  
☺ We are awaiting instructions.<sup>2</sup>

With the exception of Institutes (see Institutionalized, 3 Colleges, p. 487, *supra*, which requires a Special Writ instead), everything built at a colony requires that the colony owner first hold a Patent allowing the building of that specific enhancement, installation, or ship. Hosting a College or Corporation at a colony does not require building, nor does Capital Status or any political status of a colony require building at that colony, or a Patent.

- ✓ For example, no colony may construct Industry, Scout Ships, or 1<sup>st</sup> Era Warships (or anything else except Institutes), unless the technology to do so is available via a Patent held by the colony’s owner.

Construction at colonies is actually constant and ongoing, as infrastructure is created, systems are repaired and upgraded, etc., and is assumed and invisible in the game. The Construction at colonies that requires activation of the Construction Power is only for the process of building the major units and enhancements recognized in the game, that is, those items specific to formation of interstellar governments and civilizations.

- ✓ Participants could think of this as a triumvirate in the Roman sense: Construction-Commerce-Technology are the *triumvirs* of interstellar civilization.
- **Cloverleaf Interchange:** Wheeled carts, while more efficient for moving heavy loads over distances, also require wide, clear hard surfaces, i.e. roads, even if just dirt paths. Thus, infrastructure is a feedback loop, whatever is built needs to be maintained, whatever is built creates more growth and demand, whatever is built will eventually be insufficient, need replaced, and upgraded or modernized, and there is no turning back, building or fixing less causes unemployment, is bad for the economy, is blight and dangerous and not good for political careers – just listen to what the politicians always promise at election time, politics is tied to civilization’s feedback loops (see *Interstellar Politics*, 1 Taxation & Census, p. 295, and *Forward Expectations*, 1 Disruption, p. 255, *supra*). The environmental impact of roadbuilding, as a metaphor for the spread of civilization, is the subject of a *BeastMaster* television series episode (possibly it was the episode, “Tao’s Brother” (2001)).
- **Industry:** Activation of the Construction Power for the purpose of Colony Enhancement allows the colony’s owner to build or add new Installations and Enhancements to the colony (including Orbital Cities) where the Construction Power was activated, up to the limits previously described. The primary and most frequent reason for activating the Construction Power for the purpose of Colony Enhancement is to build new Industry.

- ✓ The Industry Existential Patent allows one Industry to be constructed for every 2.5 population factors on the colony, including in Orbital Cities. Each Industry produces .5 RPs (see Resources from Industry, 2 Taxation & Census, pp. 306-307, *supra*).

Industry is an installation, costing 2 RPs each, which requires that the colony owner hold the Industry Existential Patent, that increases the position's resource production during Taxation (see Resources from Industry, 2 Taxation, p. 306, *supra*) and at the same time, increases the colony's GDP for the next time that the Construction and/or Commerce Power is activated at that location. Thus adding Industry to a colony has a 'double-effect' and positions should, if possible, obtain Industry during the setup process. Industry is an 'investment' that repays most handsomely.

- **Get to Work!:** Generally speaking, it is best and most economical to build things in one turn, that is, begin and complete building of installations and enhancements at colonies with one activation of the Construction Power. However, unless specified in the Patent, a position may take as long to build anything as desired; this may be necessary to build up small colonies due to GDP limitations. Each time a position wishes to add resources to an item that is 'under construction,' the Construction Power must be activated for the proper purpose at that colony, increasing the 'cost' of building the item or ship in terms of Acts and Scenes, Power Activations required. Ships, items, enhancements or anything that is not completed has no positive effect on the game, but do exist at the planet, and may count against capacity limitations of the colony and may be destroyed during adverse News Events, by Special Operations Black-ops, or in combat, or by whatever other entropic events occur.
- **Steep Road:** Any colony with at least five population factors (see Resources from Population, 2 Taxation, p. 306, *supra*), producing 1 RP per activation of the Taxation Power, will eventually be able to build something – hopefully Industry. Colonies with less than five population factors may slowly grow – if not destroyed or added to – to the threshold. Thus, any colony will eventually be able to begin Construction projects (consider, for example, the pregame evolution of the Homeworld, Lost Colony, and Outposter Primal States). Small, inexpensive, expendable (don't say that to the crew!) Cargo Ships may be best for frontier hopping and unloading to small colonies.<sup>3</sup>

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**FOREMAN:** *Now, I got good news and I got bad news, fellas. Which one you wanna hear first? ... Bad news: Three guys died yesterday working the top of the wall.... The good news is I got three new job openings. Top of the wall.*

– Pacific Rim (2013)

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**Orbital Platforms:** Although it is perhaps plausible that starships could be constructed on the ground and lifted into space, in the more probable course of things, the ability to build significant Orbital Platforms is probably a crucial step to system, and eventually, interstellar colonization. As such, there are three Existential Patents which reflect the pre-interstellar or early 1<sup>st</sup> Era development of Orbital Platforms: Orbital Shipyard, Orbital City, and Orbital Defense Base. These Patents may be obtained during the setup process or through the Patent Prosecution described in the Patent rules sections.

Doubtless, most of the time, orbital platforms will be envisioned to be in low orbit as has been common in science-fiction video from Star Trek to Babylon 5 (i.e. the defense platforms in the

final battle of the Earth Civil War in the Babylon 5 episode “Endgame” (1997)). There is some logic to this. Orbital Defense Bases must probably be in low orbit in order to effectively protect the approaches to the planet; the farther out they are, the wider the gap between them. It then follows that in order to be protected by the Orbital Defense Bases, Orbital Cities and Shipyards must be behind them, between them and the planet.

In all cases, anything *permanently orbital* at a colony is considered to be an installation and not a ship, therefore, construction of any Orbital Platform requires the activation of the Construction Power for the purposes of Colony Enhancement. Any Orbital Platform not destroyed in Combat (or by Special Operations Black-ops or an adverse News Event), can be captured.

- Orbital Shipyard: Of the three Existential Patents relating to Orbital Platforms, the Orbital Shipyard is the most crucial as an Orbital Shipyard is required to construct all starships – except Scout Ships – and System Boats during the game (Scout Ships cost more to build ‘on the ground’), Orbital Cities, and Orbital and System Defense Bases. Starships are the sinews of interstellar civilization, connecting islands of civilization separated by vast, cold interstellar void. All positions should consider obtaining the Orbital Shipyard Patent first, preferably during the setup process of the game.
  - ✓ A colony must have at least 10 population to construct an Orbital Shipyard, which costs, 15 RPs. Only *one* Orbital Shipyard can be at each colony, however, each colony on a Balkanized colony planet may have their own Orbital Shipyard.
  - ✓ As specified in Shipyard Blues, 7 Beginnings, p. 72, *supra*, a position that does not begin with an Orbital Shipyard may not begin the game with any starships, except Scout Ships. There is no provision for a position to begin the game with System Boats (even though it might make logical sense from a pre-interstellar culture).
  - ✓ The Star Trek movies should be primarily credited with bringing orbital shipyards (sometimes called dry dock, as if there is water in space) to the big screen and to science-fiction consciousness. The original Star Wars movies of the 1970s showed the Death Stars being built without shipyards, but I don’t believe that any other ships were ever shown under construction, nor were shipyards shown in the original Star Trek, meaning the concept is a later development. Star Trek: The Motion Picture (1979) began with the new Enterprise leaving the shipyard. However, new Star Trek does also include ground-based shipyards (e.g., Riverside Shipyard, Kelvin Timeline), not to mention that the Klingon Bird of Prey *Bounty* landed in Golden Gate Park in San Francisco in Star Trek IV (1986)<sup>4</sup> – which GGDM does not explicitly endorse, other than allowing that Scouts can be built without a Shipyard as a game mechanical concession (*ut supra*), albeit, more expensive than with an Orbital Shipyard.
- Orbital City: Orbital Cities, which must be built over two Regular Turns like a ship while other orbital items can be built in one turn (see Orbital City Existential Patent), by an Orbital Shipyard cost 20 RPs each (10 RPs 1<sup>st</sup> turn down payment required) and allow a colony to expand beyond the surface Maximum Habitability of the colony planet below by 15 population factors each by putting populations and industry into orbit (see Dayworld, 3 Taxation & Census, p. 315, *supra*). Orbital City technology is a direct predecessor to Colony Ships that will eventually transport populations to new planets orbiting distant stars.

The game system does not look to see how many moons each planet has, or the habitability class and limits of said moons. Rather, colonization of the moon(s) of any planet are jointly assumed as part of the planet's Maximum Habitability and/or the ability to build Orbital Cities to exceed Maximum Habitability. For some positions, Maximum Habitability limitations of the Homeworld or their initial colony planet will quickly become a problem in the early game, but for most others, Orbital Cities are a luxury that can wait until later.

- ✓ For the process of moving population to or from Orbital Cities, see Sardine Tins and Opening the Can Of..., 3 Expansion, pp. 911, 914, *infra*.
  - ✓ It is possible in some instances that the planet, for example, a gas giant, is uninhabitable and the information provided is solely for the habitability of one or more moons. This is exactly the case in the movie Avatar (2009), most viewers don't realize that the Earth-like world Pandora, is a moon orbiting a gas giant in Alpha Centauri A. Thus, the habitability of that planetary orbit would be its moon Panadora.
- Orbital Defense Base: While positions may obtain the ability to build Ground Defense Bases through the Ground Defense Base Existential Patent, the *first line of colony defense* are Orbital and System Defense Bases (each requiring a separate Existential Patent). Ground Bases are best against Raids and protecting the colony in Ground Combat. Hopefully, you will not need them anytime soon, but you will need them someday. Activation of the Construction Power for the purpose of Colony Defense Era Upgrade is detailed in 2 Combat, p. 954, *infra*.
- ✓ Colony Defense Era Upgrade is not the same as building new Defense Bases or Enhancements to existing Defense Bases both of which require activation of the Construction Power for the purpose of Colony Enhancement. An Orbital Shipyard is not required for a Colony Defense Era Upgrade.

Ground Defense Bases cost 15 RPs to construct, are constructed in a single Regular Turn (i.e. paid in full), do not require an Orbital Shipyard, and are limited to 1 Ground Base per 3 population factors on the colony. Ground Bases damaged in Ground Combat must also be repaired by activation of the Construction Power for the purpose of Colony Enhancement (see Verdun, 4 Combat, p. 997, *infra*). Hopefully, Big Bertha stayed home...

An Orbital Shipyard is required to build Orbital and System Defense Bases, however, they must always be constructed (i.e. paid in full) in one Regular Turn, not two. Orbital Defense Bases cost 20 RPs and are limited to 1 Orbital Defense Base per 10 population at the colony. System Defense Bases cost 45 RPs and are limited to 1 System Defense Base per 30 population factors at the colony, limiting them to medium and large colonies. Both Orbital and System Defense Bases can be armed with Ship Missiles and other enhancements, but not Fighter Complements (however, this could be changed by in-game developments, especially for System Defense Bases to act like 'forward deployed defensive Carriers').

- ✓ The classic problem of any fortified place has always been the theoretically infinite number of attackers vs. limited local logistics and local defeat in detail, whether it is a successful breach of the wall and storming, seizure of a gatehouse or bastion, or concentration of forces to capture a fort in a chain of fortifications. Thus, any colony defense can be overwhelmed if the attackers bring enough warships and sacrifice.

*“All low-energy delivery deflection technologies have inherent fine control and steering capability, making it possible to add just the right amount of energy to steer an asteroid originally destined for a mere close approach toward a specific Earth target. According to Rusty Schweickart, the gravitational tractor method is controversial because, during the process of changing an asteroid’s trajectory, the point on the Earth where it could most likely hit would be slowly shifted across different countries. Thus, the threat for the entire planet would be minimized at the cost of some specific states’ security. In Schweickart’s opinion, choosing the way the asteroid should be ‘dragged’ would be a tough diplomatic decision.”*

– from Wikipedia article, “Asteroid impact avoidance,” captured August 9, 2019

**Deflection Dilemma:** Suppose a large meteor was certain to hit the Earth, and that the impact could or would be a mass extinction event for life on Earth (*à la* the dinosaurs). Other than assuming the nuclear defense posture – and those who have served in the military know what I mean – what could we do about it?

It is possible that we might reconfigure our ICBMs to hit a target in the upper atmosphere (e.g., Project Icarus by MIT students in 1967, the inspiration for the TV movie, *Meteor* (1979)). Unless there are weapons in orbit – in violation of multiple space treaties, as in the movie *Meteor* (1979) that is about all we could do. We’d have to hope the blast deflects the rock, or at least pushes the large pieces in the opposite direction (per the laws of physics) but likely the result will still be catastrophic.

Any of the proposed meteor-space-object defense systems would require both a violation of existing treaties and/or an unprecedented global effort. And who would anyone trust to run the meteor defense grid without turning it back to Earth? A related issue is called The Deflection Dilemma (in which Carl Sagan had some contentious involvement), which is:

- ✓ That any system designed to deflect asteroids from impacting the Earth might also be used to deflect normally harmless rocks to a path that will cause them to impact on the Earth (similar to the previous discussion of mass-driver Orbital Bombardment, Planet Narn, 3 *Taxation & Census*, pp. 316-318, *supra*), or
- ✓ If an asteroid were on a collision course with Earth, who decides which countries or areas are to be risked in the deflection attempt? It’s not a simple thing, even an ocean large meteor impact could cause a tsunamis on the scale of those that hit India and other countries in 2004 (over 227,000 were killed in minutes).
- ✓ “On Thursday, an asteroid called 2019 OK, traveling at almost 15 miles a second, came unusually close to impacting Earth. The asteroid passed by about 43,500 miles away – closer to Earth than our moon is. It was one of the closest known approaches of an asteroid to Earth since we started closely tracking the movements of objects in space. If you had binoculars and knew exactly where to look, you could have briefly seen 2019 OK in the sky. NASA tracks large asteroids in order to identify any that might be on a threatening trajectory toward Earth. But 2019 OK was first seen a few days ago, and was only definitively identified as an asteroid yesterday – hours before it passed right by us.

How'd they miss it? Well, while 2019 OK could have done a lot of damage if we'd gotten very unlucky – as Swinburne University astronomer Alan Duffy told the Sydney Morning-Herald, the asteroid would have struck Earth with 'over 30 times the energy of the atomic blast at Hiroshima' – it's not actually all that big. The asteroid is estimated to be 'between 187 feet and 427 feet in diameter.' The largest passenger aircraft in service today (the Airbus A380-800) is about 240 feet long, so spotting this asteroid would have been a bit like spotting a single big commercial jet in the vast expanse of space – traveling at 15 miles a second and coming toward us directly from the sun, which makes spotting it more difficult.

Even a small asteroid like 2019 OK could potentially do a lot of damage if it'd hit Earth, rather than missing by 43,500 miles, but for it to be, as lots of outlets called it, a 'city killer' asteroid, we would have needed several more unlikely things to go wrong. A 45,000-mile near-miss is very close compared to how vast space is, but it's still a fair bit – Earth itself is about 8,000 miles across. About 0.5 percent of asteroids that come this close or closer will actually hit us." – Kelsey Piper, "A 'city-killing' asteroid just zipped by Earth. Why didn't we see it coming?" Vox, July 26, 2019.

- Skylab is Falling: I remember Sky Lab. The potential destruction of a large orbital object or starship hitting the Earth (or any planet) is a favorite visualization of video science-fiction, in addition to the destruction of Planet Mül (from *Valerian and the City of a Thousand Planets* (2017)), I also recommend watching the cinematic game trailer for *Firefall* (2012), both are available on YouTube. As to the latter, I never understood why they built a mile long warship in low Earth orbit (Sky Lab was tiny, 82.4 ft. long) and then tried to open a warp hole ('Arcfolding') while in *low Earth orbit* while being controlled from the ground,<sup>5</sup> but there goes another city in Brazil! The *Arachnids* (Starship Troopers, (1959)) didn't like Brazil either, they destroyed Buenos Aires with an asteroid (in some versions of the story).
  - ✓ I have encountered discussions on the internet asking whether a civilization could achieve spaceflight without developing advanced weaponry? The discussion of this goes to how technology develops and cultural factors. Knowledge of propellants and explosives, mechanisms, electricity, and probably or possibly nuclear power would be unavoidable and necessary. The issue of weaponry, however, lies solely with the culture; for example, if a culture never had the concept of weapons (their ancestors were not hunters/scavengers) or war, or any need for weapons (they have faced no existential dangers requiring weapons), then the tools will *likely* never be used to create advanced weapons. From this, *we might assume that any species that obtains at least orbital space flight arrives there from a history of technology and warfare*. GGDM makes this assumption. However, as one commentator (user subrunner, 7-29-16) pointed out on [worldbuilding.stackexchange.com](http://worldbuilding.stackexchange.com), a space ship, or rocket, in orbit, *is* a potential weapon (and so is a starship), like a car or aircraft is a weapon (as we know well from 9/11 and drunk drivers), with no actual weapons or special modifications necessary.
  - ✓ Take this concept and inflate it by the technology assumed to exist in the GGDM setting; what happens to those unexploded nuclear missiles, unused fuel, or runaway anti-matter or black-hole power plant when the falling, uncontrolled ship or orbital platform hits the colonized planet surface? 1.2 billion casualties (from "Firefall Intro Cinematic Trailer (HD)" GameZone YouTube Channel, 2012).

*“The cities supplied few recruits as compared to such provinces as Thrace, Isauria, Cappadocia and Armenia. Small landowners filled the ranks, receiving pay as well as exemptions from the burden of Byzantine taxation. The officers represented an aristocracy which handed down a professional tradition from father to son.”* – Lynn Montross, War Through the Ages (3<sup>rd</sup> Ed., 1960), p. 112

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*“But the old Byzantine system, based upon a native soldiery organized into themes, had been destroyed at the roots when the empire lost its great recruiting ground in Asia Minor. For centuries that peninsula had supported a large population with its industry and agriculture. In the past such mighty empires as Lydia and Cappadocia had sprung from those fertile plains.*

*Now after ten years of war and anarchy all prosperity vanished, never again to be fully revived down to the present day. Usually the patient toil of peasants may be trusted to heal the wounds of the earth. This time, however, sword and torch seem to have done their work too thoroughly for redemption. Only a generation after Manzikert, when the Crusaders marched through Asia Minor, they found a bitter, man-made desert in which brambles were growing out of the ruins of once thriving cities.”*

– Lynn Montross, War Through the Ages (3<sup>rd</sup> Ed., 1960), p. 131

**Manzikert:** The fall of the vaunted Byzantine navy was not by naval defeat. In 1071 A.D. the Byzantine army was routed in a disastrous defeat at the Battle of Manzikert far inland on the eastern border near Armenia. The Byzantine emperor, betrayed by a political rival (Andronikos Doukas) who was in command of the reserves at the battle and simply marched back to camp, was captured by the Seljuk Turks and released later with humiliating concessions and peace terms.

The returned emperor was then overthrown, blinded by his enemies, and died of infection, and civil war followed. The 11<sup>th</sup> and 12<sup>th</sup> century decline of the Byzantine navy (and generally the state and civilization) traces from this defeat as in the following decades, the Seljuks and then the Ottoman Turks advanced across Asia Minor capturing the heartland of the Byzantine Empire and others encroached on islands and along European coasts.

The main bases and shipyards of the navy were in Constantinople which remained a bulwark until Ottoman capture in 1453 A.D., but the resources to build and maintain the navy came from elsewhere. Soon the Venetians and Muslim naval forces began dominating the seas as well. The sack, massacre, and wanton destruction of Constantinople in 1204 A.D. by the Fourth Crusade (occasioned by violence between pro- and anti-Crusader factions in the city) was only possible because of the poor state of the Byzantine navy and superiority of the Venetian navy. By that time, the Ottoman Turks had penetrated to the coast opposite Europe, with the Byzantines holding only Constantinople and a few scraps of coast nearby.

- ✓ This presents a historical case for Ground Combats in GGDM, which are detailed in 4 Combats generally, *infra*. Defeat in Ground Combat can have a long term effect on the power of the position’s starship forces.
- **Need & Complexity:** See further, Joseph Tainter, The Collapse of Complex Societies (1988). There is an inherent relationship between naval power and complex societies; naval power is one of the major layers of complexity added to solve problems of increasingly urbanized



population. The collapse of complex Byzantine society (and loss of territory) preceded the collapse of the Byzantine navy. Had the Byzantines resurged from Constantinople in a couple of generations, they would have reconquered a manmade desert and city ruins.

- ✓ GGDM participants should assume that interstellar colonization (which precedes the need for an interstellar navy) is also a layer of complexity being added to pregame civilizations to solve some problem in the origin homeworld or colonies. What ‘problem’ leads to, lends urge to colonization of system space, interstellar colonization? This is the staple of sci-fi stories. The question that can be partially answered in the game, is what problem are they trying to solve by far flung interstellar colonization? What is going to make us finally go out there?
- Friends & Enemies: Emperor Romanos IV Diogenes was treated worse by his political enemies than by the actual enemies of the empire during his captivity with Sultan Alp Arslan of the Seljuk Turks.<sup>6</sup> Romanos subsequently abdicated the throne on agreement that he retire to a monastery and that his life would be spared and unharmed, but that wasn’t enough for the political victors (the same traitorous usurper Andronikos Doukas) who reneged and had him blinded with hot irons and sent to an island without medical attention, from which he died shortly. His enemies heaped insult upon his blindness in his last days. Thus the defeat at Manzikart was more than another military loss; the political leadership of Constantinople lost whatever moral ‘soul’ they had remaining and the populous economic heartland was torn from the empire (and that is the true catastrophe), and by 1204 A.D. when the aristocracy, including the Patriarch, fled the Sack of Constantinople by the Fourth Crusade, they were jeered and abused by the peasants who considered the aristocratic refugees below peasantry.
  - ✓ The Crusades were ‘caused’ by the failure of Byzantine power to check the Turks. The First Crusade was in response to a call for assistance by the Byzantine Emperor and just happened to suit the purposes of the Pope and the powers of Europe at that time. The Byzantines also sometimes allied with the Turks against usurpers of the Byzantine Empire, so there was considerable political-military interplay in Anatolia.

Need & Complexity and Friends & Enemies can be thought of as the four dimensions of most design, personal, activism, work relationship, employment, life on Earth, and political problems.

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*“Whereas most of his fellow prisoners are unmitigated thugs, Speer, by contrast, is a charming, cultivated and intelligent man. It was these qualities, combined with a conscience that subordinated everything to ambition, that made him one of the most dangerous of all the Nazis.”*

– John Kenneth Galbraith and George W. Ball, “The Interrogation of Albert Speer,” Life Magazine, December 17, 1945 (available free online)

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## Endnotes.

<sup>1</sup> Commentary: There was a crisis in the profession late in Frank Lloyd Wright’s life: a famous architect named Albert Speer was accused of and tried at Nuremburg for using forced labor/slave labor to construct his building projects in Berlin. This must have appalled the peculiarly rational practitioners of the profession.

<sup>2</sup> Citation: Reference is to the cult classic movie, Phase IV (1974).

<sup>3</sup> **Commentary:** There are a few steep roads I will not forget. One is at the top of South Williamsport, PA where I used to deliver papers in the dark on Sunday mornings. There is a small street that comes down the hillside from the top starting at 8<sup>th</sup> Street or Pine Crest (I don't remember); when you turn onto the street and start down the hill, it looks like you are driving off a cliff, then suddenly the car goes over a hump and you are facing straight down a steep hillside.

- ✓ Other memorable places include being stopped in convoy at the top of Miners Pass on the Marine Corps base at Twenty-nine Palms at night. Wherever we were was a dirt road on a narrow ridge, looking out both sides of the truck was down steep hillsides into the darkness.
- ✓ The steep road going up to Kasey Springs on Camp Pendleton in the mid-1980s was only paved about a third or half way up from the bottom; at some point, the pavement stopped, and the guardrails ended. The gravel road is just wide enough for a truck and winds along a steep hillside or cliff like a Road Runner cartoon. There is no stopping between the bottom and the top. We were supposed to be helo-lifted up, but it was cancelled and we had to drive up. On the right side of the truck was the steep cliff or hillside coming down to the road, looking out the left side of the truck, I could see the trees, the tops of the trees, way down below. Did I mention no guardrail? And just wide enough for one truck? I assume range control made sure that no one was coming down when we started up; but then again, no one is usually up there.

<sup>4</sup> **Commentary & Citation:** *Alternate ending to Star Trek IV: The Bounty* goes critical due to the stress of time-travel and the drain or malfunction of the cloaking device, explodes and obliterates San Francisco, which causes global thermonuclear war when the U.S. blames the Soviet Union. Meanwhile, the probe in the future destroys life on Earth seeking an answer to the Humpback Whale song – wait, there may not be anything alive and no oceans on Earth when the probe arrives. And *Star Trek IV* doesn't end with yet another maiden voyage of the new *Enterprise*.

- ✓ This must be the reason why they couldn't just fly the cloaked *Bounty* to the hospital and beam Chekov out (like they beamed Gillian aboard, Spock reported the ship fully powered a minute later, or like they did the whales at the end), instead, they had to disguise themselves as physicians and go manually rescue him, holding hospital staff at gunpoint in the operating room. *See*, it all makes sense. *Star Trek sense*.

<sup>5</sup> **Commentary:** I asked, but I never really got an answer to this back when it was in closed beta. I never played the game.

<sup>6</sup> **Commentary & Citation:** Similarly, in cultures that practice widespread slavery, where slaves are objects and not subjects, domesticated animals and beasts of burden are often treated better than the human slaves (especially if unskilled) and may have more value. By the time of Romanos IV, true slavery was rare and not socially sanctioned in the Byzantine Empire, but famously, intrigue, spying, deceit and political violence were common, at least in Constantinople.

- ✓ “Slavery was common in Classical Greece and in the earlier Roman Empire. It was legal in the Byzantine Empire but became rare after the first half of [the] 7<sup>th</sup> century. From 11<sup>th</sup> century, semi-feudal relations largely replaced slavery. Under the influence of Christianity, a shift in the view of slavery is noticed, which by the 10<sup>th</sup> century transformed gradually a slave-object into a slave-subject. It was also seen as ‘an evil contrary to nature, created by man’s selfishness,’ although slavery was permitted by the law.” – from Wikipedia article, “Slavery in the Byzantine Empire,” quoting W.G. Clarence-Smith, *Islam and the Abolition of Slavery* (2006).

- Clarence-Smith is a professor at SAOS University of London, editor of *Journal of Global History*.

It is thus likely a historical falsehood asserted that the Byzantines used galley slaves to row. All scholarly sources I have read seem to repudiate the idea, instead asserting that oarsmen were freemen, farmer's sons, and small land owners of the same sort that filled the lower ranks of the Byzantine army. Thus, they probably were not chained literally to their benches as in the movies. The widespread use of galley slaves for rowing actually occurred much later, the Ottomans, the French, and the Knights Hospitaller, along with the Barbary Pirates, all widely used slaves, prisoners of war, convicts and debtors for rowing. Approximately 12,000 Christian galley slaves were freed from Ottoman Ships during fighting at the Battle of Lepanto in 1571, the slaves were given arms and joined the hand to hand fighting against their former masters; the Holy League fleet also had thousands of slaves on their galleys, their chains were removed before battle so that they could fight. This move is probably the actual genius stroke of leadership on the Christian side, recognizing the potential of adding tens of thousands of freed slaves to turn the tide.