

The Company Wars

THE COMPANY WARS

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THE ORIGIN OF STATIONERS AND MERCHANTERS

In the early twenty-first century, starprobes went out, launched by Sol Station, which during the interval of the starprobes' travel, became a great economic power in Earth's politics.

Sol Station, a self contained orbiting "multifactory," pulled in metals, minerals, and ice from the asteroids, abandoning the practice of lofting anything up from Earth's gravity well. Since the majority of industrial cost on Earth was either in fighting gravity (lifting and transporting heavy objects) or heating things up and cooling them down (smelting and refrigeration), once a spacestation achieved the machinery to separate and smelt metals by solar power (thus becoming a "multifactory," a combination of industries all locked together in the production of goods for export to Earth (medicines, electrical power, scientific data, and processes) and for its own consumption (machinery, construction materials, oxygen from ice, and foodstuffs (from orbiting fishtanks and farms operating at industrial pace thanks to total environment control possible in such facilities.)

The result was a station capable of replicating itself endlessly at little expense; and a balance of trade which made investment and experimentation possible.

Hence, the robot starprobes which reported several stars much like the Sun, lacking habitable planets but potentially rich in metals and ice.

The theory of cryogenic suspension in sublight starflight was rejected. After all, Sol Station and the one traveling scientific station which had already been in orbit about Venus and Mars and now ventured the turbulent gravity well of Jupiter, proved that there was little difference between a working solar station and a ship.

So the first startship was modular, and while it would take years under light speed to reach the chosen star, there was no reason for the people aboard not to carry on life much as it was carried on in huge Sol Station. When it reached its destination, its payload, containing manufacturing units, would go into orbit in some rich and stable area of the designated starsystem, while the engine module would break free after assisting in this process and return to Sol Station.

It proved hardly more expensive in effort to make the mission multistage, that is, to colonize several starsystems in the same vector by using several engines and compartments and shedding each into deceleration at the time appropriate for each star. So if one part of the mission failed, another might succeed, and if anything went wrong with one engine, they had the capacity to continue on the others, or to return should it become necessary.

As it happened, all three stages worked without a hitch, and Earth had three functioning starstations. They had no ambition at all to land on a planet. Planets were too expensive at this stage, too wasteful of energy in getting up and down; mankind had decided that starstations (of which Sol Station was one) were more productive for small populations than planets were.

The voyaging starships never lost touch with Sol Station, and continually transmitted the data the scientists and technicians in the colony mission were developing enroute. Life aboard went on in a mundane fashion, under the one gravity produced by acceleration; and when decelerated and parked in orbit, each starstation began a continual dataflow to Sol Station, and to each other, and to ships in passage. The result of this close community of scientists at work in new environments, as well as the research and development necessary for the guidance systems and engines for the mission, was a technological acceleration for Earth, a period of great prosperity and wild speculation as new discoveries multiplied.

The engine modules had a small crew compartment: they were designed to move greater mass than their own -- to push, in other words. Their crews had the harder life, since they were few in number and had to give up their associations with the colonists, who would live normal Stationer-style lives, hardly different than they would have lived on Sol Station. The engine-modules might

have been robotized, but it was felt, first of all, that the chance of failure would be less with crewed modules, in such long voyages; and secondly that the occasional contact of human beings who had seen Earth would serve to keep the colonies from becoming too different in their isolation; the chance for instance, that a colony would grow completely alienated from Earth and shut off its contacts had occurred to Sol Station. So the primary reason for crewed ships was a psychological one.

The small crews must pass years together, and must have as normal a life as possible. Families happened, in spite of mild official discouragement, and when the first ship returned to Earth, they were offered a chance to stay. They refused, having spent too long at this to give up what to them had become a way of life. Crews grew larger (as did crew quarters) as second-generation crew took husbands and wives. Children ran and played throughout the ships, did small maintenance, and grew into crew work with the passing years, children whose lives were measured in calls at this and that starstation.

This was the origin of the merchanters and the stationers, whose lives became vastly different one from the other, but who were linked together in mutual necessity.

The arrival of any ship in those early days was occasion for holiday.

Trade began, conducted without substance (of data by communications net) and with (of goods and parts carried by the ships).

What did the merchanters get out of the exchange? The improvement and care of their ships, which were their homes. Their food. Their whole lifestyle. And the freedom which began to be their whole way of life. A merchanter "family" was tightknit, even developing an accent unique to a particular ship: everyone aboard seemed to be a cousin or aunt or uncle.

Stationers got the same sort of thing -- but their populations were larger. They liked their security, the benefits their trade brought in.

Starstations expanded, built new modules and boosted them by ship to stars as near to them as Barnard's Star and Alpha Centauri are to Sol; and Sol had to get news of some of these stations secondhand, because of their distances.

There were nine such starstations -- ten, counting Sol.

They were: Alpha Base and Beta Base, Bryant's Star, Glory, Venture, Galileo, Olympus, Thule, and Eldorado.

The next starstation was sent to Pell's Star. And that star had a planet which had life, which had a sapient species, which had agriculture and the kind of luxuries which Earth had been supplying.

#### PELL'S STAR AND DOWNBELOW

Scientists flocked to Pell. Everyone wanted to be in on the find. Meanwhile, word of the discovery traveled at lightspeed back to Earth.

By the number of years it took that lightspeed message to get to Earth and for Earth to debate the matter and send another message the same number of lightyears distance back, trying to adjust the trade patterns to accommodate the new discovery, it was too late. Some starstations had shut down and emigrated because goods were reaching their trading partners from Pell, not Earth, and they were suddenly in a backwater area, out of the future line along which goods would flow.

Pell not only succeeded as a starstation, it was being overloaded by immigrants and sent out new colonies to Viking and Mariner; and Mariner, having discovered by telescope a planeted star near it, colonized Cyteen, which had another agricultural world.

#### THE BREAK WITH EARTH

Earth just did not cope with these changes fast enough. The value of its goods plummeted. It suffered an economic crisis and there began to be an outcry that the starstations and the merchanters ought to be taxed to support Earth, who after all, started the space program.

Now in one way the original decision to have manned ships paid off; some merchanters had maintained enough contact with Earth to be somewhat loyal to the Earth Company, but few stations were loyal enough to want to pay a tax. Earth was able to enforce the tax, at least, at first.

There was some shooting. Merchanters who would serve Earth were armed.

A great many people who did not like this trend left the nine starstations which began to be called the Hinder Stars.

They went to Pell or further.

But then... then a scientist at Cyteen discovered a principle that made possible Faster Than Light travel: an FTL ship.

During the passage of a lightspeed message to Earth that such a discovery might be possible, an FTL ship was launched from Cyteen and had time to tour almost every starstation in far space.

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Had it not been for the tax, Earth could have been in the center of things again. But Cyteen was hostile to Earth.

And Cyteen had two things: a discovery in the biology of the planet Cyteen had given them rejuv, a drug that could hold off old age for up to fifty years. Earth wanted it. Badly. Cyteen also had FTL. And that, Earth got, thanks to Pell, which got the secret and spread it.

The shooting then became serious. Some merchanters went to Cyteen and Cyteen declared its independence of the Earth Company.

Earth built fifty superFTL carriers to batter Cyteen to its knees. It named the ships after the nations of Earth.

But Cyteen, older than Earth in the matter of building FTL ships, matched their fleet.

The one thing Earth had was a majority of merchanters on Earth's side, and this included some very good starpilots who wrote new chapters in FTL operation, and who outflew and outfought Cyteen equipment, which was generally a few years more advanced than Earth's.

In FTL technology Cyteen had a slight edge, mostly because of a handful of physicists who were still at work on improvements.

In actual operating skill, the loyalists had the edge, and their ships were good enough, if not the latest.

#### MERCHANTER OPERATIONS DURING THE WAR

Merchanters had once been the warships: a few of the old sublights had been converted to FTL; many of the modern merchanters were launched by Pell, Earth, or Cyteen as new ships, crewed by spinoffs of older merchanter families. But the lifestyle changed radically because of FTL.

The voyages of years now amounted to weeks spent in space.

While merchanters still looked for mates outside their ships, the difference in lifestyle of merchanters and stationers had gotten so extreme that merchanter/stationer marriages were unlikely. Merchanters associated with merchanters, and were confined to the docks at the ninth level of the rim of each wheel-like station. Along one side would be the tending machinery and access ramps of ships in dock; along the other side (in the Green and White sides of the wheel) were bars, restaurants, and hotels (called sleepovers) for spaces. On the dockside of Blue Section (which is always administrative) are the customs office, the spacer banks, security headquarters, and in short, all the nerve centers of the docks. Only military ships of ships with special clearance get to dock in a station's blue dock, and only stationers with special clearance get to live in the eight levels above, many of which have sensitive offices. Station Central is the uppermost of the blue levels.

White contains many shops that serve spacers; the levels above have shops that serve stationers, and residences of shopkeepers and medical folk. The uppermost level of white had the security detention area and police headquarters; the level just below has the medical facilities, the hospitals, and so on.

Green section on the stationer levels contains general residences, restaurants, and shops for stationers.

Red section on the docks is for insystem haulers coming in with ores and other industrial goods: it contains much of the manufacturing. This also tends to socially separate insystem spacers from FTL spacers, who do mix without fighting, but without great enthusiasm either: FTL merchanters are clannish and occasionally dangerous, tending to enforce their own law, particularly on Green dock, which is their territory.

There is little residence (but some) in red sector. Its docks have shops and manufacturers' offices and some station offices which apply exclusively to the insystem ships.

Orange section dock is either for FTL or insystemers, depending on need. It has shops, banks, and some restaurants; above are residences.

The hub has three functions: docking for null-G haulers like oreships which unload their cargoes without gravity, and which will stand off from station during crew liberties. Ore haulers are too big to dock at regular facilities. The hub also has those functions of station lifesupport and power which do not need gravity. And it has a gymnasium and recreational area for null gravity and low gravity sports.

Merchanter ships come in several classes.

There are general FTL haulers. Crew lives forward in a wheel-like cylinder that rotates to supply gravity because these ships do not often use regular engines and the force of acceleration is a nuisance, not a help to them. The cargo compartment is behind, in front of the engines. The cargo space may be of several kinds.

First it may be unheated, in which case contents will freeze in the cold of space. Some goods profit by this.

Such holds are not pressurized either.

Or the hold may be heated to various degrees. This is expensive, usually involving lifesupport sufficient to admit a worker without a spacesuit, but in most that do claim heated holds, the temperature is just above freezing. Few goods need balmy temperatures. Very few haulers can handle that kind of thing in bulk.

Or a ship may take cannisters, some of which have internal regulating systems for heat or air.

Many ships have one heated hold up front and the rest unheated.

Also most goods do not require gravity. Most holds are zero-G.

A very few ships can provide heated holds with gravity, which they get by having one or more holds included in the crew cylinder. This is very expensive transport. Often passengers ride in spare crew cabins (there is not much interstellar passenger traffic at this stage). In rare emergencies, heated one-G holds can be used for passengers.

Ships can come in all sorts of combinations.

There are also can-haulers which are nothing but a crew compartment in front and engine at the rear connected by a long bare backbone with clamps that bind up to ten or twelve huge cannisters in place. Canhaulers unload to small pusherships which then shove the cannisters into the null-G dock of station hubs.

In the normal operation of a merchanter ship, it takes cargo, leaves dock, and spends hours (or in some systems and depending on the power and load -- days) getting to the nadir of the stellar pole

far enough out that the jump will not land them in the heart of the star or try to take a planet along. During this time the crew lives normally, annoyed only by the first acceleration that got them going. Normal space engines shut down then and they coast.

When they get to the nadir jump range they get a navigational fix on a star, do the elaborate calculations to determine exact location, and turn on the generation vanes, the large panels suspended on vanes about the ship like old-fashioned rocket fins -- but these provide the field which takes them into jumpspace, the Between.

Subjectively, a few minutes pass. Objectively, a week or month of Universal time has passed. This again varies according to power and mass of the ship and load, and yes, a more powerful (or less loaded) ship can overjump a weaker one and arrive first.

The ship has now been dragged out of hyperspace by the nearest gravity well in the vector it had chosen. Usually these are jump-points, brown dwarf stars of Jupiter-like objects which exist between the greater stars -- too cool to give off much light or radiation, but massive enough to make a considerable pockmark in hyperspace.

The ship is now traveling about 3/4 to 1/2 lightspeed or about 139,000 miles per second. At this rate, planets and large rocks are dangerous to it. If something went wrong at this speed in our solar system, a ship near Earth might have fourteen minutes to solve its problem before hitting the Sun -- and, of course, it takes enormous energy to turn even a hair, let alone bend a sharp turn to evade something.

If you use conventional radar, it sends out a pulse and you literally run into its bounced-back return; if you are tracking a high-speed ship moving in a different vector than your own, your pulse may not catch up to it and come back fast enough to do you any good. Remember the fourteen minutes above; and heaven help you if the ship in question is coming your way! More about communications and radar of FTL ships later. For now, suffice it to say it is a good idea to come in only at zenith of the jump point and to leave the point only at nadir. This regulates traffic and reduces your chance of running into someone to those of your house getting hit by a meteorite on Earth. Rare, but known to happen. Starships, after all, are not as frequent as automobiles.

If your instruments are off, of course, you could impact the jump point.

And any ship moving at in-system speeds looks like it's standing still. They can only hope you'll slow down before you get into the jump point central area.

How to shed this enormous velocity? Pulse the jump engines, which partially reforms the field and blows off some of your velocity like an invisible drag chute extended into the interface of realspace and hyperspace. You slow down to a crawl.

Now you pass tamely through the realspace near the Mass, the almost star-like object that makes the gravity well. There may be other ships already here. You can talk to them by com and even, if you wish, stop completely, link airlocks, and exchange goods outside station customs. A lot do. This passage through the jump point can take a leisurely week, if you're having fun. If you're in a hurry you can probably get on through (and be cursed by near traffic) in a day.

There is, however, a penalty for this, subspace is a harrowing experience and makes one feel awful. Moving through space too rapidly give you no time for your stomach to recover and you will progressively become sicker and worse at navigation. Take your time. It's healthier.

Also, if you string jumps (pass through several jump points without slowing down) your velocity could begin to get out of control. If you should fail once to dump speed before jumping out again, you would probably jump past any local gravity wells and get sucked into the nearest most massive star's well, exiting at a speed beyond lightspeed, which violates Einstein's principle and pockets you in a traveling discontinuity -- in other words you become a black hole and come to a spectacular end as you and the star attract each other. Since you are a very small black hole, it will swallow you without ill effect -- except to you.

So you make your exits from stars and jump points tamely, at a sedate speed, with due care.

Now, during the War years, you may see a military ship occupying the jump point. It is good to

identify yourself rapidly and courteously beyond the computer-squeal of identity your ship constantly gives off, and to heave to if ordered to do so. You cannot match a military ship in maneuvers or jump capacity. It can go further, faster. Only if you are still 3/4 light do you have a chance of running from it before it can get up to speed or before its particle weapons and shells can reach you. But its beams go lightspeed: you are 3/4 light. You have maybe fifteen minutes lagtime before it knows what you are (your noise getting to its receptors at lightspeed). And fifteen minutes lagtime for its beams to reach where it predicts you will be fifteen minutes later (or less if you're going toward it) -- if it fired at once.

That is not a lot of maneuvering room, considering your degree of possible turning is less than a warship's, and it diminishes incrementally at 3/4 light. You have to dump most of your speed, lock on a star, and be in a favourable position to jump. Thirty minutes is not really very long to do all this. If you can do it you are probably a merchanter running with empty holds and up to no good.

They do have to guess how much mass you're carrying to know where you're likely to be (if you should turn). How much cargo you carry plays a part in this.

You could try dumping cargo.

Usually, however, the worst the military will do (if they're Union) is look you over and check your papers and question you. If they're Mazian's Fleet -- well, in the last years of the War, the Earth Company Fleet began to need troops and crew for its ship. It might impress your young men and women as troops or crew; might take your supplies, raid your cargo. Africa and Australia have been known to kill for fun. India, North Pole, Atlantic, and Pacific will mostly take supplies. The rest of the fleet are likely to take both people and cargo items.

If you meet other merchanters at a jump point -- still be careful. Ships have been taken by Union to use as spies.

Merchanters know one another by name. All on a given ship have one last name. If you say Finity's End, for instance, everyone knows this means the Neihards. So it is an age in which a man or woman's word and name for dependability are life itself. But Union knows these names too. And has access to ships that come and dock at Union ports.

This war has no borders -- except for the fleets that maintain them. It is fought in three dimensions and the front skips and moves according to where the carriers are. Merchanters move freely through the war, dock here and there, get questioned by both sides, and try as much as possible to ignore the fighting which has been going on for half a century. They act as if the war doesn't exist.

So you may be bound out of that jump point for either a Company star or a Union base. It doesn't matter. Usually. After, no one attacks stations or planets. Yet.

When you arrive at a star, you come in at the stellar zenith pole as agreed by navigational law, slow down at once, Your arrival has been reported by a jump range buoy which is a robot station which has three functions: first, it gives you a current updated computer image of the estimated positions of every object in the solar system, cutting down on the lagtime problems. Second, it adds you to the image which it now beams back to station. Third, it assigns you a lane to follow, again cutting down lagtime. You do as instructed and come in safely at reduced speed.

Station will know you have arrived an hour or so later when the message gets there (FTL ships are faster than messages). Station Central will greet you and you will talk to them as you approach. The lagtime shortens from an hour to half and hour to five minutes to no appreciable lag as you get to the station and begin docking. You match the station speed and rotation pattern, shutting down your own rotation, and locking your cylinder into docking position, then shove your nose into the docking cone, fasten clamps and wait for the crews to attach lines and hoses which provide you power, flush your tanks, take your refuse (biostuffs are precious) and give you shielded-line communications with the station.

You go out, go through customs check, and report to station offices for debriefing.

UNION MILITARY

Union is based at Cyteen, and that star system is defended not only by warships but by astrography -- i.e. there is a nasty region of space on one side which is a gravity well consisting not only of several jump points swinging each other about in a difficult ballet, but with enough debris about them to make dropping out of hyperspace here a very fatal matter.

Since FTL's tend to go to the nearest jump point unless they have gone way, way deep into hyperspace, any ship coming in on this side of Cyteen will come to this graveyard, like it or not. No ship has yet been built that can jump over it.

There are also starsystems further out, which are at an early stage of colonisation. These all belong to Union, which is economically powerful and able to build ships at a great rate, while the Earth Company cannot.

And Union uses cloning techniques to produce population at a great rate; while it still takes 18 years to produce a soldier, and longer to turn him or her into one of the black-uniformed Elite space force, the rate of population growth is tremendous, thanks to the birthlabs.

Union ships are mostly military. Some merchanters are registered to Union ports, but these are not counted as Union ships, since they are not owned by the Union government. Their designation is US. UnionShip.

#### OLD WARSHIPS

The oldest sort of FTL warship is a converted merchanter. Most of these were shot up and put out of action by 2350.

#### CRUISERS

There are a few of the early FTL cruisers left -- ships with big engines and vanes and a big powerplant for the beam weapons, small crewspace and generally miserable living conditions.

#### CARRIERS

There are carriers: these carry four (usually) insystem fighters; and troops. The troops usually number about a thousand per vessel. They have large crew/troop cylinders and a great deal of this cylinder space is given over to their lifesupport, the medical and operations facilities, the recreational space (in space for years at a time, the troops have to have room to move about), galley facilities, equipment storage -- which includes stoorage for sidearms, ground drop shuttles, hand launchers, defensive and offensive personal electronics, field hospital unit, and the thousand odd hard-suits and armour used by the troops; training and briefing ares, not to mention sleeping and maneuver-protection areas. Beyond this there are the crew quarters, which are luxurious by troop standards, private cabins for high officers, separate recreational facilities (as spacers and troops do not mix much), operations stations sufficient to direct a mission scattered across a solar system; and the operations stations specifically in touch with each of the four fighters-craft; and the weaponry of the carrier; and the actual operations and flight of the carrier.

On a carrier there is one captain (unlike a merchanter, which may have two to four captains and whole crews, each active during a particular watch); each carrier however has two crews, one mainday crew, one alterday. (Mainday and alterday are 12 hour periods: night is ignored in space, where it is meaningless, and time is divided into two duty shifts, because ships do not stop running while a crew sleeps.) The next in command is de facto alterday captain.

For combat, it should be added, all crew is called to stations if there is time. Strategic and tactical command passes to the captain, while piloting, armaments, communications, and radar operations got to appropriate officers. The captain is, to be sure, capable of handling the ship physically in combat, but rarely is this the case: a carrier captain is chosen for a combination of many skills and rarely is the captain also the most qualified combat pilot. There are in both fleets a few exceptions to this, but the skill of any captain in Mazian's small fleet surpasses that of almost all Union pilots.

Troopers, both male and female, like the officers and crew of the carrier, are aboard for those

moments in which human force is needed: boarding a stopped merchanter; landing on a planet, moon, or mining station; holding a facility once taken; opposing enemy troops in any facility or terrain too valuable to be blasted by the ship's weapons -- for operations in which a scalpel is of more use than a sledgehammer.

To get to these situations where they are of use, the troops have to ride through many unpleasant battles in which they are no more than freight, and one quality of these troops has to be patience and endurance: the physical strain of riding through an FTL battle can kill the unprotected.

When they exit their ships, they go in laser-resistant armor which has (if needed) a self contained air and heating system, so that this armor can double as a spacesuit for brief periods. A hit in the joints is one way a laser or projectile can get through this armor, but it is made to keep those joints covered as much as possible. Particle weapons are more trouble, but more the kind of think one would face in a pitched battle. Each trooper carries a laser; a projectile sidearm on occasion; and a heavy knife, because shooting inside pressurized compartments and certain portions of spacestations adjacent to the outer walls is not an outstandingly good idea.

The helmet also has a com, so that each trooper can receive general orders; and the visor also has sighting and range devices and other readouts which appear by an optics system if one looks up from inside the helmet.

Union troops are both natural-born and birthlab born; they are all highly indoctrinated because the educational system of all Union citizens is fed into the mind by subliminal means -- a technology used everywhere, but used by Union for political as well as factual education. These troops are both loyal and literate, and they are professional, trained to the nth degree in every aspect of their weapons and their duty.

#### CARRIER COMBAT

The carrier is a vastly powerful ship capable of over-jumping a merchanter, capable of very fine maneuvers. It is not the size of a ship that determines its speed and agility: it is its mass to power ration, its mass relative to the size of its vanes and engines. Carriers are vastly over-powered and come into a system at up to 7/8 lightspeed.

A carrier may not wish to dump speed: it may ship through a starsystem at this incredible velocity in which the distance between planets can be covered in minutes, and it can fire and be gone so rapidly the victim may have no warning. It may shed its riders, which will travel at that speed, although they are not capable of FTL: they are small ships with a crew of about fifteen, each one equipped and instrumented to handle the enormous velocities of a carrier, up to the lightbarrier. They are very sophisticated in electronics and armaments and any one of them is every bit as much to be dreaded in attack as the carrier itself: they are fast and their firepower, while less than a carrier's, is sufficient to destroy a carrier's maneuvering capacity, or to wipe out a starstation or reduce a planet to the stone age. Riders spread out from a carrier, and often operate at different speeds so that their capacity to turn is different. This confuses the enemy's longscan, (more about this later). When the carrier is ready to leave the system, it summons its riders which limpet themselves to the hull.

A carrier has very powerful weapons mounted on the huge frame shell, which also supports the vanes and engines. The personnel cylinder rotates inside this frame, and the RPM of the internal cylinder is variable in a warship. When the ship goes into maneuvers of high-G stress, the RPM increases, which presses humans deeper into their seats and helps them endure the stress of the small changes of course these ships can make at high speed. Additionally the working stations, for crew who have to remain sitting upright and working through these terrible stresses, are themselves on hydraulic tracks which help absorb the stresses by slowly yielding to the move and returning to position. The fitness of these adjustments is critical, since the ship that can turn tighter than its enemy even by a fraction of a degree (remember that we are crossing whole solar systems in which that little change at the start of the course means miles and miles difference at the end) may confuse the enemy's longscan estimates and help the ship evade a strike.

That frame can also do something no human body can stand: it can whip 360 degrees or any portion thereof at blinding speed to bring those guns to bear on anything th computers tell them to, and since it is not part of the personnel cylinder, the occupants get no stress from the move.



Two ships passing each other at 7/8 lightspeed do not see each other coming fast enough for human operators to react: ID is made by the two ship's computers spitting out their continual squeal of identification, recognizing friend or foe, and directing fire all before a human mind could even realize the enemy was there, let alone send a hand to the control board.

Two ships differing vastly in speed: the advantage is always to the ship at greater velocity. Therefore, a major objective is to cause your enemy to dump speed and get the battle to a slower speed if you are defending the system. A ship has to dump if it has run out of solar system (or it can jump out altogether and reorganize itself and then come back in a week or so from a neighboring jump point -- if you have been attacked, it is a good idea to send ships out to all the neighboring jump points to prevent this move ... the enemy will also try to set up an ambush when you do, and so on). A ship also has to slow to the speed of its riders it wishes to retrieve -- and no carrier wants to leave its riders behind if it can help. Outside of losing fifteen highly trained crewmen per ship, riders are expensive, and if the situation is bad enough that the carriers are running, the riders are likely to be overwhelmed too.

Union, however, has lost quite a few riders, while Mazian's fleet, much more reluctant to leave riders, has kept most of its own, as witness the fact that most Company Fleet ships have their original riders: i.e., those riders that were lost were destroyed with their carriers, not left behind.

In riderships particularly, Union suffers from less skilled personnel than the Company Fleet has.

Union riderships have been cannonfodder until recently, but the situation is changing.

#### SUPERCARRIERS

Union is developing a few carriers that can handle more than four riderships. Mazian has no such ships.

#### DARTSHIPS

These are just a little larger than riderships, but they do have star capacity: they can go FTL, which means that they travel like carriers and fight like riders. They carry very small crews, only four or five, because they have sacrificed crewspace and complexity to give up mass to the engines. Living in one is miserable.

They are very greatly dreaded because they are hit and run fighters and you never know they are coming. The best you can do is chase them if you can figure out what jump they're going to make: a carrier can overjump one and be waiting for it, but it is very tricky for a stationary ship waiting at a jump point to ambush one traveling fast; you have to shoot from the hip on your computer's first indication this is the enemy, and you have to fire at where they're going to be.

The Earth Company has no dartships.

#### EARTH COMPANY FLEET: MAZIAN'S FLEET

When the Hinder Stars stopped trading with Earth, commerce fell off, particularly as the war heated up. Merchants feared Earth, feared conscription, feared the lack of understanding Earth had of their situation, and commerce between Earth and Pell was finally severed.

Having built a fleet of fifty great FTL carriers which hurt Earth economically, Earth fell into chaos as a failing economy and the stress of the war and the complexity of Terran politics paralyzed its decisionmaking apparatus. This led to the rise of the Isolationist party which cut off funds to the Fleet.

#### OF IMPRESSMENT

Supply for Mazian's fleet became so bad few of even the highest officers had a complete uniform ... let alone badly needed equipment and repair. Ships that were damaged had to be scrapped for parts to repair others. Equipment was cobbled together by ingenuity. The Fleet kept fighting -- kept holding off the Union fleet even when the Union regenerated its losses and they could no

longer get enough recruits or even food to feed the troops.

So they turned to impressment and raids on merchant shipping to get what they needed.

Ironically, they still relied, even at this point, on the cooperation of Earth Company Merchant Ships ... for information, voluntary support, contributions of supplies, and even personnel. Some of the present Fleet captains came from such volunteers. The problem was with the frustration of the Fleet when merchants began to refuse this cooperation under the increasing burden of Fleet demands, and after seeing to what extent volunteers were adsorbed into the Fleet -- forgetting Family, putting Fleet loyalty first. What began as cooperation ended up as a bitter relationship. Most merchanters wanted the old days of trade back and the Fleet represents that tradition; they do not like Union's way of life, which is alien to their values of family and ship. They fear if Union wins and starts building merchant ships of its own, they will be run out of business, forced under the domination of a government -- and presently they have no government at all. The only think that is holding Union at bay is Mazian, whose abuses are flagrant and piratical. So they are caught between a rock and a hard place and support Mazian even when he raids them.

#### THE STATIONS

The staunchest Earth Company Station is Pell. The Company also claims Viking, Mariner, Pan-Paris, Russell's Star, and Esperance. All others belong to Cyteen.

All stations are too fragile for combat. They have all declared their neutrality in this war and will dock any ship that asks for docking.

Even Cyteen would -- if a Company warship wanted to come to dock -- not, you will understand, likely.

#### DOWNBELOW AND THE DOWNERS

The only Earth Company world besides Earth is Pell's World, called Downbelow, named by the gentle natives who share Pell with humans. It has thus far proven too expensive to colonize the world; and there are ecological reasons not to do so. But Downers, whose own name for themselves is the hisa, supply grain, meat, fruit, and all manner of goods to Pell and the loyalist stations. Humans cannot live on Downbelow without breathing aids.

#### INSYSTEM HAULERS

Also worth mentioning are the insystemers, particularly numerous in mining colonies: these are tin cans with engines for the most part, zero-G ships run by miners collecting ores out of asteroid belts, or the ore haulers who bring it in, or the countless little pusher-ships and skimmers that flit about stations sweeping up debris and assisting with construction and movement of cannisters. Even an insystem transport which runs supplies back and forth moves at a crawl which can take weeks to get from point to point, or months to cross the solar system. Some of them are solar-sailers, riding the stellar wind; some are fusion ships. Theirs is a hard life and they are hard people, right down to the youngsters born on these small ships.

It is the dream of many insystemers to go to the starships, and they often become the volunteer troopers of the fleet, lacking the skills of FTL technicians. Many trooper officers were born on insystemers.

Insystemers are, by the by, another kind of navigation hazard to a starship: but they (as the name implies) cannot leave the solar system, and always operate in the plane of the planets and asteroids, where few starships come: they are reasonably predictable in course too, even if they can turn or even reverse direction; it takes so long for them to move that, relative to a starship, they might as well be standing still. The system bouy knows pretty well where they are.

#### MAZIAN'S FLEET

Mazian's Fleet once consisted of fifty carriers; it is now far smaller. They have no dartships, no cruisers, nothing but the carriers and riderships and the occasional help of a merchanter.

They are officered by the officers smart enough to have survived against the odds, to have gotten

supply where supply did not exist, to have eluded the ambushes of Union's more advanced ships, and to have raided and harassed Union territory (some merchanter harassment comes under this heading) to such an extent that it has hurt Union's commerce; further they have come several times within a hair's breadth of actually defeating the massed Union Fleet. If they could knock the Union Fleet out in one pitched battle, the merchanters would instantly fall in line, and the Earth Company would rule human space again.

Further, Earth is secretly building ships again, and will launch a new fleet if it can buy enough time. The Fleet does not know this. At least -- it is not likely the Fleet knows. Earth just needs a few more years. Then it will take back the Hinder Stars, whose starstation still exist, mothballed and waiting; and it will launch out in a new period of FTL trade.

#### TACTICS AND STRATEGY OF MAZIAN

Mazian has one edge: skill. His captains can jump together and avoid hitting one another, a trick those shiny new Union ships have been known to fail at, and Union pilots are scared to do it. Consequently, Mazian operates in two ways -- in hit and run tactics, using his carriers like massively powerful dartships at Union shipyards and mines and strategic jump points which Union would like to hold for itself. And he can group them in pairs and larger groups, arriving all at once or even from opposite sides of the system simultaneously to make hash of Union defenses.

Union pilots regard Mazian's captains with mingled hate and awe because of their uncanny ability to put their ships where they want when they want, especially when those ships are old and patched. Union ships just cannot match their precision, and Union Pilots lack the nerve and the recklessness of Mazian's lot. Mazian's troops are also legendary, for their ruthlessness and their fierceness: where Union troops are cool and efficient and follow orders, Mazian's Fleet troopers are loyal only to their own commanders and their own ships fight like maniacs and have a disturbing tendency to seize the initiative if deprived of officers: their chain-of-command runs right to the bottom, and if a trooper officer drops, the unit never pauses: it knows who's next in command.

They have on the average more experience, are older than the average Union trooper, and are career soldiers, where many Union draftees hope to live to see the end of the war. Company troopers have no such plans ... not even those impressed from merchanter ships, who have survived their induction. They will loot, but their own officers can control them ... if they want to.

#### COMMUNICATIONS

Radar and radio, lasers, any means of communication or longdistance examination or communication thinkable --has to operate under the speed of light.

FTL ships go faster. So the fastest way to get a message to another star is to have a ship carry it.

This also means that an attack can get there FTL before any broadcast warning. It takes eight years for a communication to get to Cyteen from Mariner, except by FTL ship, which arrives in a month or so.

This lag means that tactics have to be planned without the ability to radio ahead and tell your friends you're coming.

Ships have to physically meet and talk: that's quickest.

#### LONGSCAN

Ships have two kinds of radar: the ordinary sort which operates sublight; and longscan, which is part guess and part radar.

The way it works is this:

It takes the original information of the jump range buoy and identifies every ship and object in a system, how fast they're going and what direction. It calculates a likely track and shows it on a screen as a four coloured line. Red is what track the ships will take if they keep on as they

bear. Yellow is what they will do if they veer as much as convenient: this is a cone-shaped projection. Blue is their position if they decided to stop.

Human operators rapidly intervene and as the computer prioritizes them the fastest-moving ship data, they decide, on the basis of emotional human knowledge, what those ships are likely to do when the informational wave they have just made entering the system hits them. If a warship, for instance, it may turn toward them as fast as it can. An operator is assigned for each ship under consideration while the computer handles the slow craft and the other which for various reasons do not need constant monitoring.

In the meantime two things have happened: Their ship has changed course and speed either following or not following the buoy lane assignment; and the other ships one by one pick up their presence in the system and react accordingly. But this radar image changes constantly, so when the action begins to conform to one of the projections, the computer changes the colorcodes, assigning red to most probable and so on down to blue as the least, so it is part radar, part computer, and part human guesswork.

The data in the bank is the best information about the mass and engine capacity and turning ability and hostility or friendliness of each ship whose computer number is on that chart; and all ships known to be in space are in that computer memory.

Now, military craft (particularly Earth Company warships) are always making adjustments and honing their turning abilities if only by the smallest degree; this fouls up the enemy's longscan guesswork and can provide surprises. Mallory's Norway for instance, has not recently tested her adjustments to the extreme, and therefore the captain herself does not know just what Norway might do if she had to. And those refinements are only tested to the fullest, of course, when it comes to a situation where a ship either turns tighter than it is supposed to, or breaks apart -- or dies in impact.

All FTLs and starstations have longscan. Station central traffic control has longscan as its main function and it generates the image which the buoy broadcasts to incoming ships.

All communications of FTLs naturally have to have doppler adjustments because of the relative difference in velocities involved in their operations in starsystems.

There is no communication in hyperspace.

## TACTICS

The object is to destroy the enemy ships. Station buoys are off limits as starstations are, since their destruction would endanger neutrals aboard ships which would suddenly pop into a system blind and not have land assignments or longscan information.

Mines may be attacked, but robotized targets should be the objective according to the rules of war.

Shipyards are frequent targets: they are also heavily defended.

No stationary defense can copy with an FTL attack.

Planets, stars and large rocks can shield a ship from scan if it turns off it's emissions, which it is not supposed to do... but it is done.

Emissions include radar.

Stars and some Jupiter objects are "noisy" enough in their own emissions to mask a ship.

A carrier is too big to blow up: you have to immobilize it and hammer away at it.

A wrecked ship can encapsulate a few crew and jettison them but if they are not picked up soon, they will die. Troops also can be rescued if they are wearing their hardsuits, but they are widely scattered, hard to find, and usually their own side does not have time. Remember they travel in the same vector and at the same speed as the wrecked ship was going.

If you end up side by side with the enemy going the same direction as you are, it will be as if you are standing still relative to each other: a terrible battle will ensue like two old frigates battering away at each other with broadsides. Thankfully, this is rare.

If you are next to a small object and jump, you will take it with you. Unfortunately, you cannot decelerate it when you get where you are going.

Here is map of Compact: