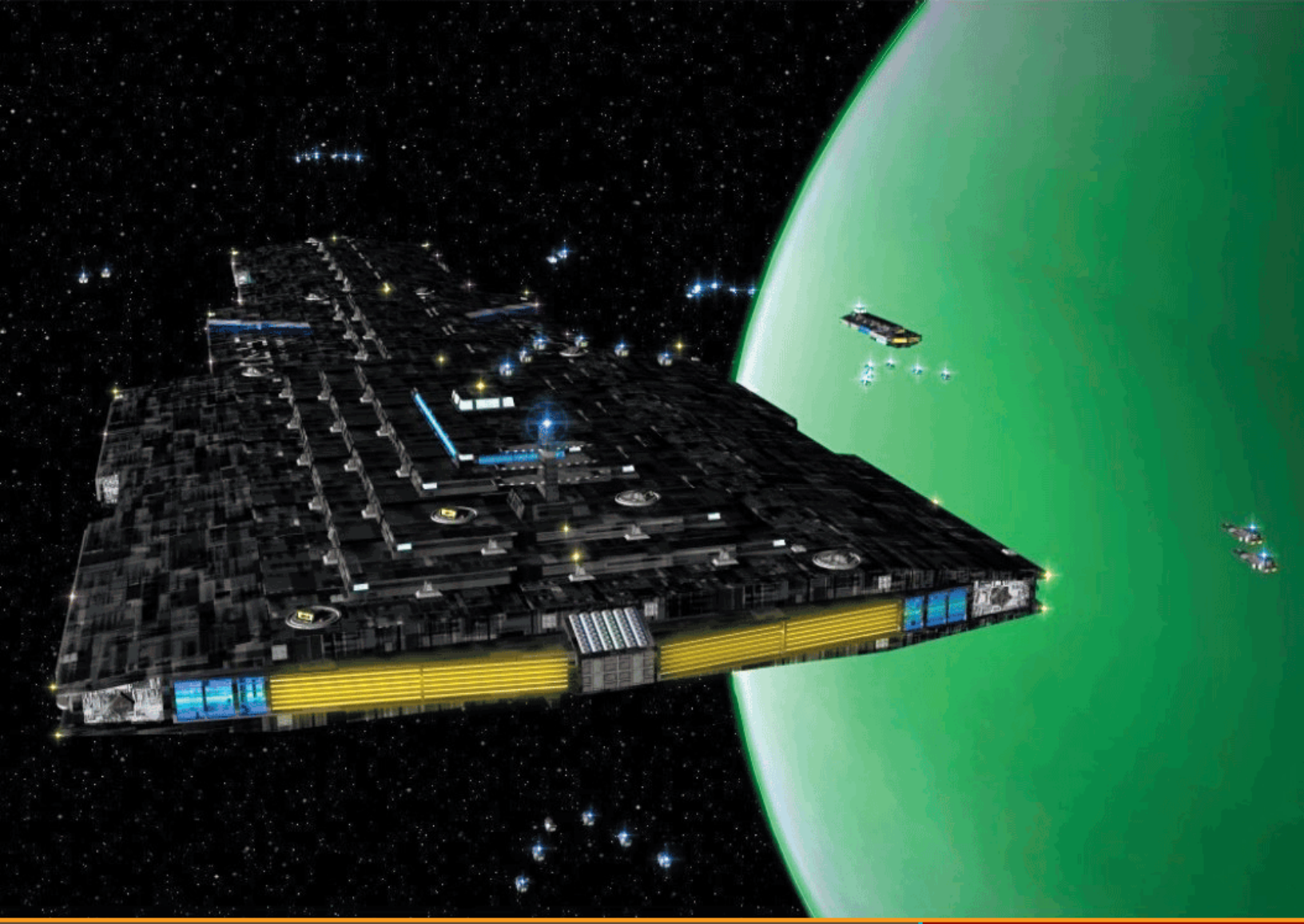


Sky Marshall 7

Fiction

New Technology

Starfire History

Alternative Rules

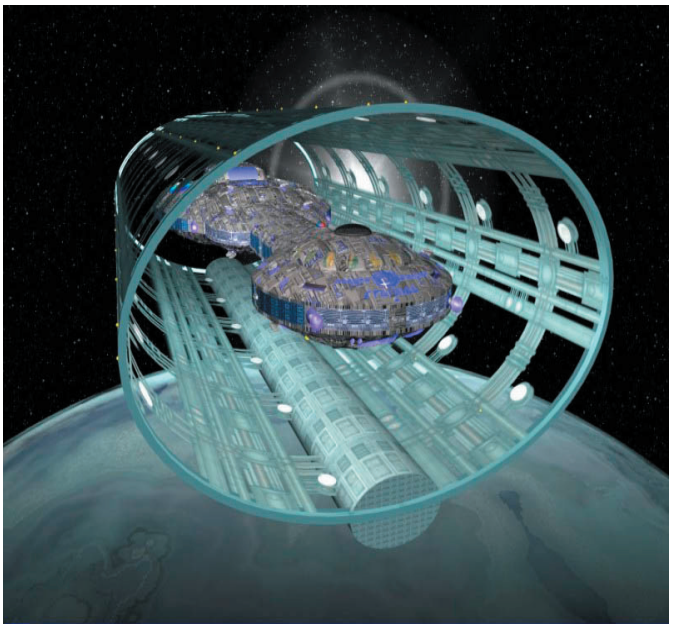
Glactography

Real Science

Loose Ends

The Mystery of the *Nelson*

After the chaos and destruction of the Federation Civil War, the Rim Federation stood in a precarious position. Cut off from the Terran Federation, it sat astride warp lines that connected to the previously hostile Orion Khanate and the newly formed Terran Republic, with which it had just fought a major conflict that had lasted six long years. The defense of the Rim was very important to the Terran Federation but it was unable to support the Rim in the early days of it's development as a separate state. With a small production base, the Rim was unable to continually build and field significant numbers of warships so it concentrated on large ship classes deployed to vital warp points to keep the peace. One of these vessels, the famed *TRNS Horatio Nelson* was a supermonitor which was severely damaged during the *Battle of Zapata*. Crippled during the stupendous battle, the *Nelson* stayed in Zapata for two months after the peace negotiations between the Federation and the Republic concluded due to the massive repairs needed to get her safely back home. The ship and her crew received a heroes welcome upon orbiting Zephrain and work crews began their evaluation of the ship. With only one of her weapons functioning and most of her engines destroyed, the *Nelson* was still badly shattered and the Rim Admiralty chose to put her in storage for spare parts for the fleet's other active supermonitors. She was laid up in dry-dock at Zephrain SS until early April of 2445 when funding was finally made available and repairs began in earnest. After laboring mightily, Zephrain workers completed the work on time and under budget, adding several new systems as well. The commercial engine rooms of the *Nelson* had been gutted and the Admiralty chose to install better defenses instead of rebuilding the engines. Several brand new weapons systems were also built into the *Nelson*, including a new electronic warfare bay, micronized military sensors, and an antimatter generator. A armory was built into the ship to repel boarding parties, which was a definite possibility given the warships sluggish speed and several squadrons of Gunboats were allocated to the newly built Gunboat Racks that were installed at the insistence of Admiral Jenkins. Newly developed earth-penetrating warheads were also placed into the *Nelson*'s magazines, giving her the ability to destroy deeply buried planetary targets. She underwent a second, vital, refit in August of the same year, adding new 'burst' shield generators into her massive hull. With the powerful belt of



armor and shields, the Nelson was nearly 200% harder to kill than her counterparts. Famed Captain Sun Cen piloted her out of dry-dock and onto her first mission, where her story ends.....or does it? In 2465, after several months on routine patrol, the *Nelson* and all her escorts disappeared in the Cirocco System without a trace. Her Captain, Sun Cen, was well-known for his outspoken opposition to the Rim joining the newly forming Pan-Sentient Union and the possibility of his taking the *Nelson* over to the other side (i.e. the Terran Republic) has not been ruled out by investigators. Shocked at her loss, the Rim dispatched Vice-Admiral Reid Reagan with a full Task Force to look for the *Nelson* and her escorts, but to no avail. The supermonitors' extremely high maintenance demands limit the ship's ability to travel far according to senior analysts and rumors of the *Nelson* fighting the Arachnids in the Leyte Combat Region under the Reformation flag has not been substantiated.

CORE TAPS: PLANETS AND SHIPS

Core taps are some of the largest engineering feats known to man but since only a few examples of these engineering marvels exist it is hard for the average scientist or governmental official (or the casual reader) to make a serious evaluation about this new, radical technology. The Pan-Sentient Union armed forces, especially the PSU Navy, are fully pursuing these new power sources and the planet Midgard has built an experimental planet-based Core Tap on its' southern continent, Maastritch. The Bureau of Construction has also stated that the new planetary shields, invented by Dr. Abrihim Murkowski, cannot be fully fielded and powered unless a Core Tap is utilized as the power source. Admiral Ralston of BuShips has also confirmed that the new Stealth Field for capital ships cannot function without a ship-based Core tap unit. With this is mind, we shall take a look at the basics of Core Tap technology.

Core Taps were theorized by engineering wizard Michael McDonnell of McDonnell Engineering, the famed R&D firm located on the planet Misery in the Ivy Chain of the Terran Federation. Although McDonnell has been dead for over 200 years other scientists have carried on his work and a decade ago the first Planetary Geothermal Tap was brought online at Yukon, a frozen arctic world desperate for power generation sources. This lightly populated Fringe World proved the design as sound under the management of Dr. Tarisha Jutratta of Hyderabad Engineering Company. The first Core Tap built into a warship occurred in 2450 when BuShips field tested a Warship Core Tap in the new supermonitor class vessel the PSNS Kellerman. While the Kellerman was later destroyed in a faulty fusion reactor overload six weeks later, the Core Tap concept proved itself and additional uses were tested for the new reactor, including mating it with a Gravitic Communications System in the Pone System, where instantaneous communications were finally developed. Expanded Core Tap use is bound to occur as the designs are finalized for these powerful new reactors.

Core Tap(CrT): The single largest engineering system ever built, the (CrT) was designed by the Rishatha Imperium during the 8th Interregional Conflict and is installed primarily on it's large warp assault units (i.e. beam combatants). It's phenomenal size and cost limited this system to only the largest of Rishatha fleet units. Built at the center of a warship and tapping into the higher energy states of subspace, the first generation Core Tap increases beam damage by 25%, costs 500 MCr, and is 35 hull spaces in size. CrT1 is 35,000 to develop and is TL 16. The CrT1, because of its extremely high energy levels, makes a mounting ship +1 for enemy vessels to fire on it. These constructs can be used to replace the (DeC) in X-Ray Laser.

CODE	COST	SIZE	TL	DAMAGE	DEVELOPMENT
CrT1	500	35	16	+25%	35,000
CrT2	750	25	18	+50%	50,000
CrT3	1,000	20	20	+75%	65,000

Planetary Geothermal Tap(PGT): The most dangerous engineering system ever developed, the Planetary Core Tap is also one of the largest. This is a critical system for the operation of the Planetary Defense Shields (PDS), which defends entire planets from orbital assault and planetary bombardment. If the Planetary Core Tap is damaged and enters a runaway stage, substantial environmental damage and potential loss of life could be heavy. That is why most Core Taps are constructed in the low-population arctic regions of a planet. The PGT adds +10 to range and +50% to damage for all energy beam weapons, enabling them to fire through atmosphere. TL13, 500hs, 2,000 MCr to build, 100,000 to develop. All population levels Small and lower ignore Core Tap runaways if the system is built far enough away from a planetary population, while those above take an increasing percentage of damage.

SIZE	DAMAGE/PU
Medium	15%
Large	20%
Very Large	40%

THE FOLLOWING SYSTEMS NEED CORE TAPS TO FUNCTION

Gravitic Communications System(GCS): A massive (150HS) faster-than-light communications system built in orbit (only). This facility must be built in orbit but separate from any space station, base, or ship. This system can communicate instantly with any ship equipped with CC in the same solar system. Costs 1500 MCr each. It cannot be armored, shielded, or armed as the radiation

would kill any organic creature aboard. The facility must maintain a maximum one hex range from a medium populated inhabited planet due to power transfer and maintenance needs. Every month this facility uses 150MCr of power from said planet. This FTL system provides total and instantaneous one-way communications coverage of the system it's deployed in. The hull must be built as a space station and a boat bay added for maintenance but no Q, H, or Lh is required. Additionally: At HT 12 radiation shielding is possible and the GCS may be installed and used on any unit with a Core Tap. 30,000 to develop. TL6

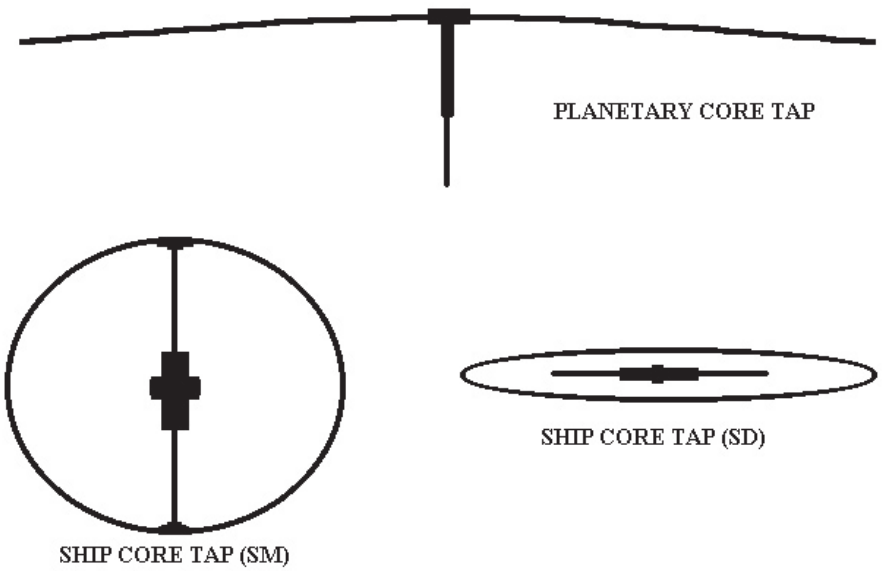
Planetary Defense Shields(PDS): After the disastrous Seventh Interregional Conflict between the Rishatha Imperium and the Arachnid Omnivoracity, in which 44 billion Rish civilians were mercilessly eaten and slaughtered by the voracious Arachnids, an advanced combined research team of Rish and Daa'Vit developed the first Planetary Shields. Each PDS costs 3,000MCr and takes up 100 hull spaces. Each shield generator must be built for each planetary facing for total planet coverage and must be emplaced inside a PDC. PDS's stops all weapons from striking the planet except primary beams, meson guns, and Hyper-L missiles. TL13. Costs 200MCr (each) per month to operate, or 100 to maintain. 100,000 to develop. The Planetary Core Tap is needed to power this system.

Stealth Field(StF): Developed by the Rhwhrm race before they were assimilated by the J'Rill, the Stealth Field was a vast improvement over Stealth Tuners. By suppressing all active emissions and diverting DF radiation back into the StF battery, the Stealth "Field" revolutionized warship movement throughout Known Space by lowering strategic detection. StF reduces detection to 60 tactical hexes and have such high power demands that they only operate on warships equipped with the Core Tap system. Being fairly large and expensive, StF is primarily used as capital ship stealth. Eight hull spaces in size and 200% of engine cost. TL12, 30,000 dev.

**Thanks Todd Kes for timely advice.*

HARD SCREEN TECHNOLOGY

Hard screen technology (HST) was first invented by the Rishatha Empire during their titanic battles to secure the Muralis Arm of the Milky Way Galaxy. Hard screens are similar to standard Terran shields

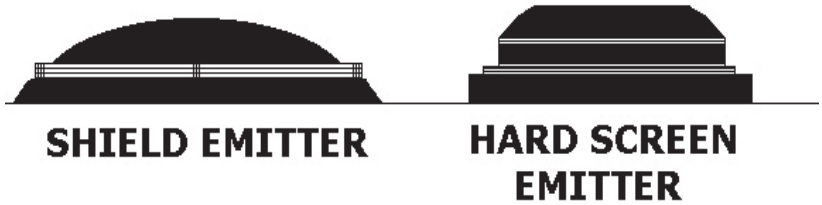


but they have one major difference: shields absorb damage until they fail while screens block damage until it becomes critical. Standard shields place an energy barrier around a vessel while a hard screen emitter throws up a physical wall of force to protect the vessel from incoming damage. Unless enough damage is done to a hard screen it stays up and protects the vessel that mounts it. Hard screens are an offshoot of force beam technology. The first units were developed in the following manner: Rishatha scientists were doing research into protecting their standard shields from force beam energy. Their most recent enemy, the Vlathu Hordes, used large numbers of force beam weapons in their assaults against the outer Rishatha systems and the central government decided to massively fund more R&D efforts. Scientists at the Quaylor Science Lab accidentally discharged a force beam between two standard shields, creating the first force screen. They the military realized what they had, they were ecstatic: when a force beam was applied between two harmonized shields it created a nearly impenetrable screen that had to be completely overwhelmed before the mounting ship took any damage. The generators for these energy barriers were quite small and even destroyer-sized vessels could mount them. Below is a list of various screen technologies that has been developed:

Hardened Screens(Sc0): Development of 'hard screen technology' by the militant Horune race challenged the Rishatha Imperium into developing countermeasures to this unique shield system. Screens costs 180 MCr per 3 hull space system. Hardened Screens do not work against P or Hyper Missiles. All weapons systems can shoot out of Screened warship as can point defense however a ship with Screens up cannot launch or recover fighters, bombers, or other small craft. One Sc per 30 hull space of ship and Screens can be combined, but above 100 hull spaces of Screens they become unstable. Each Sc system is 3 hull spaces in size and generates 10 points of screen each. Two Screens per 30 hull spaces of SS, Base, or AF is allowed. TL9. Development costs 20,000 MCr.

Battlescreens, Advanced(Sc1): The Rishatha Empire developed these new, more powerful screens after the destructtion of the vicious and mercifially short-lived Horune Empire. Advanced battlescreens are 3 hs = 10 points of screen. Once overwhelmed, it stays down for 20 tactical turns. The difference between a 'hard screen' and regular shields is screens must be overwhelmed in one salvo, or it does no damage. Also, when a 'hard screen' is 'up', you cannot fire out through it. Sc1 costs 180 MCr per 3hs system. Development costs 20,000 MCr. Sc do not work against P or Hyper Missiles. Important note: Shields cannot be up when screens are up. The P system CAN shoot out of Screened warships. A ship with Screens up CANNOT launch or recover fighters, bombers, or other small craft. Point defense also CANNOT fire out. Screens can be combined, but above 100hs they become unstable. 1 Sc per 30 hull space of ship. Two Sc per hull space of SS, Base, or AF. TL9

Battlescreens, Improved(Sc2): Improved Battlescreens are a highly restricted 'hard screen' technology that was developed by the Hre'Daak in its conflicts with the human-dominated Pan-Sentient Union. These are a 'hard screen technology' are five hull spaces in size that generates ten points of 'screen' per unit. Once overwhelmed, it stays down for 20 tactical turns, and all must be overwhelmed at once if multiple screens are being used. The difference between a 'hard screen' and regular shields is screens must be overwhelmed in one salvo(per ship not per turn, datalinking not included either), or it does no damage. While ships traditionally datalinked are able to "pool" their fire, the battlescreen system is able to reset and strengthen its field before additional fire from "helping" units arrives. Also, when a 'hard screen' is 'up', a ship cannot launch or recover fighters, bombers, or other small craft. Cost is 200, spaces 5, dev cost 50,000. Hre'Daak technology.



THIRD EDITION FIGHTER LAUNCHERS

Below is a list of 3rd Edition fighter launchers that I have found, borrowed, or invented over the years. The tech level listed is only a possible tech level; they are not official. The Editor

TL3

Flight Deck(FD): A pre-V system, a flight deck must be mounted right after the armor and datalink. Once half the FD hull spaces are damaged(destroying 2 fighters per hit if the deck is full) the deck is disabled. Re-arming takes 6 turns and a Magazine(Mg) must be mounted right after the FD to hold fighter ordinance. Cost is 10MCr per fighter held, capacity is 2 fighters per hull space, and can launch 6 fighters per turn. The size of a Flight Deck is recorded as (FD10), meaning the FD is 10 hull spaces(can be more or less) is size. A TL 3 system. 1000 to develop. When built on non-carrier hulls, FD costs three times as much! NOTE: With a Vl and Flight Deck, turnaround time is halved(3 turns vs 6). For every 12 Vl/Vh systems, you need 3 hull spaces worth of FD. These are a 'return landing deck' for fighters and bombers that enables them to have a quicker turn around time. Vh are still used, as a storage space and pre-launch hangar for the fighter. You cannot launch fighters or bombers from this type of FD. This type of FD is noted as *FD*.

TL5

Launch Bay(Vb): A limited fighter launch system,

Vb may only launch/recover one fighter per tactical turn(may not do both simultaneously). Each Vb is 4 hull spaces in size, costs 40MCr, and can hold 6 fighters. Available at TL5. 2000 to develop.

TL6

Fighter Rocket Launch System(Vr): This original system was developed by the crocodile-like Chalder race, who could withstand the high-gee launch. Only Adaptable, Tough, and Radiation Tolerant races can use this system. A one shot system(per int turn). Makes a fighter move speed 15 until it turns. One hull space in size. TL6, 10 MCr each, reload cost is in fighter maintenance(+1MCr). Dev cost: 4,000

TL7

Fighter Hanger(Vh): A modified hold, the Vh may not launch or land fighters; it is simply a hanger where combat ready fighters may be held and prepped. Each Vh takes up 1 hull space, costs 10MCr, and can hold 2 fighters. Develloped with Vl

Fighter Launch System(Vl): A limited launch system, the Vl may launch or land fighters at the rate of one per impulse(may not do both simultaneously). The Vl may launch any fighter stored in a Vh if that Vh is in the same chain as a Vl. VhVhVhVhVhVlQVh for example, in this chain the Vl may launch any fighter in the first 5 Vh's but not from the last Vh. A Vl takes up one hull space, and costs 10MCr. 1500 to develop.

TL9

Fighter Launch System-Hydraulic(Vli): The Mandrast Empire fielded the first hydraulic fighter system immediately after coming into contact with Species 8472, which was undoubtedly one of the most unusual organic lifeforms ever encountered. Fighting quickly broke out and the expensive Vli system saw extensive use in the Norcadian Campaigns. The Vli is an automatic hydraulic ram system that fires fighters from a specially constructed fighter bay. This system allows fighters to be launched the same turn as they transit a WP. Fighters launched like this cannot fire or turn, and only get half their movement speed. Also, when manually released like this, a certain number of fighters are automatically destroyed(15%) as they are dumped into space. Fighter losses DECREASE by 5% for each TL above TL9. One hull space. Vli costs 20 MCr and are TL9. Dev cost: 5,000 MCr.

Maglev FD Upgrade: Developed by the Grizzelans, this system allowed the continual use of the Flight Deck, which was threatened with removal by the introduction of the V system. This system is refitted right into the FD itself, launching fighters and other small craft all at once. Shown as ((FD20)). No additional hull spaces. One MCr per fighter held. TL 9. Dev cost: 2,500. (Available to all players).

TL10

Clamshell Fighter Bay(VCx): Continual warfare shaped the Draka psyche, which in turn forced development of more advanced weapons systems, including the huge fighter hanger system. This system (the Clamshell Bay) is a huge, and is based on the Ship Bay and Mechanical Linkage systems. The VCx takes two turns to open, but once it does, all fighters in the Bay can be launched. If fAABs are available, they are launched with the fighters(max available), with no fBAY needed. This large system allows three fighters to be launched per hull space, but it takes twice as long to rearm and the ship is not initially recognized as a fighter carrier due to it's unique design. The Clamshell Bay can be any size, up to 75% of a warships hull space. This system MUST be mounted immediately after Z. 5MCr per hull space, dev cost: 7,000. TL10.

Fighter Mechanical Link(Vm): Several high tech fighters are unique in that they do not have landing gear and do not have weaponry at least in most cases, other than beam armaments. In such cases the fighters are launched and recovered through a mechanical linkage. Since the space required is far less than the size of the fighter it would be a ½ space system at 10MCr. Developement cost=3,000

Strikefighter Accelerator(Va): This is a miniaturized version of a railgun which is designed to be built into a hanger bay when the bay is constructed. It may not be added to existing "V". It provides fighters with much greater speed to their target which also amounts to increasing their round trip tactical range. Strikefighters launched by Va have a speed of 20 until they first slow down by using their engine. They may change their heading, but each 60 dg. heading change slows their speed by 4 until they reach their normal max engine speed. The launcher speed 20 is NOT reduced by external ordnance carried. Development cost = 3000 MC, system cost = an additional 10 MC per V, space requirements: adds .5 hull space to the "V" (6xV would use 9 hs).

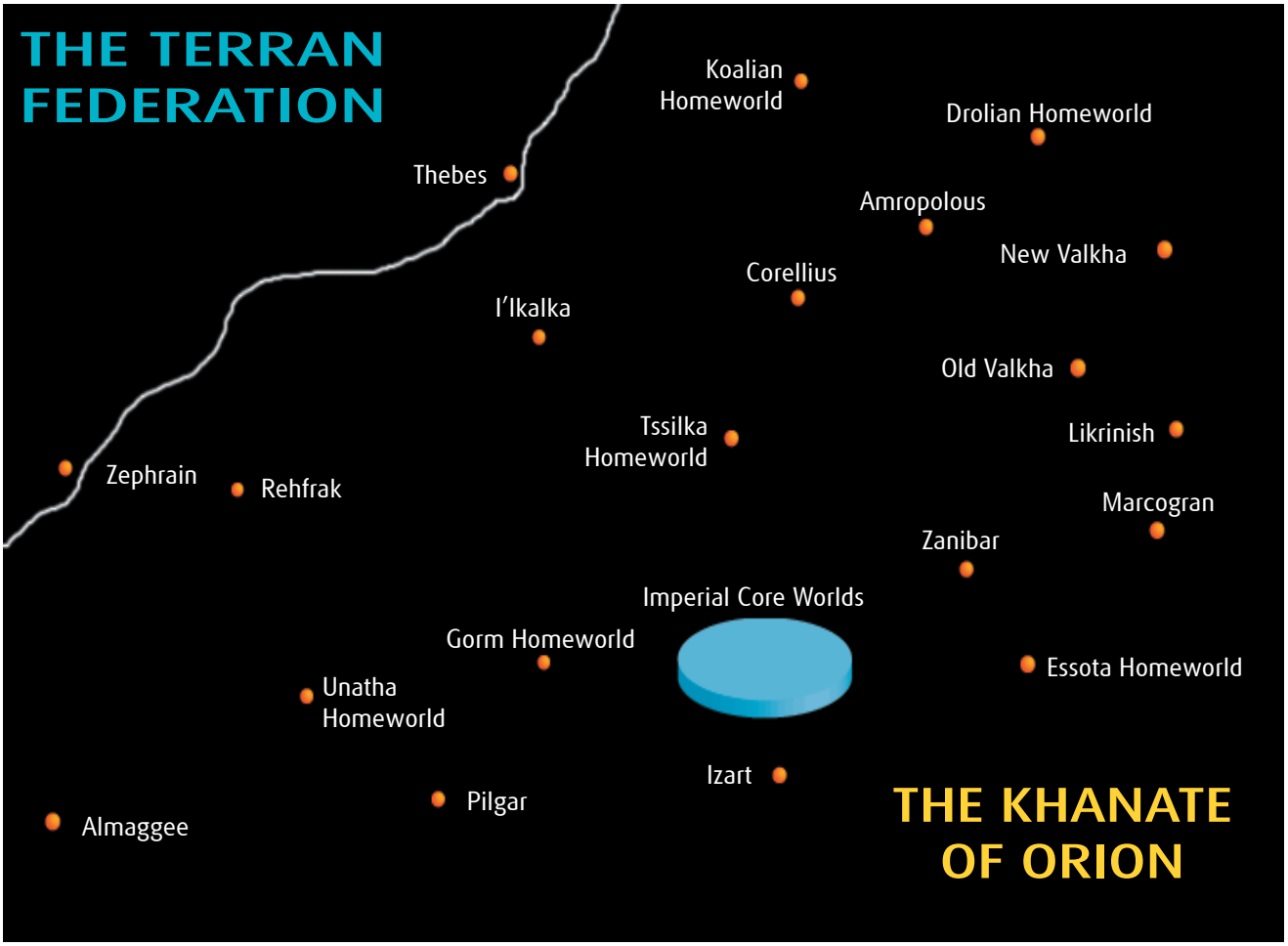
TL11

Expendable Fighter Pod(EFPOD): Developed by the Dakn Empire during their genocidal conflict with the Arachnid Omnivoracity, the EFPOD is a sort-of micro-carrier, able to pass thru and deliver deadly fighters to the other side of a WP. Based on SBMHAWK technology, the EFPOD is, at it's core, a small drive field generator and navigational system. The system looks roughly like a triangular cylinder. The generator and navigation systems are

housed inside the cylinder. On each of the three facings, there are mechanical links allowing a total of three fighters to be attached to the EFPOD. This system is then launched into a warp point, the fighters are released after WP transit. Fighters, in this case, are launched on the first turn of transit. They suffer transit penalties. However, since fighter control and navigation are only partly automated, fighters only suffer half penalty. The EFPOD, like the SBMHAWK, is destroyed after use. It behaves in all other ways as an SBMHAWK. The EFPOD costs 300MCr, costs 10,000MCr to develop, and is TL 11.

TL12

Fighter External Ordinance Rack(XOf): Developed by the deadly Dakn race during their epic battles over Home Hive IV, the Fighter External Ordinance Rack was a standard system on all Dakn warships, until the development of the fighter hanger. XOf are replaced on a one-for-one basis vs XO Racks and cost 8 MCr each. 18,000 dev, TL12. Normal fighter launch after transit!



ORION GENOCIDAL BEHAVIOR

Now that the accords of the Union between Pa-Sentient Races has occurred, Terran scientists, historians, and philosophers are being allowed a much deeper look into Orion Society, and what they are finding is sending shockwaves through the Terran half of the PSU. Apparently during their rise as an interstellar power, the Khanate of Orion has regularly and increasingly used demonstration nuclear strikes and outright genocide against other alien races that they have come into contact with, to force their surrender. With a long history of outright aggression against other alien races, it was no wonder that war broke out almost immediately when Humanity ran into the Orions in System VX-134. Considerable recent study has gone into researching the central Orion archives on New Valkha and the results have been surprising: until the Orions met Humanity, they had conquered and wiped out every race they ran into, resulting in the deaths of billions of sentients within the short time span that the Orions have been active among the stars (starting in 2041 AD). A deeper, more detailed study has been concluded on this issue and the results will now be spelled out here.

During their expansion to the stars, the Orions of the Khanate ran into many different species and all of them were assimilated into the Khanate with the singular exception of the Gorm, whose valiant struggle against their attackers won them praise and honor in the sight of the Orions. However, the Gorm were not the first alien race that the Orions encountered, that short-lived honor fell to the Likrinish, a pre-industrial sentient race located near the core Orion systems surrounded Old Valkha. Now the Terran Federation has taken a high-minded and, yes, progressive, approach to industrial and pre-industrial societies: a hands-off approach no matter what. However, the Orions have no such compunctions and when they discovered the backwaters Likrinish (in 2043 AD), they immediately moved to conquer them, a move hardly befitting a race as "noble" as the Orions. Using heavy orbital nuclear strikes that destroyed the Likrinishs' forty-three largest cities and causing an estimated 800 million deaths, the Orions eventually forced an unconditional surrender from their low-tech enemies, after strikes that went on for nearly 3 months. The tradition of "expansion by conquest" had its roots laid in the Likrinish home system and expanded from there. During that same year the Orions found the fabulous warp nexus near the Great Nebula of Orion and expanded geometrically across the stars.

Within decades the Khanate of Orion grew form a small micro-empire into a powerful, organized, and highly militarized society, hell-bent on conquering new worlds no matter the cost. This mentality has become very clear to Terran researchers and is proven by the Orions next encounter with an alien race, the star-spanning Drolian Federation. A pocket empire located near Amropolous, the Drolians were a somewhat peaceful race but when the first contact between the Orions and Drolians occurred (in 2068), the Orion commander on the scene wanted to force the issue an deliberately "crowded" a Drolian vessel, sparking the Drolian Incident which led to all-out war between the two empires. Within two years the Orions brutally attacked and conquered the Drolian Federation using, again, widespread nuclear strikes on the Drolians; countless billions perished in these nuclear firestorms. In fact the Orions had a consistent policy of nuking every Drolian outpost and habitation that wasn't located on a habitable world, a policy from which the Drolians could only conclude that the Orions would pen them up on their worlds and "keep them there" according to the Drolian merchanter Ullaek Kan/nock, interviewed by my researchers several weeks ago as he passed through New Valkha on a freighter run to Seltra Minor.

By the mid 2270s, the Khanate of Orion had expanded into such a large area and colonized so many worlds, including adding the entire Drolian Federation to their empire, that running into alien races was becoming exponential. In late 2077 the Orions stumbled upon the water-breathing race known as the Mercogran, octopi-like beings located near the heavily populated Orion Zanibar System. Again, using nuclear strikes without warning, the Orions rolled over the small polity that the Mercogran had built from scratch, not even bothering to fully communicate with these harmless aliens before firing upon them. In fact the Mercogran homeworld was so heavily bombed by the Orion Navy that it has taken over 200 years for radiation levels to drop to acceptable levels and the heavy loss of life is still discussed even to this day, centuries later.

More aliens came under attack by the Khanate of Orion as that entity expanded amongst the stars. The cat-like Essota (discovered in 2091) were bombed back to the stone age and their home system interdicted. The Koalian States, a pocket empire located near Corellius, was occupied after heavy nuclear strikes upon planetary population centers forced their surrender. The Tssilka Federation was destroyed and their homeworld occupied in 2115. The Corellian Revolt (in 2156), while an internal Orion matter (the Corellians are Orions after all), was brutally suppressed by firebombing any colony, outpost, and habitation that refused to acknowledge the supremacy of the Khan. The genocide of Orions and aliens alike

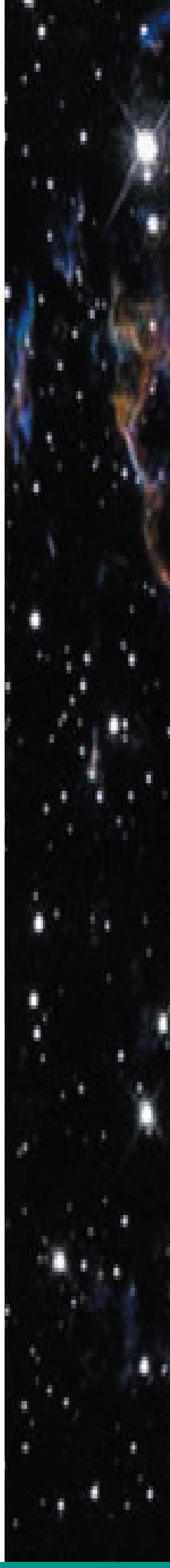
would have probably continued indefinitely but as luck would have it, the Orions ran into Humanity and of course the rest is history.

The First Interstellar War (begun in 2205 AD) came somewhat as a surprise to the Terran Federation and it is still unclear why the Orions chose not to use orbital nuclear strikes against humans, a doctrine that would have surely prompted human admirals and politicians to adopt a genocidal policy against the Orion peoples. Likewise the Orions, after being forced to the negotiating table in ISW1, did not pursue this policy either in ISW2 (begun in 2225 AD), a conflict which inevitably involved the Ophiuchi race as well. Immediately following that disruptive war with the humans, the Orions found themselves at war again in the heavily contested Gorm-Khanate War (begun in 2228 AD). The Gorm, luckily for them, beat back most of the Orions advances but realized that they couldn't resist indefinitely the Orion advance and sued for peace, an event which led the Khan of the Orions to add the Gorm to the Khanate as near-peers. However, the darkest days on nuclear destruction were to come as the Orions found themselves the reciprocants of genocidal tactics for the first time in their history.

In 2230 AD the Orion system of Trexx was found to be depopulated and residual nuclear radiation in the atmosphere of the planet confirmed that the inhabitants were wiped out by nuclear bombardment. Orion warships raced to the scene and aliens ships were discovered landing colonists on the twin worlds of Trexx and were annihilated by the local Orion commander without mercy. The aliens, later known to be the Pilgar, were just as genocidal as the Orions, but even more so. The Pilgar were a fantastically sinister and bigoted society who were extremely paranoid as well and were have found to have destroyed utterly at least 4 other races before they stumbled onto Orion-occupied Trexx. The resulting 10 year war, the longest to date in Orion history, was a see-saw affair, with the Pilgar seizing several strategic system from the Orions, and wiping out their local populations, while the main Orion fleet chose to ignore such thrusts and focused on the main objective: the Pilgar Homeworld. Finally smashing through the asteroid forts that guarded the system, the Khanate of Orion ruthlessly and meticulously destroyed every last Pilgar across their empire, an orgy of destruction that killed countless billions and is still referred too to this day as the Pilgar Genocide by (nearly) proud Orions.

The Pilgar conflict had enlarged the Orion Navy to such a degree that when they next encountered another alien race, the issue of surrender became moot. The Unatha were discovered in 2242 AD and since they had not left their system via the only WP in the area (a closed one) they had little resistance to offer and signaled their surrender once Orion battlefleets ranged on their homeworld. However, the Orion admiral on the scene was a recent veteran and wanted to make sure the Unatha go the message: do not oppose the Khanate of Orion. He systematically bombarded every major city on the planet, killing at least 2 billion civilians and completely wiped out all other habitations in the system, including the vast Unatha space station in orbit of their homeworld just for spite.

In the year 2248 AD the Khanate of Orion had apparently spent its bloodthirst from the Pilgar Genocide for when they ran into the Almaggee race near the Nert Sector, the Orions appeared to be negotiating for the Almaggee surrender when again a local Orion naval officer "crowded" the Almaggee fleet that had assembled for first contact, sparking a conflict for which the Orions were truly not prepared. While having a much smaller force of warships, the Almaggee, being a water-breathing race, had come up with some truly unique weaponry, including drive-homing shells containing anti-matter, fast fire pulse lasers, particle drive missiles, and battle satellites that continually fired on approaching warships. The resulting conflict took nearly two years to resolve but after utterly destroying all life in Almaggee Prime using nuclear weapons, the Orions went on to conquer the entire Almaggee Empire. A year later, Rehfrak was colonized and Orion genocidal attacks as policy finally came to an end.



FIGHTERS & BOMBERS

Ian Clarke had an interesting proposal on the Starfire List and I brought it here for more exposure. Good job thinking outside the box, Ian!

I suggested a while back that we introduce the following. At the time it was felt on the 3DG that too much play testing was required and it should be a SMOR (Space Masters Optional Rule). See what you think.

PROTOTYPE STRIKE INTERCEPTOR (I0)

Through out it's development it was possible to configure the strike fighter without fXO racks rather than the standard strike fighters within the Grand Alliance. The drawback with the decrease in the number of fXO racks is that it reduces the firepower of the fighter in anti starship actions. The advantage is that it increases the fighters speed and agility making it the best possible counter to other strike craft and small craft.

All Strike interceptors are at +2 to hit when carrying out anti-fighter fire against strike-bombers and +1 to hit against strike fighters and other small craft (including GB)

PROTOTYPE STRIKE BOMBER (B0)

Through out it's development it was possible to configure the strike fighter with a larger number of fXO racks than became the standard within the Grand Alliance. The drawback with the increase in the number of fXO racks is that it disrupts the drive field of the fighter and thus reduced the maximum speed. The strike bomber is the reduced speed increased fXO rack version of the strike fighter. It gives you a choice in what to load your carriers with, the very capable fighter or the slower bomber with heavier load. All Strike bombers are at –1 to hit when carrying out anti-fighter fire against strike-fighter/small craft and –2 against strike interceptors.

There were also I1-I4 and B1-B4 with higher tech levels and improved capabilities, see below.

US28.04 STRIKEFIGHTER TYPES AND CAPABILITIES

HTL	Fighter Type	Max Speed	Loaded Speed	Internl Weapons	fXO Racks	Fighter Cost	Endrnce Endrnce	Endrnce Min	Scan Range
8	F0	9	8	0	2	20	120	60	6
9	F1	10	8	0	3	30	240	120	20
10	F2	11	9	1	3	40	360	180	20
11	F3	12	10	2	3	50	480	240	20
12	F4	13	11	2	4	60	600	300	20
13	F5	14	12	3	4	70	720	360	20
15	JSF	15	12	3	6	80	960	480	20
10	B0	10	8	1	4	40	360	180	20
11	B1	11	8	1	5	50	480	240	20
12	B2	12	8	1	7	60	600	300	20
13	B3	13	8	1	9	70	720	360	20
15	B4	14	8	1	10	80	960	480	20
10	I0	12		1		40	360	180	20
11	I1	13		2		50	480	240	20
12	I2	14		2		60	600	300	20
13	I3	15		3		70	720	360	20
14	I4	16		3		80	960	480	20

3rd EDITION RACIAL ABILITIES

The editor would like to thank Symon Cook from the UK for an excellent article that he posted to the Starfire List. I wanted to highlight it here because I don't think it got the play it deserved. Thanks Symon and keep up the good work!

Starting empires

I've seen a fair few systems for randomly rolling the characteristics Of a race for Starfire, but never the system we used, buying your race With points. In principle the players would decide to have a "three pointgame", for example. You would use those points to buy advantages such as superior pilots (Ophiuchi) or radiation resistance (Gorm). You couldalso take disadvantages (no fighters) to gain extra points to buy extraadvantages. We had all the classic Starfire advantages anddisadvantages, along with several of our own devising. Finally you could purchase changes to your starting planetary system.

Some examples, partly rewritten from our 2ndEd campaign, partly 'new'.

The costs need balancing for 3rdR. Note especially that I use vastly reduced growth rates. The values for Fast Growth rate, Low growth rate and possibly Efficient, Industrious, Very Industrious and Supremely

Industrious may need to be increased with SM2 growth rates.

Advantages

Innovators (1 point)

This race is swift to develop new applications for technology. They Gain 5 points towards researching a new system upon paying the development cost.

Researchers (2 points)

This is a race of avid researchers. They gain 5 points towards both research of a new TL and developing a new system upon paying the start-up cost.

Expert Pilots (1 point)

This is a race with an aptitude for fighter operations. Pilots gain +1 initiative and +1 Vs small craft. When using EM then gain two free points of EM.

Fast Growth rate (1 point)*

This race reproduces faster than normal due to a natural high birth-rate, fast maturation or primitive cloning techniques. Their growth Rate is twice normal.

Radiation resistant (1 point)*

This race is somewhat resistant to radiation and uses the 'Gorm rate' for engine tuner contamination. If taken twice the race can use It for double the Gorm periods.

Efficient (1 point)

This race has more efficient or productive industry than usual. Income from large and very large populations is 1.25 x normal.

Industrious (2 points)

This race has much more efficient or productive industry than usual.

Income from medium, large and very large populations is 1.5 x normal.

Very Industrious (3 points)

This race has extremely efficient or productive industry. Income from medium populations is 1.5 x normal. Income from large populations is

1.75 x normal. Income from Very large populations is 2 x normal.

Supremely Industrious (4 points)

This race has more efficient or productive industry than usual and the workforce is supremely dedicated. Income from all populations is 2 x normal.

Expert Negotiators (2 points)*

For some reason, be it telepathy, natural deviousness or an efficient intelligence network the race excels at diplomacy. All political offers except Amalgamation gain +10% bonus.

Hegemonising (3 points)

This race can 'convert' conquered populations, making them productive citizens or slaves. It might represent psionic domination, mind-control or obedience implants, injection of nanoids or some other technique.

Whenever a race is conquered, roll percentage dice. There is a 20% chance the occupied population are suitable, otherwise, the technique cannot be used. To begin conversion, it is first necessary to construct one or more conversion centers on the planet. These cost 50 MCr and take 10 spaces if mounted in PDC. Each center can convert 1 _PTU_ every month. Using conversion has a detrimental effect on the victim race.

All future diplomatic action receives a -10% modifier.

Determined (1 point)

The individuals of this race put their government, culture or race before their own well-being significantly more often then most others.

PTU have a 50% Size requirement. Ships of this race receive a +10%

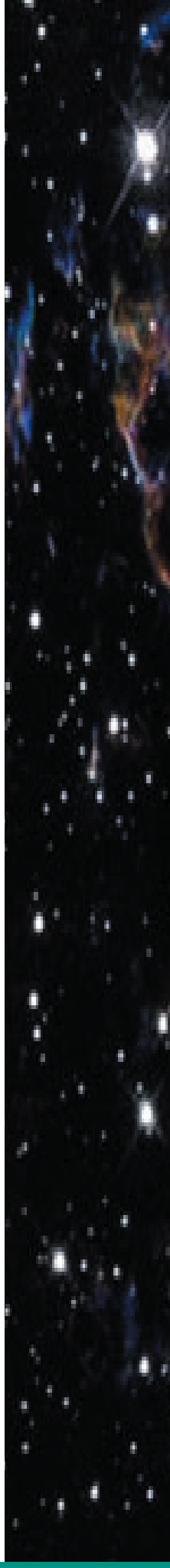
Bonus to prevent breakoff or surrender, and a similar bonus to perform simultaneous transits and ramming.

Selfless (2 points)

The individuals of this race consider their personal fate secondary to the fortunes of their government, culture or race. PTU have a 25% Size requirement. Ships of this race receives +20% bonus for breakoff/ surrender, but instead of surrendering if called for, they will ram or self destruct. They may always make simultaneous transits or ram.

Traders (1 point)*

Enthusiastic and persuasive traders, all trade income received is increased by 15%.



Adaptable (1 point)

Touch and adaptable, this race treats planets with HI within three of their home world as benign.

Responsive (1 point)

This race responds quickly to changing tactical situations. Add +1 to all initiative rolls for all units in tactical combat. Any transfer of command during battle gains a -1 to the transfer time with a minimum of one turn. Finally, add +1 to all activation rolls.

Disadvantages:

Corrupt (1 point)*

For some reason, graft and personal enrichment is a way of life for This race. Although it can be a simple as pure theft, it usually manifests

As the racial government being overcharged (1MCr toilets anyone). Income

Is reduced by 5%. However, the races merchants are not discriminating, so trade income is increased by 5% for the corrupt party only.

Poor fighter pilots (1 point)

Pilots of this race suffer -1 to initiative. They also must pay 1 extra movement point for the first point of EM.

Cannot use fighters (2 points)

This race is either completely unwilling or unable to use fighters.

They may still use small craft and Gunboats.

Specialised (1 point)

This race does not easily tolerate climatic variation. They only treat planets with HI within one of their home world as benign.

Poor Tacticians (1 point)

The race has difficulty responding to rapidly changing tactical combat.

Subtract 1 from all initiative rolls. Any transfer of command during battle requires one turn more than normal. Subtract 1 from all activation rolls.

Low growth rate (1 point)*

This race has a low growth rate. The usual population growth rate is

halved. Free PTU are not effected.

Retarded Tech (2 points)

This race does not perform research efficiently. They accumulate research points at 2/3 the normal rate and research costs 1.5 x normal.

Very Retarded Tech (3 points)

This race performs research very efficiently. They accumulate research points at 1/2 the normal rate and research costs 3 x normal.

Hive-mind (2 points)

All members of the race tend to be linked, perhaps telepathically, empathically or pheromonally. Massive casualties tend to disorientate survivors in the same star system. If planetary bombardment destroys 1000 PU or more, all survivors in the system suffer -3 initiative and activation, -2 hit probability and -1 point defense for one system turn (12 hours). Each succeeding system turn sees a reduction in these penalties by one as the survivors recover.

Alien (2 points)*

Even as aliens go, these are alien. All political offers made by or to this race receive a penalty modifier of 10%, except Partnership, where the penalty is 15%, and Amalgamation where it is 20%.

Xeno-chauvinist (1 point)

The race will neither offer nor accept amalgamation. 'Alien' or 'Hegemonising' are pre-requisites for this disadvantage.

Life valuing: (1 point)

This race has great respect for life. They can not carry out planetary bombardments, except against a foe that is clearly genocidal. Neither can they use a simultaneous transit. The race must provide for extra small craft and crew capacity to rescue crews after a battle. All ships of at least 22 hull spaces must carry at least one small craft and ships of at least 60 hull spaces must ensure they have two small craft available and one more Q than normally required. When conducting scouting and the scouts are not expected to survive, crews must be taken from the highest skill level ships. I.E. if several green crews and one crack crew are available, the crack crew must volunteer to scout. They do receive a +5 diplomacy modifier from any other race with Life valuing and any race with RM less than 51.

Other:

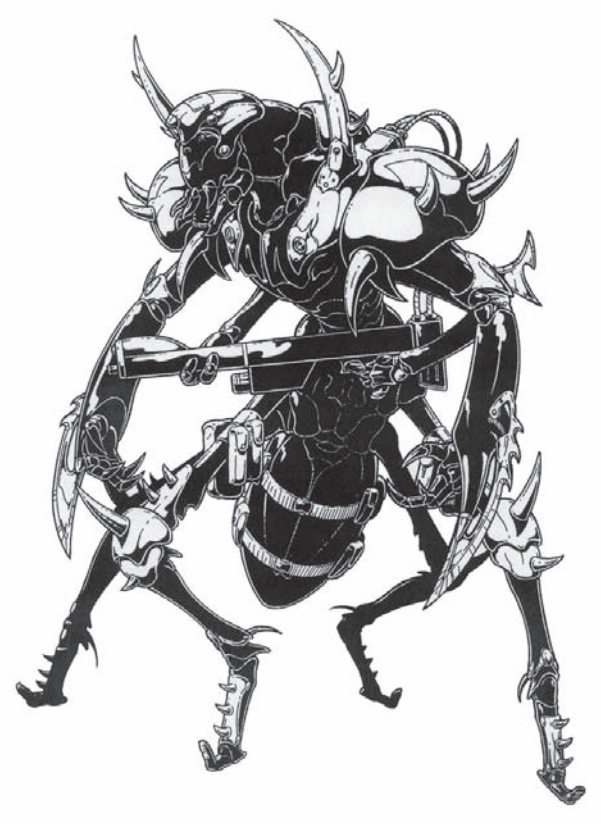
Organic technology (0 points).

Organic technology is useless to outsiders. A user of organic technology cannot gain tech advantages by observation or trade with other races, unless they also use organic technology. Conversely, other nations using conventional technology cannot gain technology by observing the use of organic technology. As a final point, Organic technology users cannot refit the ships of normal technology users and vice versa.

Cyborgs (0 points)

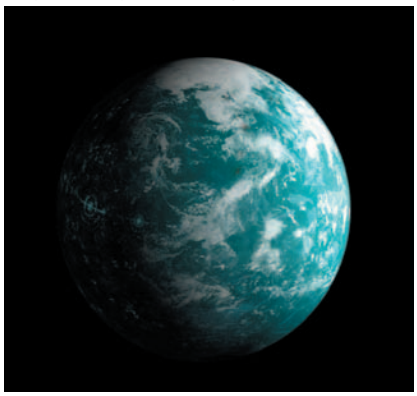
Like machine races, Cyborgs are required to pay for population growth and need not grow if desired. As electrical implants produce a minimum level of competence, they never have crews rated at worse than 'green'.

Note that you cannot take an advantage and a disadvantage that effect the same properties. E.g. Efficient and corrupt is an illegal combination. Only items marked * can be taken twice for double effect.



Rao

Nearly everyone in the Rim Federation has heard of the Rao: prolific, aggressive, large insectoids whose empire was laid waste recently by an unknown force. Stumbled upon by a Rim survey group just prior to the outbreak of the Armageddon War, the Rao have been beaten brutally down but the forces that did so have not hung around to lay claim to the deed. As a race, the Rao seem to thrive in nearly every climate but thankfully are not voracious conquerors or particularly evil, although they do live their lives in massive ant-like colonies, with between 50 and 100 million Rao in a single city-colony. Building extensive hive structures, the Rao came to dominate their home planet many millennia past, even building large surface cities whose remarkable construction can be today, even if most are in ruins.



The Rao are a somewhat benign hive mind race (taking into consideration the Arachnids) and their homeworld is Troma Rao, one of the largest terrestrial planets in the known galaxy (it is easily more than ten times the diameter of Earth), largely covered in highly active volcanoes, pyroclastic clouds, and stinking oceans. The estimated population of Troma Rao was easily over one trillion beings before the planet was orbitally bombarded and all its' surface cities laid waste.

Curious and aggressive, the Rao developed space travel nearly 9,000 years ago (according to their data records) and became a truly powerful interstellar society. Their exodus to the stars was, in part, instinctive, for to do otherwise would have caused the Rao to engage in constant battle among themselves to maintain their population at the proper levels. Even in space, warring factions of Rao battled one another to prove their superiority or to seize a colony or resource. Several years ago they stumbled upon a vastly more powerful and vicious foe, who occupied and then bombarded all the Rao Center Worlds into oblivion

Rao Society

The Rao have proven, in their battered state, to be somewhat friendly to overtures from the Rim Federation and apparently enjoy the company of humans, although they have never met an Orion (yet). Rao live by a synthesis of hive intelligence and individuality with a natural telepathy and empathy that opens them to one another, while the chemicals of the regional Queens influence unity within that community and reduce infighting. The only wars the Rao have known, up until they were bombarded by the Unknown Attacker, have been though brought on by instinct and necessity. When an area of a planet that is colonized becomes overpopulated, their numbers must be culled. That can only be done through war or leaving the planet. At the height of their empire the Rao Center

Worlds numbered nearly three dozen planets, with every nook and cranny inhabited by large numbers of Rao.

Rao Physiology

They do not wear clothing and are heavily armored by their formidable exoskeleton. Rao weigh between 600 and 800lbs and stand around 6'6" in height. Their natural hard-as-steel exoskeletons are physically so tough that they can survive great depths underwater (up to 4,00 feet) and even the lifeless void of space without any special suit or gear! The Rao have many insect abilities, including chemical trail and chemical alarm and they developed a fantastic way to move among the stars (having never developed WP travel): they use manufactured Jumpgates, a technology that has been lost to them by being bombarded. Their warships (the surviving ones anyway) still cruise the home system of Troma Rao, looking for their attackers and trying to fend off any more orbital destruction of their homeworld.

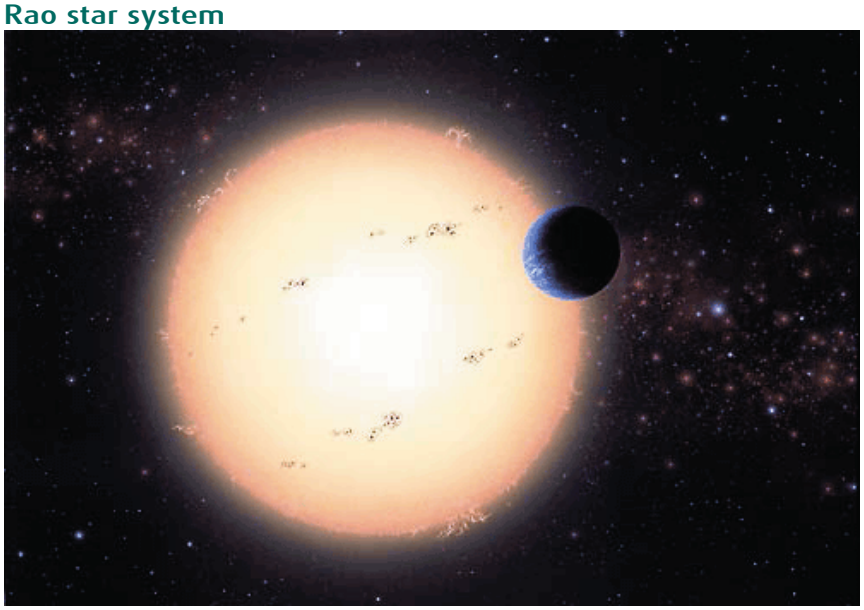
Rao cities in ruins

Rao Orbital Defenses

Rao Jumpgate in action

Rao ships move to attack

Rao star system



LOOKING FOR LIFE AMONG THE STELLAR GARBAGE

Red Dwarf Stars are generally the leftovers of older stars

by Ken Croswell

Berkeley - Jan. 24, 2001

If you want to find extraterrestrial intelligence, you're going to have to look in the right place. In our Galaxy alone there are more than 100 billion stars, so you might expect to find a profusion of alien abodes. But which suns do you point your telescope at? Bright, yellow stars like our own Sun have always seemed the obvious place to start. In the past few years, though, researchers have begun to wonder if they've been neglecting a whole class of likely targets: red dwarfs.

Smaller, cooler and fainter than the Sun, red dwarfs give out just a feeble red glow. More than a dozen of these puny stars reside within as many light years of Earth, yet they're so faint that not a single one is visible to the unaided eye. It was always thought that any planet orbiting a red dwarf would be an extremely unlikely place to find life. But it now looks as though these dim red suns could harbor most of the Galaxy's life-bearing worlds.

This is great news for anyone hoping to find hospitable planets outside the Solar System. While stars like the Sun are relatively rare, four out of five stars in our Galaxy are red dwarfs. "We all want to find habitable planets out there," says Laurance Doyle, an astronomer at the SETI Institute in Mountain View, California. "The fact that we can now rule in 80 per cent of the stars is a positive note for almost everybody."

For decades, the arguments against finding life around red dwarfs have seemed secure. These stars owe their dimness to a misfortune of birth -- when they formed they only acquired between 8 and 60 per cent as much mass as the Sun. As a result, their cores are cool and the nuclear reactions take place at a slow rate, providing little energy. The nearest red dwarf -- Proxima Centauri, which is 4 light years from Earth -- emits less visible light in a century than the Sun does in a week.

No problem, you may say. The Earth is hospitable to life because it lies at just the right distance from the Sun. So although red dwarfs may be fainter than the Sun, an alien planet orbiting one could still have a balmy climate if it huddled close enough to its star. For a red dwarf with one-hundredth of the Sun's brightness, for instance, a planet would be at a suitable temperature if it circled ten times closer to its parent star than the Earth does to the Sun.

Such a planet would not, however, be just like the Earth. Although it would enjoy terrestrial temperatures, its proximity to the star would come at a price. A planet in such a tight orbit would become tidally locked to its star, just as our own Moon is locked to Earth. One side would perpetually face the star, while the other faced away.

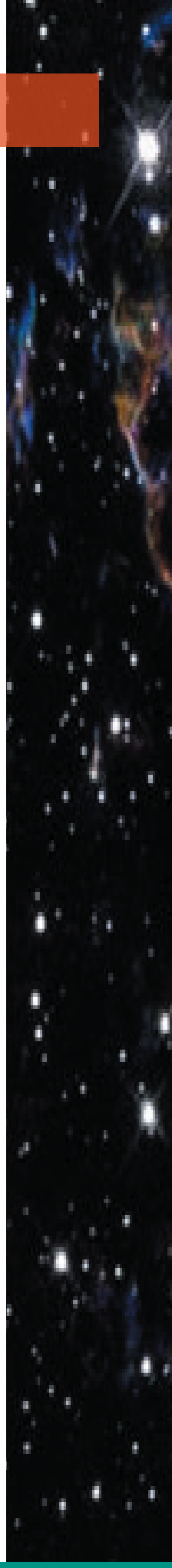
The Moon's Earth-facing side suffers little more than the occasional visiting astronaut, but the day side of a red dwarf planet would fry. Worse, the night side would be so frigid that you would expect the gases in the atmosphere to freeze, and snow onto the dark surface, where they would remain locked up forever. Only if the atmosphere was sufficiently thick would a planet be spared such a fate. Researchers calculated that gases circulating in the atmosphere would then be able to transport heat from the planet's day side to its night side, warming the night air so that it wouldn't freeze out.

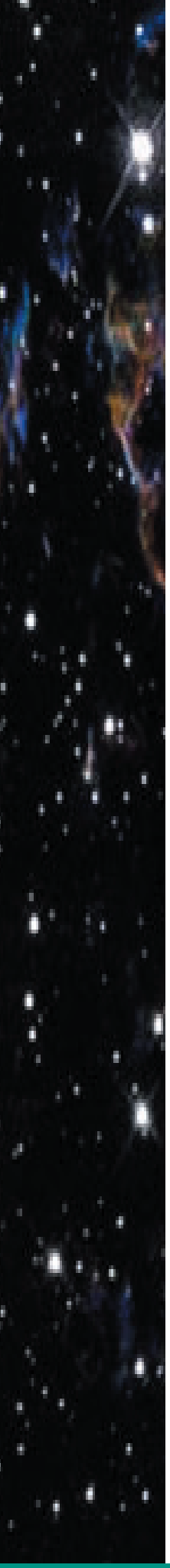
Until recently, though, most researchers believed that to do this the atmosphere would have to be so thick that it would prevent the sun's rays from reaching the surface. And that would rule out photosynthesis on the planet, a serious blow for the development of life as we know it. No wonder, then, that those looking for life have pointed their telescopes elsewhere.

But in the 1990s, Robert Haberle and Manoj Joshi of NASA's Ames Research Center in Moffett Field, California, found something unexpected. They simulated the atmosphere of a red dwarf planet, and calculated that even a thin atmosphere would do the trick. If the planet had only 15 per cent as much air as the Earth, they said, that would still ferry enough heat around to the dark side to keep the atmosphere from freezing out.

"When I first heard that the atmosphere wasn't going to freeze out, I found it tremendously exciting," says Martin Heath of Greenwich Community College in London. But there was still a problem with the water cycle. Even in some of Joshi and Haberle's models, there remained freezing conditions on the planet's dark side. Heath was worried that even if the gases didn't freeze, the planet's water might still migrate from the day side to the night side, killing off any prospects of life.

Then in 1997, Heath began to wonder whether deep ocean basins might solve the problem. With deep enough seas, even though the surface of the ocean might freeze on the planet's dark side, you could still have a liquid layer beneath, kept from freezing by the planet's geothermal heat. This would allow liquid water to flow back to the day side.





Perpetual light

Although it now looks as if a planet orbiting a red dwarf can offer oceans, atmospheres and a mild climate, such a world would still differ greatly from Earth. It would have no seasons, because the tidal pull of the star would prevent its spin axis from tilting. And one side would be in perpetual light, while the other was in perpetual darkness.

The hottest part of a red dwarf planet would be just one spot on the equator -- the center of the day side, where the sun is overhead. On a habitable planet, the temperature at the hot spot might soar to 40 or 50 C. Moving away from this spot, temperatures would drop, falling towards freezing near the dividing line between the day and night sides. On the night side there would be an ice cap covering the coldest part, directly opposite the hot spot.

"The daylight hemisphere is going to be where the action is," says Heath. "For one thing, it's going to be pretty cold on the dark side. We know that there are organisms that can sit in water pockets in the ice and carry out photosynthesis, but they can't do that if there's no light getting there."

Wherever you were on the planet's day side, the red dwarf sun would never set. Instead it would hover perpetually at the same place in the sky. Plants and trees might orient themselves towards it as they grew. But because the sun is stationary some regions would never see direct sunlight. A region in the shadow of a mountain, for example, would be forever in shade, preventing photosynthesis there. And even for the regions in sunlight, photosynthesis might be difficult. Red dwarfs are so cool that they emit most of their energy at infrared wavelengths, giving off relatively little at the visible wavelengths that support life on Earth.

As if all this weren't enough, red dwarfs subject their planets to other challenges. They often display spots far larger than those seen on the Sun. These "starspots" can cause the star to dim by up to 40 per cent for several months at a time. Would this be enough to precipitate the big freeze? Joshi thinks not, as long as the planet wasn't at the extreme edge of the star's comfort zone. Plants might cope with starspots by changing their color, absorbing more light when their sun dims.

At other times, red dwarfs brighten dramatically, spewing large flares that can more than double the star's brightness in a matter of minutes. Such flares might damage life, but they might also help it evolve, by increasing the mutation rate. In any case, the number of flares often decreases as a red dwarf ages, and many old red dwarfs don't flare at all.

One clear advantage that red dwarfs have over Sun-like stars is their longevity. Although they were born with less fuel than the Sun, they burn it so frugally that some will survive for more than 1000 billion years. In contrast, the Sun will die within a mere 8 billion years. It has taken terrestrial intelligence 4.6 billion years to evolve since the Solar System formed, but life on Earth may be atypical. If intelligence generally requires more time to emerge, then planets orbiting red dwarfs may be ideal.

So do red dwarfs really have suitable rocky planets like the Earth for life to occupy? We already know that they can have larger planets, more akin to Jupiter. Astronomers have found two Jupiter-sized worlds circling a nearby red dwarf called Gliese 876, which lies just 15 light years from Earth. These particular planets are unlikely to harbor life, however, since Jupiter-sized planets -- at least in our Solar System -- consist mostly of hydrogen and helium.

Even chance

Still, it's perfectly possible that red dwarfs could have smaller planets too. Doyle and his team think they may have detected Earth-sized worlds around another star, CM Draconis. This "star" is actually a binary system composed of red dwarfs orbiting each other. The plane of this orbit is edge-on to the Earth, so the stars eclipse each other every 30 hours. If it has planets, they too should lie in this plane, meaning they will cross the stars' faces and block out some of their light. And because the stars are so small, even a planet with just three times the Earth's diameter would dim the light noticeably. But does CM Draconis have such planets? "I think it's about 50:50," says Doyle. His team published a paper last year reporting two possible candidates, but they still have nothing definite. "The candidates we have need to be observed more," says Doyle.

Even if such planets exist, researchers admit that many questions remain about whether red dwarfs can support life. "It's very early days," says Heath. "What we've shown is that there is a case to be answered. That's a very different thing from demonstrating that there is actually life on a planet around a red dwarf star."

But they are cautiously optimistic. "Our approach to this whole subject has gotten more catholic over the years rather than more selective," says SETI pioneer Jill Tarter, who is searching for signs of life around all stars within 16 light years of the Sun, most of which are red dwarfs. "Those are our next-door neighbors, and we really ought to look down the street before we try and hike across the country," she adds. When it comes to SETI surveys of more distant systems, however, Tarter still prefers Sun-like stars. "If you'd asked me a few years ago," says David Soderblom of the Space Telescope Science Institute in Baltimore, Maryland, "I would have said that red dwarfs have a very low probability of having life-bearing planets. But given what we've seen here on Earth and the rather hostile conditions under which life can flourish, I would say it's pretty good odds."

And there is good reason to believe that the first extraterrestrial civilization that we find will differ greatly from our own. Ten years ago, when astronomers knew no planets beyond the Solar System, they believed that other solar systems would resemble our own. Then, in 1991, they accidentally discovered the first extrasolar planets, circling not a living star like the Sun but a type of dead star

known as a pulsar. And in 1995, when they found the first extrasolar planet around a Sun-like star, it took them completely by surprise. In our Solar System, giant planets like Jupiter and Saturn orbit far out from the Sun. But this giant was astonishingly close to its star, and astronomers have since found many others like it.

Which leads to an intriguing thought. Any planets that circle red dwarfs may have given rise to astronomers as parochial as those on Earth. These alien observers may have concluded that only red dwarfs can support life, blessed as they are with stable planets where suns never set and seasons never disrupt the climate. Indeed, their SETI programs may ignore Sun-like stars altogether. After all, they might argue, any temperate planet orbiting such a star would lie so far out that it would rotate freely, subjecting life to a relentless cycle of light and dark. Any tilt of the axis would cause severe summers and winters, and changes in axial tilt might induce ice ages, with mighty glaciers smothering much of the globe. How on Earth could life possibly arise on such a hostile world?

Ken Croswell is an astronomer living in Berkeley, California, and is the author of "Magnificent universe" (Simon & Schuster, 1999)

High World Population Numbers: Get Over It! And here's why...

(Editor's note: this article is taken from the Zaon website and included here because I thought the discussion was interesting).

Okay, I know ZAON world populations (for the major premier worlds) seem high to many of you, but they just aren't and I'm going to explain why. I'm posting this as its own thread because the topic has popped up just about everywhere and I've had just about all I can take.

I've researched this. Have you?

In the Rendered Worlds thread someone pointed out that Titan's surface population would be a density of 1240 people per square kilometer. It's actually more like 2030, but in either case that is nothing to worry about. Notta.

Most spread-out SMALL cities in America have densities significantly higher than that. Europe is even higher. But the reason why Earth's population is so low is because of all the vast open unsettled areas.

Then we have BIG cities which put that number to shame... For example:

Philippines (Manila's densest areas)..... 43,205 per sq km (year: 1995)

Philippines (Manila's LOWEST pop areas)... 5,529 per sq km (year: 1995)

Manhattan (around Central Park blocks).... 40,000 per sq km (year: 1990)

Paris (Les Halles & St. Honore area only). 100,077 per sq km (mid 1980s)

San Francisco (ALL incl low pop areas).... 6,126 per sq km (year: 1998)

Shanghai (Huangpu, the densest area)..... 54,868 per sq km (year: 1998)

Cairo (the most dense districts)..... 109,000 per sq km (year: 1994)

London (ALL of London's Inner districts).. 8,754 per sq km (year: 1990)

From USA Census Bureau:

New York City (ALL dense & sparse combined)..... 7,504 per sq mile (year: 1997)

Jersey City, NJ (average of ALL areas in city).. 11,808 per sq mile (year: 1997)

Los Angeles (ALL of Orange county areas avgd)... 3,386 per sq mile (year: 1997)

FACT: Only 1% of Earth's land is used for cities, towns, and roads. Only 10% is used for agriculture.

FACT: If the world's current 5.8 billion people occupied 1,000 square feet each, they would occupy only one 1/276 of the Earth's LAND. If the world's population density was the same as Manhattan New York's density, all the worlds houses would occupy a little square on the Earth that measured 94 miles on each side.

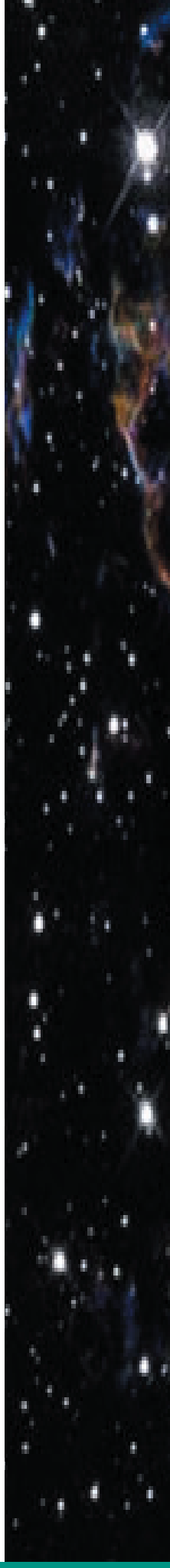
FACT: Four times as much food is produced in developing countries today versus fifty years ago, and fifty percent more food per person is produced versus in the 1950s.

FACT: The UN which measured quality of life by 45 criteria said in two annually published reports that by every measure the quality of life is better in more densely populated countries and in more densely populated parts of individual countries. Criteria included life expectancy, water quality, medical care, and education.

NOW, I know that I've mainly been comparing cities to overall planet population densities, but you have to realize two very important factors:

1) Based on research (links provided below), Earth itself could feed, support, and maintain quality of living for anywhere from 20 to 200 billion people depending on which source you believe. And that's with TODAY's technology:

2) With advances in agricultural, environmental, and resources technologies, planets could conceivably house many times more than the above 20 - 200 billion. And trust me, there are going to be advances in agricultural and environmental technologies compared to what we have now today. And Za'aan technology is way up there. Furthermore, this says nothing about a world where foodstuffs are actually imported from other



worlds! Fuck, if you do that you could raise the numbers tons more than that.

So, Titan's population of about 1 trillion is deliberately meant to be shocking. However, even Titan's population (which is far higher than all other worlds in the galaxy) is not at all in any way whatsoever unreasonable. Period.

Notes: Titan's diameter is 16,206 kilometers (the '206' is in honor of Seattle's area code LOL). Titan has under 40% water and over 60% land (estimates). So, at 4PIr2, I get about 824,670,000 sq km total and about 494,800,000 sq km of land (compared to Earth's land area of 150,000,000 sq km).

At just over a trillion people, this puts Titan's overall population density (on land) at 2,030 people per sq km. No biggy, that just means that all of Titan's land area is covered by city about as dense (on average) as good 'ol spread-out Los Angeles. Now, obviously parts of Titan are LESS dense than LA while other parts are WAY MORE dense than that (in the superhighrise areas of the Imperial City pop density is well in excess of a million per square kilometer (because the buildings are so fricken' high).

So, while I know that many of you have spent your entire lives in Manhattan and London and have never had the opportunity to drive through middle America or middle Russia, but if you do that someday you'll understand why the Earth's population of 6 billion is ridiculously LOW for our world. In the game, Earth's population will be in the 40s of billions, and its chief worlds like Centauri will be even higher. The galaxy is a huge fricken place and while only a few worlds have populations this high, there are thousands of others in the hundreds of millions.

So everyone just get over themselves. And please do it before this same argument pops up about how there couldn't be a billion ships in the entire galaxy, either.

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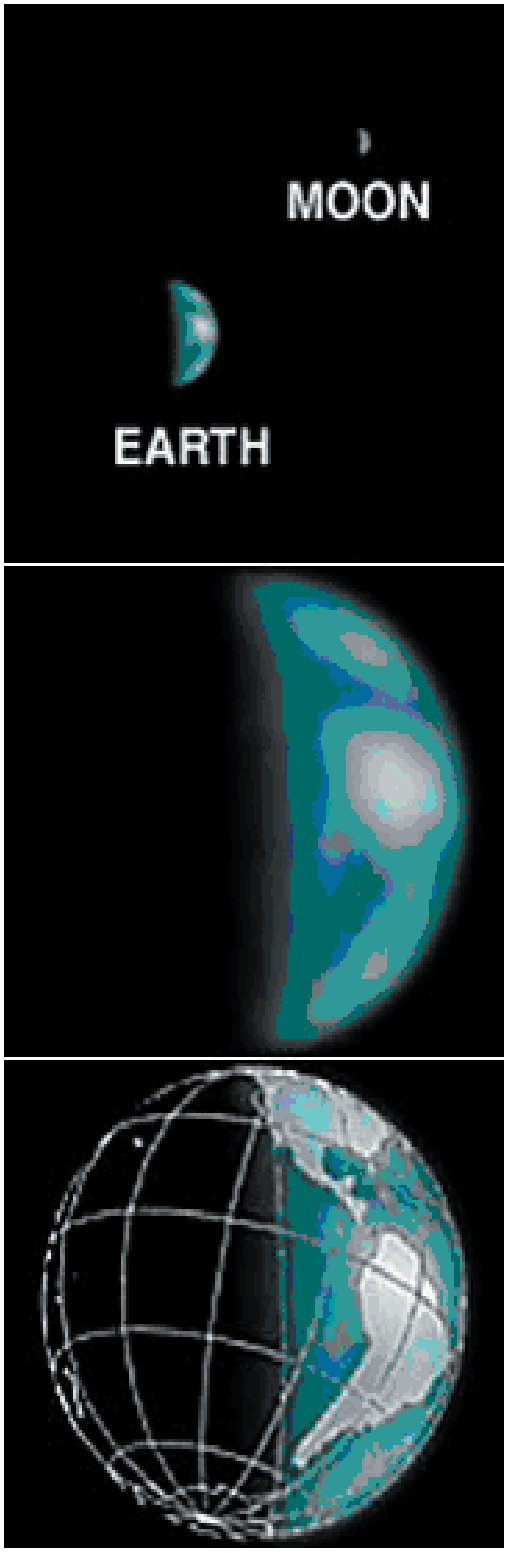
And there's TONS more if ya want 'em.

HOW WE ARE SEEN

This is the earth and moon from Mars orbit Says the National Geographic,

The camera aboard NASA's Mars Global Surveyor (MGS) spacecraft currently orbiting the red planet photographed Earth, the moon and Jupiter, as seen in the evening sky of Mars, at 9 a.m. EDT, May 8, 2003.



TERRAN MARINES

Doing things the hardest way possible

Roger Roy of the Novaya Zemla Sentinel writes of his time as an embedded reporter with the Terran Marines. He says he understands Marines better now, "But I'm not sure I can explain them. They tend to do things the hardest way possible." Furthermore, "They are loud and rough. They have lots of tattoos. They'll ignore you or torment you if they think you're a fake. They'll do anything for you if they like you. They'll believe the wildest rumors. One told me, early in the war, that he'd heard the Army, rather than the Marines, would occupy cities because the Marines "break too much stuff." Marines tend to think and travel in a straight line. They have a talent for complaining and swearing that I've seldom seen surpassed. [He never met my motor sergeant in Beaufort City when I was a battery commander - DS]. They were ordered to more or less ignore civilians unless they were hostile. If they took fire, they weren't to stop: Their orders encouraged a sort of don't-mess-with-me-I-won't-mess-with-you policy. But if someone messed with them, they were inviting the worst. Marines return fire with a relish. The Marines figured anyone who messed with them had it coming.

STARFIRE ERRATA

Likrinish Conquest: 2043 AD
Drolian Empire Conflict: 2068-2070 AD
Mercogran Discovered: 2077 AD
Essota Conflict: 2091 AD
Koalian Emergency: 2093 AD
Tssilka Annihilated: 2115 AD
Corellian Revolt: 2156 AD
First Interstellar War: 2205 AD
Second Interstellar War: 2225 AD
Gorm-Khanate War: 2228-2230 AD
Pilgar Genocide: 2230 AD
Unatha Conflict: 2242 AD
Almaggee War: 2248 AD
Rehfrak Colonized: 2250 AD

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