M317 Cluster Sourcebook

Worlds of Adventure in 2d6 Gaming

M317 Cluster Sourcebook

For use with any 2d6 science fiction RPG variant by

Frank Miskevich

version 1.0.3 copyright © 2022

The M317 Cluster and associated web pages are licensed under the Creative Commons Attribution non-Commercial 3.0 Unported License (CC-by-NC 3.0)

M317 Sourcebook Index

Chantor 1. A Brief History of the M317 Clu	page
Moga-Jump Cate Discovery	
Unification Wars	5 A
Pansonhantic Confederation	5
M317 Timeline	5
M317 Innenne	5
Chapter 2: Cluster Wide Organizations	
Confederation Government	9
Principles of the Confederacy	10
Woteth, Confederation Capital	13
<u>Cluster Scouts and the Census</u>	14
<u>Cluster Naval Forces</u>	15
Differences Between CNF and CSS	16
Confederation Hierarchies	17
<u>Cluster Consulates</u>	19
Confederation Influence	19
Explorer's Aid Society	21
Piracy	22
Mercenaries	24
<u>M317 Interstellar Bank (MiB)</u>	25
Tithe	25
<u>Megacorps and their Spheres of Interest</u>	26
Non-Governmental Organizations	39
Chanton 2. Warlds and Tashnaladias	
M217 Naming Conventions	42
MS17 Nathing Conventions	45
<u>Systems and Stars</u> Habitable Worlds	44
Marid Temperatures	49
<u>World Temperatures</u> Confederation Worlds of Concorn	49 E1
<u>Connected Monda</u>	51
Spacecraft and Technology	52
Spacecrait and Technology	53 FF
<u>Fuel Skimming</u>	55
Jumps and Misjumps	50
High Gravity Planets	5/
Bleeding the Easy Way	58
Belting the Easy Way	59
Hazards of Mineral Extraction	60
Ancient Technology	61
<u>Robots and Augments</u>	62
Scientific Research	63

Chapter 4: Sophonts and Their Way of Life

65
67
69
70
74
81
84
86
87
87
88
89
92

Chapter 1: A Brief History of the M317 Cluster



The universe is a vast and amazing place. In the globular cluster M317, hundreds of races have existed and died for untold millennia. Among the races currently surviving in the Cluster, a number of them could not identify a homeworld of their own despite living on planets as long as their histories had existed. One of those systems was Calpig located in subsector [7,5] Cedkencon, where 3 different intelligent races lived on separate planets orbiting the same star. Neither the humans, merfolk, nor reptilians were closely related to any species on their worlds, and there was no evidence for any even remotely similar species until approximately 300,000 years ago. Despite communicating and trading with one another for centuries, their origins were a mystery. They had only recently learned that it was possible to jump more than one parsec at a time through jump space (TL-11), and their ships were discovering new worlds and empires regularly.

The Old Races, those that had disappeared from the Cluster, had left extensive proof of their existence on many worlds. Some of their artifacts had been found, and a few still functioned even after many millennia. While exploring an unremarkable system for a possible mining colony, the Calpigans encountered an ancient artifact like nothing they had ever seen before. A large torus-shaped device orbiting within an asteroid belt around the orange primary of Manyatab in the [9,5] Tugxyvan subsector contained a central hole nearly 500 meters wide. A control pod containing machinery far beyond anything currently understood was seamlessly attached to an outer edge of the torus. Researchers studied the device for 75 years before the reptilian scientist Rienth d'Trellieth turned on the device through a fortuitous accident. Drawing energy from the star itself through an unexplainable quantum gravitic bridge, the device opened a passageway through space to a location in a distant spiral arm of the Milky Way Galaxy about 50,000 parsecs away. Expecting to find truly alien species, the first travelers through the Mega-Jump gate were shocked to find that there were already humans living on the other side of the gate. Reptilians, Insectans, and several other races were also known and well recognized in the Milky Way. Clearly the long forgotten builders of the gate had traveled this path before.

The larger galaxy quickly embraced trade with the M317 Cluster through the Mega-Jump gate. The Cluster worlds, however, worried about unfettered trade with the technologically more sophisticated worlds on the far side of the gate. Eventually the promise of improved technology and possible use of the Mega-Jump gate to explore even more regions of the universe was impossible to ignore. In exchange for technology and the opportunity to trade with the Milky Way, the Calpigans hosted a large cadre of top scientists from the Milky Way to learn about the

A **globular cluster** is a spherical collection of gravitationally linked stars which orbit the galactic core as a satellite. Most of the stars are found near the center of the cluster, with a decreasing density found in the periphery. Globular clusters range in size from a few dozen stars to over 1 million and are separated from the main galaxy by thousands of light years.

device. They eventually discovered that the device required an uncommon ore found on Manyatab-f as well as a rare, difficult to obtain gas found in the lower atmosphere of the gas giant Manyatab-b. Unfortunately, even the best scientists in the known universe were not able to decipher the operational controls of the device, let alone the theory upon which it worked. It could be turned on and off, but it connected to only the single location in the galaxy and despite intensive efforts no additional control elements were interpreted. The Mega-Jump gate was a unique artifact that far surpassed anything available in known space.

The power of the artifact, however, was unmistakable. Trade through the subsectors near the Mega-Jump Gate exploded, and the prestige and technology associated with the Milky Way created a degree of competition and distrust beyond anything the current sophonts of the Cluster had ever experienced. This degree of competition proved destabilizing to the worlds of M317, and after arguments turned into open threats a battle was fought for the control of the Mega-Jump gate. Then a war. Then several wars. The worlds of the Milky Way offered to send advanced warships through the gate to help the Calpigans and their allies, but the people in the Cluster were more worried that a beachhead opened by a technologically superior force would be impossible to remove once established. Eventually some cruiser fired an errant shot which struck the artifact in the wrong place while it was powered up. Energy arced to the warship, vaporizing it immediately, but the damage was done. Now, transport through the gate is deadly. While an occasional electromagnetic signal can make it through, all matter comes out as a tangled mess of disorganized plasma and hard radiation. No living matter whatsoever has survived. Despite continuing research, travel to the Milky Way is lost.

Although the Mega-Jump gate was damaged beyond repair, the wars for supremacy in M317 continued. Worse, technology from the Milky Way had entered the Cluster, making war even more deadly than before. Over the course of the next several hundred years, a series of battles known as the Unification Wars took place. Through a process of attrition, violent conflict, and periods of intense losses for every polity, a single loose government formalized trade relations in 487 CE.

An **open cluster** is a somewhat smaller, relatively loose grouping of gravitationally linked stars which are approximately the same age. They are found within the body of spiral and irregular galaxies where star formation is occurring. Although bound together by gravity, open clusters interact with other stars in the main galaxy and are not independent the way that globular clusters are. Many systems were nearly destroyed, everyone was scarred, and numerous habitable planets nearly depopulated before a tenuous truce was accepted.

Over the next 200 years the Pansophantic Confederation developed into a loose collection of all star systems within the globular cluster M317 with a parliamentary capital in the Woteth system of [6,3] Woteth. Currently made up of nearly 2000 populated systems, the many subsectors and races of the Cluster had survived through a nearly universal war. Peace, even an uneasy one, allowed sophonts everywhere to catch their breath and begin to rebuild a more normal life. While not exactly united, the confederated systems agreed upon a series of rules for co-existing with their neighbors. This allowed the development of pan-Cluster trade routes and a general rediscovery of ravaged worlds and settlement by new colonists. Many worlds left behind after the general devastation of the Unification Wars are still recovering from the damage, while others wither away as their population dwindles on a scarred or forgotten planet.

Today in 690 CE (common era), the Confederation is accepted, if not always welcomed, as a necessary evil to prevent interstellar destruction. Ancient ruins with lost devices and forgotten knowledge are scattered on hundreds of isolated worlds. Smaller colonies still fail at a substantial rate, either from unexpected planetary dangers, the ravages of pirates that became established after the wars, or even sabotage by competing worlds. Local political groupings known as pocket empires exist within the larger Confederation, and many have their own political ambitions separate from the Confederation. Still other worlds have remained under the thrall of greedy neighbors, more civilized pirates looking for a veneer of respectability, or megacorps looking to strip the valuable resources of a system to enrich their shareholders. For those willing to take risks there are thousands of opportunities to either make a fortune, make a difference, or die a lonely death in the frozen depths of space.

M317 Timeline

BGE	Tadinuish civilization fell after a war against an AI overlord "Those who cannot remember the past are condemned to repeat it "			
BGE	Mega-Jump (MJ) civilization fell -George Santavana			
	for unknown reasons			
BGE	Triegan/Preravilan civilization			
	died out during a biogenetic plague			
BGE	Plilagans develop Jump-1 engines from Preravilan artifacts			
BGE	Etledestoids contact Trisne system by radio			
BGE	Etledestoids develop Jump-1 engines from damaged starship			
BGE	Latgetans develop Jump-1 engines			
BGE	Tatapan humans encounter Vessnebrans, disgusted by their alien nature			
BGE	Genoextiction laws on Rysetag prohibits genetically modifying sophonts			
BGE	Tataps push to spread humanity to as many systems as possible			
BGE	Etledestoids produce first xenoracial stem cell transplants			
BGE	Tatapan Crusade halted by multi-species Alliance in Standoff at Dutpolzal			
BGE	Senticients explain sophont diaspora as part of the universal Goal			
BGE	Etledstoids expand Jump engines to Jump-2			
BGE	Eggists and Devourists start the Sacrificial Wars over origin of life			
	BGE BGE BGE BGE BGE BGE BGE BGE BGE BGE			

520	BGE	5 Theories of Terraforming explain why so many worlds are habitable
457	BGE	Mind-free Movement mandates chemically blocking psionic powers
413	BGE	Esper Massacres start in Ranainfor subsector and spread to many systems
376	BGE	first crude meson weapons appear
317	BGE	nuclear dampers and meson shielding redefine space combat
285	BGE	Sepapetids spread Ocean Mother theology among aquatic races
256	BGE	Dyno developed to enslave reptilians on Napbow, starting a civil war
234	BGE	Cyborg technology allows personalities to live on in machine bodies
212	BGE	Synaptic processing enhances the development of AI for robots
147	BGE	Pogrom starting in [2,3] Spaeckta subsector kills millions of Senticients
88	BGE	Brepluros nearly overrun by reptilian-ape supersoldiers; gengineering banned
75	BGE	Mega-Jump gate discovered by Calpigans
0	CE	Reptillian scientist Rienth d'Trellieth activated the Mega-Jump gate
4	CE	Imperium trades Jump-3 tech for establishing trade with Calpigan worlds
8	CE	Missionaries from the Imperium bring Milky Way religions to the Cluster
17	CE	Intergal Friendship Treaty limits military travel through Mega-Jump gate
33	CE	superdense processing from white dwarfs imported from Milky Way
60	CE	Galactic Trade Agreement signed
76	CE	Lipisteb Sultanate demands higher priority for Milky Way Trade
103	CE	Calpigans defends Mega-Jump gate from the First Incursion
114	CE	Lipistebian War initiated for control of the Mega-Jump Gate
118	CE	Lipisteb Sultinate defeated by the expanded Calpigan Tripartite Alliance
122	CE	Tripartite Alliance claims cargo tariff rights through the Mega-Jump gate
124	CE	Tripartite Alliance surrenders cargo tariff rights in the Bowpostan Choice
145	CE	Tripartite Alliance retains control of the gate in the Sidpan Campaigns
148	CE	Calpigans surrender direct control of the gate to the Systems Alliance
156	CE	United Federation of Planets demand equal access to trade through gate
157	CE	Systems Alliance reaffirms Intergal Friendship Treaty with the Imperium
161	CE	United Federation of Planets receives increased shipping access
162	CE	Jeostan Empire demands equal access to Mega-Jump gate
164	CE	Jeostan War begins
166	CE	Octroan Free States join with Banzen Empire for gate access
167	CE	Zalmodan Confederation joins United Federation of Planets for territory
167	CE	Hozinler Community secedes from the United Federation of Planets
171	CE	Systems Alliance defends gate from Second Incursion
174	CE	Systems Alliance blocks all non-allied shipping through Mega-Jump gate
176	CE	Kingdom of Notgnoost joins Systems Alliance
179	CE	Banzen agents infect Notgnoost with lethal virus billions die in first weeks
180	CE	Coiloglab nukes Banzen using dirty fusion bombs to contaminate home world
183	CE	first High Synaptic AI developed to improve military warbots
185	CE	Werkel Democratic States join the Systems Alliance
188	CE	Shenatoc Hierarchy joins United Federation of Planets
189	CE	Final Incursion damages Mega-Jump gate permanently

191	CE	Systems Alliance and United Federation of Planets issue truce
193	CE	Alliance and Federation surprise attack each other in different subsectors
217	CE	Zewar Free States turn on Federation of Planets- take 20 systems
222	CE	Federation ortillery bombards Zewar worlds, kill 15% of all sophonts
224	CE	Shenatoc occupies Loru-b
228	CE	Zewar releases tailored virus targeting Shenatoid soldiers
230	CE	Zewar retakes control of Loru system
237	CE	First Treaty of Woteth signed between Systems Alliance and Federation
238	CE	Federation wins battle of Napdoo, demands Treaty of Woteth be revised
239	CE	Systems Alliance annuls Treaty of Woteth
267	CE	Systems Alliance and Federation of Planets sign Second Treaty of Woteth
297	CE	Systems Alliance fragments between periphery and central worlds
299	CE	Federation of Planets attacks remnants of the Systems Alliance
302	CE	Ocire secedes from the Federation of Planets, declares new Empire
307	CE	Federation splits into 3 warring factions, each claiming betrayal by the others
317	CE	the Hundred Kingdoms period, small empires rise and fall each decade
408	CE	Unists push for peace as most system ecologies are disrupted by wars
426	CE	Bolovus-B induced to go nova, wiping out entire Bolovid system
428	CE	Dolbun Empire builds 3 nova bombs, demands fealty or face destruction
430	CE	Dolbuns novabomb Usgarus-A and Krobias-A, killing 13 billion
432	CE	Dolbuns novabomb Jeostan-B, killing over 76 billion sophonts
433	CE	Grand Alliance Fleet reduces Dolbun-d to asteroid fragments
436	CE	Grand Alliance declares temporary truce to stop destroying stars
438	CE	Rolful Conference bans nova bombs on pain of planetary annihilation
439	CE	Outgap attempts to rediscover Dolbun novabomb technology
440	CE	Grand Alliance reduces Outgap-e to asteroids
443	CE	Polkotan plague accidentally released in an accident near the Polkotan system
445	CE	Ertan Conference arranges cooperation to halt Polkotan plague
452	CE	Polkotan plague eradicated after killing over 120 billion sophonts
465	CE	Treaty of Sarbon restricts biological warfare and establishes reciprocity in war
487	CE	Woteth Accords create Grand Confederation to expand trade in Cluster
490	CE	M317 Interstellar bank formalizes the credit as the Confederation currency
494	CE	Vasotdid Exception allows limited internal wars within Confederation systems
505	CE	Sentience Proclamation defines minimal sophont rights across Confederation
523	CE	Unification calls for a trade embargo against all non-Confederation systems
528	CE	Confederation changes its name to Pansophantic Confederation
531	CE	Scout Service and Magesterium approved to manage Confederation rules
538	CE	Woteth in (6,3) Woteth formally approved as the Confederation Capital
546	CE	Matcedple Secession occurs over unfavorable Magistrate decision
547	CE	blockade of Matcedple Alliance worlds enforced by neighboring systems
550	CE	Matcedple backs down and implements the Magistrate decision
551	CE	Explorer's Society started by ex-scouts to improve cultural understanding
556	CE	Confederation creates independent Naval force for enforcing decisions
559	CE	new Naval force captures a pirate freehold and implicates Honsem system

690	CE	Current situation in the M317 Cluster
686	CE	CNF seizes planet buster bombs from Powweese, limits kept on destruction
682	CE	Hetbegap system caught misreporting income, fined as a reminder to others
675	CE	Fifth census kicked off
667	CE	Cedsno system taken over by the CNF to disrupt active slave trading
642	CE	Pulsars defeated Devil Dogs to become the dominant mercenary unit
626	CE	final Altrav production facility captured by CNF; crew flees before final defeat
621	CE	Altrav Pharmaceuticals reject Confederation controls over their drug trade
615	CE	CNF develops black globe barrier technology for base protection
613	CE	Pansophantic Council affirms Confederation principles supercede local laws
599	CE	Confederation tithe reduced and central authority limited to key principles
588	CE	first 2 dozen megacorps receive official recognition and status
582	CE	Devolution Accords guarantees local systems the right to their own militaries
575	CE	First census used to allocate tithe supporting Confederation branches
569	CE	CSS monitoring and prompt cooperative action limits plague casualties
567	CE	Polkotan plague breaks out after a derelict craft drifts into the Etfit system
561	CE	Honsem defeated by combined systems/CNF, forced to pay reparations

Chapter 2: Cluster-Wide Organizations

Confederation Government

The galactic cluster M317 is small enough to be regulated as a single loose organization of systems. While not all systems choose to participate extensively in the stellar assembly (rabid xenophobes exist everywhere), the Pansophantic Confederation serves as a means of making life better for most citizens. It consists of 4 levels of membership based upon the population and average technology level of the systems involved.

The lowest level, or frontier system, has no vote, no observers, and may not even be aware that they are part of a globular Confederation at all. These systems have either a pre-space flight technology of 6 or less or a population of 5 or less (less than a million sophonts). If they have spaceflight but fewer than a million sophonts, they are considered too small to make a meaningful contribution to Cluster politics. Systems with spaceflight are required to pay tithe just like regular members but with no say in the Stellar Assembly. Worlds with pre-spaceflight levels of technology are either subjugated worlds (in which case their tithe is paid by the organization running the planet), independently stable but unaware of the Confederation (where they are monitored and claimed by another world but left strictly alone to avoid paying tithe), or they are vestigial worlds that are dying out and unable or unwilling to reach out to other worlds. As soon as they become involved with interstellar trade, voluntarily or not, tithe is expected to be collected and paid on their behalf.

This policy toward low technology worlds is a double edged sword. It protects developing worlds by forcing a world to produce enough credits to be worth exploiting. If a space faring system has to pay tithe for the citizens of a populous, low-tech planet, the space faring planet may not be able to make enough credits from the developing world for it to be worthwhile. Unfortunately for less well off low tech worlds it is often not in another world's interest to trade with or help them because it will cost them money. Planetbound, low tech societies known as vestigial worlds are low population systems without spaceflight that are barely surviving. Whether their troubles were caused by planetary catastrophe, various wars centuries ago or just plain bad luck, vestigial systems are frontier systems that are on the cusp of failure.

The second level of membership in the Confederation are the observer worlds. Observer worlds must meet 2 criteria: 1) have a population of 1 million or more recognized sophonts, and 2) must have the technology to build their own spacecraft. This means essentially all systems that have an average tech level of 6 (basic reaction drive) or above and a population of 6 or higher will be at this level. Observer worlds may have a voting delegate to the Stellar Assembly (optional) and are required to pay tithe to support the activities of the Confederation (not optional). They also may petition the Assembly and request protections that are not given to frontier worlds. They may not serve on governing committees of the Confederation themselves. They may enter into voluntary trade agreements with other systems or corporations *only* with the approval of the Stellar Assembly. This is a regulated junior membership in the Confederation which provides substantial protection from predatory planets or megacorps that are unavailable to frontier systems. It is not foolproof, however, and there are definitely planets that are dominated by an outside group despite the Stellar Assembly.

The third level of membership in the Confederation is that of a Member World. Members have full voting rights in the Stellar Assembly in addition to all of the rights and responsibilities of the observer worlds. Member worlds must have at least 10 million recognized sophonts (population 7 or better) and the technology to manufacture jump capable starships (tech level 9 or better). This does not mean they need to build the shipyards and infrastructure of a Class A starport, only that they have the minimum level of technology necessary for the task. They may be members of committees, make proposals to any committee, and can make trade agreements without being subject to Confederation oversight. This is the full membership level of the Confederation, and systems are believed to be capable of seeing to their own needs and regulating themselves by this point in their development. If they wish to close their world off to outsiders and not engage with the rest of the Cluster, that is their choice- provided tithe is paid nonetheless.

The highest level of membership in the Confederation is the Advisory Board. These systems are the most advanced and/or highly populated systems in the Confederation. They have outsized influence in their region, and are typically independent power centers within subsectors of the Cluster. Most are at the center of a pocket empire and they will often dominate their neighbors culturally and economically whether they are nominally independent or not. In terms of trade, military strength, and diplomatic weight, Advisory worlds are forces to be reckoned with. Advisory membership is somewhat flexible, as either technology level or massive population are sufficient for entry. Advisory worlds must have either 1) a population of 10 billion plus sophonts (population A) and at least tech level D (able to make Jump-4 starships); or 2) a population of 1 billion+ sophonts (population 9) and tech level F, the highest tech level found within the Cluster.

Principles of the Confederacy

For a diverse group of sophonts spanning thousands of systems, coming up with a set of rules that everyone can agree upon is a real challenge. However, there are at least a few rules which most individuals can at least pretend to abide by.

1) Thou shalt not interfere with stellar dynamics.

Stars are essential for life. Even though the unimaginably advanced civilization which built the Mega-Jump gate disappeared, the stars remain. Interfering with stars is punishable by planetary annihilation. Near the end of the Unification Wars the Dolbun homeworld was vaporized in retribution for wiping out 3 different star systems. All other Confederation rules are superseded by protecting stars. Any investigation into this area is fraught with peril.



2) Genocidal diseases are bad. Developing diseases or drugs of any sort that are intended to wipe out any sophont species is absolutely forbidden. Even wiping out organisms such as bacteria is highly discouraged. During the Unification Wars, several strains of absolutely devastating plagues were deployed against warring planets. Billions died, and on at least 3 occasions the diseases spread to several previously non-hostile or even allied systems. Developing any type of bio engineered plague is

grounds for war up to and including planetary annihilation. Any such development against any species had better be done in extreme secrecy or their neighbors and most other sophonts in the Cluster are likely to become violent. Natural diseases do exist, and occasionally they have been known to afflict planets or randomly mutate to affect another species. While not common, such plagues had better not be identified as genetically modified or extreme violence will ensue.

3) Addictive or mind controlling drugs are forbidden. In the early years of the Confederacy entire planets were controlled by the use of addictive drugs. State sponsored use of such drugs occurred in multiple instances during the Unification Wars to subjugate defeated populations. Intentional use of such drugs by any system government will draw military action from the Cluster Naval Forces (CNF) to wipe out the practice. There are, of course, addictive drugs that exist for essentially all species, and usually different drugs are effective against different races. This means that what one species considers criminally dangerous may be completely benign to everyone else. While underground synthesis (even on a large scale) does happen, the Cluster Scout Service and Cluster Naval Forces take action against those groups or individuals when discovered. Pirates, smugglers, and nasty criminal organizations have a near monopoly on these drugs. Drugs that are only slightly addictive or have therapeutic properties are regulated, but are allowable even if lethal for other sophonts. The more dangerous the drug, the tighter the regulation. Smugglers operate secretly outside the law and while penalties can be severe, contraband is often hard to discover and very lucrative.

4) Conflict is inevitable; escalation isn't. Keeping war within reasonable limits is one of the primary goals of the Confederacy. The Unification Wars saw entire populations and star systems completely destroyed by enemies that could not or would not negotiate with each other. Easy access to nuclear weapons guarantees that serious combatants can absolutely devastate each others home worlds. The Stellar Assembly provides a mechanism to keep lines of communication open between even the most antagonistic combatants. Cluster Naval Forces are substantial, but dispersed; local systems with high populations and high technology have a regional advantage that could overwhelm any realistic Cluster force in the short term, but that level of conflict dramatically disrupts trade. By keeping fighting to a reasonable level and not involving the CNF, the rest of the Cluster can go about its business. The Advisory Board is tasked with determining what a 'reasonable' level of conflict is, and if enough delegates agree (generally 60%) the Cluster Naval Forces can become involved.

For smaller systems, active CNF involvement generally induces a negotiated agreement very quickly. The CNF is a deadly adversary and once they are committed they are ready to fight. Smaller worlds who previously refused to negotiate almost always realize that any mutual agreement is typically preferable to Stellar Assembly politics or being at the wrong end of a meson cannon.

When two members of the Advisory Board openly war with each other, this is an extremely dangerous situation. Allied pocket empires are often fighting as well, and even systems with voting rights in the Stellar Assembly have been devastated during such battles between giants. Nobody, including the rest of the Advisory Worlds, wants to get between two behemoths so these conflicts often drag on for years. This level of strife generally results in alienation and antagonism for decades, and many old grudges from the Unification Wars still flare up between longstanding adversaries. The

CNF typically brings in additional vessels to fortify their positions in the area, but unless Advisory worlds vote to gang up on one of their own the CNF does not get involved unless other Confederation principles are at stake.

General rules for conflicts include 1) restricting the use of nuclear weapons near habitable planets. Terraforming is a long term, expensive process and habitable worlds are limited. A number of formerly habitable worlds became unlivable after the Unification Wars. 2) Biological warfare is to be avoided. Plagues are difficult to restrict or control, and collateral damage is all too common. 3) Keep hostilities between actual combatants. Wiping out a low tech frontier world or developing sophont race is criminally destructive and evil. Take over the planet for its resources, sure; but a planet bound, low-tech culture does not offer much of a threat to a meson armed Jump-3 starfleet. 4) Genocide is to be avoided. Several worlds have native species that may be found on no other planets in the Cluster. Casualties are unavoidable; mass casualties are bad, but complete destruction is not acceptable.

5) Slavery is undesirable. Slavery as an institution corrupts the morals and integrity of everyone associated with the practice. By placing the slaves as inferiors, those sophonts are demeaned, but the slavers themselves feel superior to everyone else which eventually poisons their interactions with other sophonts and other systems. Defining slavery,

"I think slavery is the next thing to hell. If a person would send another into bondage, he would it appears to me, be bad enough to send him into hell if he could. " *-Harriet Tubman*

however, is a tricky process. Are horses slaves? How about indentured servants? Animals that are genetically modified to increase their intelligence? Various societies openly accept what might be (and often is) viewed as slavery by outsiders. Other systems may tolerate despicable practices if done discreetly. More localized forms of slavery also exist (exploitative factories, sex slaves, genetically manipulated workers, etc) but at least these are often punished when exposed. Slavery is another area (along with drugs) that is often associated with pirates and other illegal groups. There are, unfortunately, systems with limited Confederate influence that may also tolerate and engage in limited forms of slavery for their own enrichment.

6) Negotiated consent is enforceable. Whether they be trade agreements, surrender terms, mutual assistance pacts, or any of a hundred other types of agreements, treaties made between consensual (full) Confederation worlds are enforceable. Several captive world governments are constrained by such negotiated consent; others became captive for violating their agreements. Consulates staffed by impartial magistrates are used to adjudicate local as well as interstellar issues pertaining to the Confederation. Appeals are heard on a regional level, and the highest level of authority is given to the Advisory Board of the Confederation.

Decisions at all levels are mostly mediated agreements that rely on at least an implicit threat of consequences for breaking a treaty. A truly powerful corporation or pocket empire can revoke minor agreements without serious consequences (beyond their reputation) because enforcement of every little detail is beyond the Confederacy. Subsector and regional Consulates do not have the ability to enforce their decisions or engage Cluster Naval Forces; only the Advisory Board has the ability to

officially invoke force. Most worlds and megacorps, however, follow Consulate decisions because it is a practical policy. They are negotiated between parties, meaning that consequences are often acceptable. Even wars between major pocket empires are often mediated by Advisory members to try and reduce the level of conflict. For truly unethical behavior, the reputational loss at the subsector or Cluster level can be even more damaging than simply minimally fulfilling a lopsided deal. Observer status in the Confederation was initially developed to introduce and warn systems about the dangers of contract fine print. Megacorps depend upon the Stellar Assembly for their charters and their ability to work in multiple systems. Even though they are often beyond local laws, concerted action by several aggrieved worlds or pocket empires has destroyed more than one megacorp (and created at least one drug piracy organization).

*) The unwritten rule of the Confederation is that central action is slow. Communication between systems can only go as fast as the fastest ship. M317 has 80 subsectors in a roughly spherical configuration, and stretches 80 parsecs edge to edge. Taking an average distance from the center of 20 parsecs, a Jump-6 ship (the fastest semi-practical ship available) will take about a month to reach Woteth under the best of circumstances. A decision has to be reached in the Stellar Assembly or Advisory Council, a response formulated, and word of that response has to be sent back (taking another month+). Delegates to the Stellar Assembly have immense authority and require great leeway in terms of their actions as most systems will be too far away to consult on even a semi-regular basis.

Once central action *is* taken, however, it is rarely changed. The distances and time it takes to travel are simply too great. Occasionally the decision is flexible enough to allow a regional authority such as a Cluster Naval Force admiral to interpret a decision based on altered circumstances, but many times the decision arrives too late. Battles have ravaged fleets and planets weeks after a treaty was signed. Brinkmanship is a dangerous game when key decisions are made based on information that is months out of date.

Woteth, Capital of the Pansophantic Confederation

Located in [6,3] Woteth subsector, Woteth is the political and military capital of the Cluster-wide Pansophantic Confederation. During the centuries of warfare leading up to the Unification Wars, Woteth was one of the strongest pocket empires in the Cluster. Despite their strength, they also recognized that not everyone wanted to live the same way and in some cases would die before giving up their particular culture. Annihilation warfare, where novabombs could obliterate stars themselves, offered bleak prospects for survival. In order to preserve what was left, Woteth convinced the Grand Alliance to create a loose Confederation based on trade and only a few general principles. As worlds could mostly live the way they wished, there would be less need for expensive and destructive wars. As Wotethids were naturally a well ordered species, they offered to host the government center at the price of being essentially dominated by the Confederation itself. By allowing the larger government to establish control over themselves voluntarily, they convinced enough others that an alternative to annihilation warfare offered the best hope for themselves in a government without a single dominant power. Woteth also serves as the headquarters of the Cluster Naval Forces. A large military ship building complex is spread through 2 different asteroid belts, and the sheer number of military vessels operating in the area provides a very secure environment for the Stellar Assembly. Mere mention of the 63rd Fleet can cause even advisory board systems to reconsider aggressive actions. As the headquarters of the Stellar Assembly and the CNF, there are many rules for jumping into the Woteth system. Many sophonts consider the bureaucracy extreme, but most Wotethids like order and the rules have prevented any serious attempt to challenge the Pansophantic Confederacy for over 200 years. The Woteth subsector is one region of space where there is no doubt who has the most powerful fleet in the Cluster.

Confederation Services

Every political entity has a set of branches which carry out particular duties. Within the M317 Cluster, there are 3 major Confederation branches. The CSS, or Cluster Scout Service, is the most visible and widespread of these branches. They are an investigative and communication arm of the Confederation that monitors the various systems of the Cluster for problems and tries to keep things running smoothly. Scouts keep in close contact with both the Cluster Naval Forces (CNF) and the Magisterium, the association of judges and arbitors operating through Consulates who regulate the economic and legal connections between Cluster systems. CNF warships pack more firepower than the exploration/research oriented CSS and are the chief line-of-battle for the Confederation. Once the CNF starts shooting, unless it is something like pirates or a rogue station, things have deteriorated pretty far. Magistrates regulate agreements between worlds and corporations using information provided by the Scouts. Magistrates are the least visible of the services and many citizens never directly encounter Consulates or Magistrates. Each group has their own specializations, but all three are devoted to the concept of a fair and safe environment for all sophonts of the Cluster.

Cluster Scout Service and the Census

The membership levels of worlds within the Cluster can change due to new developments, technological advancements, wars or pestilences, etc. Every 25 years each system undergoes a Confederation sponsored census that defines their position within the Cluster. The primary purpose of the census is to make sure that all worlds are eligible for their appropriate level in the Confederacy and that the proper level of tithe is paid. Naturally these census years are a big deal for systems on the edge of a particular membership level. Nobody wants to lose their voting rights for the next 25 years, but nor do they wish to pay more than the minimum

The Cluster is a pretty big place. I haven't gone the breadth of it yet, but I find the same sort of people everywhere. Most of 'em, they just want their families to be safe, well fed, and treated fairly. I can't promise all of that to them- nobody can. But my duty is to give them the protections the Confederation guarantees everyone. That may not be much, but it's a start.

Claus Following, Scout

tithe. Much maneuvering takes place in the years leading up to the census, and many a skirmish has been fought primarily to affect their enemy's upcoming census count.

Conducting a single census across the entire Cluster in any given year is impractical. Therefore, each year a census is conducted in roughly 4% of the worlds that make up the Cluster. This rotation allows a regular count of the entire Cluster to be made while at the same time not overburdening any

regional bureaucracy in any given year. In even modestly dense subsectors some world will be undergoing a census in most years.

The census is only one function of the Cluster Scout Service. It is funded from the tithes paid by all member worlds, and the CSS investigates all charges or rules violations in their jurisdiction. They also monitor uninhabited, low-tech or low population frontier worlds because they are the most vulnerable to being exploited. While regular CSS personnel carry out most operations, they also hire outside contractors for particular missions either openly or secretly depending upon the sensitivity of the situation. By keeping a running check on the Cluster, tithe cheating is minimized.

Mail deliveries, for example, are overseen by the CSS but often independently contracted. Each system with a naval base, scout base, or consulate is required by law to receive the latest information from every other Confederation base within 5 parsecs at least once a week. While specialized Jump-6 courier vessels are used for particular connections, many short jumps are contracted out to trading vessels going to that particular world. Mail is relatively lucrative and essentially no risk, so honest captains have a regular source of income for certain jumps. Planets without bases generally rely upon their own resources to get mail from a local Confederation center. For populous worlds this is not a problem. Small worlds, however, are unlikely to be in regular contact with other planets and may have a serious lack of timely information regarding the larger Cluster.

Scout bases are the most numerous and scattered type of Confederation base within the Cluster. They are able to provide a minimum of service through tech level 12, but any individual base will have only modest resources. The nominal scout headquarters is located in the Oyfeb system, [4,6] Rimzalmew subsector and it has the most resources of any CSS base. Each subsector, however, has mostly independent bases. Because the CSS uses so many outside contractors, trading favors is a typical way of paying for repairs or supplies at scout bases. Scout bases serve as hubs for CSS ships, but generally the bulk of the CSS vessels will not be in port at any given base. Defenses are significant, but not overwhelming, and a determined adversary can take out a scout base with modest effort.

Cluster Naval Forces

The CNF is the largest, most powerful military force around. It is also the most dispersed. Because of this, local forces of strong worlds are typically more powerful than the actual Confederation fleet in the area. In case of hostilities, though, the CNF can call in Fleet elements from around the entire Cluster. It may take them months, but the sheer number of powerful

The universe ain't a particularly fair place. Some punks think they can do whatever they want, hurt whomever they want. We're here to tell them otherwise. John Smith, Marine Sergeant

warships available can overwhelm any pocket empire, given time. Local rulers understand this, and wise or self-interested leaders work diligently not to arouse CNF ire. The CNF forces are well trained and very professional; they know their duty and they understand the limit of their influence. They enforce the key Confederation Principles, but do so with at least surface support of the local government. If hostilities ever would break out between an advisory world and the Confederation, local CNF units would likely be the first casualties so the CNF prefers to act only in clear cut situations.

CNF forces typically congregate at Naval Bases. Each fleet varies in size and composition based upon their sector, but a 100,000+ ton fleet is common even in the hinterlands. Each base also has several battalions of space marines to support the naval forces present. Ship types and abilities vary- for example, peripheral systems require higher jump multiples and/or dedicated tankers so that they can reach some of the more remote systems. Patrols of CNF craft will often move around their region to deter pirates and engage in maneuvers, but the bulk of the ships are kept serviced and available at naval bases to enforce Advisory Council decisions. Naval bases can work with civilians and their spacecraft, particularly those with ties to the military. Unlike local starports, naval bases are all at least TL14 and can modify or repair even advanced spacecraft. In addition to the fleets, naval bases have significant weaponry, heavy shields, and advanced fighter cover. A naval base can be overcome, but it takes a well equipped, sizable force to destroy them and such a battle would destabilize an entire subsector (at least).

CNF ships are a regular opponent of pirates pretty much whenever they can be found. Pirates engage in a number of activities which the CNF despises, including drug development (both recreational and enslaving), slavery, and smuggling. Honest CNF officers (and that is the vast majority of the total) generally demand adherence to Confederation principles, but are willing to quietly aid others when possible. They have their orders which they are loathe to violate, but are typically trustable within the laws.

Differences between the CNF and CSS

Both the Naval Forces and Scout Services work to further the aims of the Pansophantic Confederacy. These forces both use armed starships as their primary mode of transportation and work under the direction of the Stellar Assembly and the Advisory Board of the Confederation. Naval forces, however, are primarily punitive and designed to pulverize opposition ships. Their mission is to end a particular conflict and deadly force is expected. Their ships tend to be larger and more heavily armed than Scout Service vessels. They will always be armed with nuclear missiles and/or torpedoes if appropriate, and their ships generally have at least 1 bay weapon system for inflicting massive damage upon the enemy. They are primarily a combat organization and are not particularly interested in diplomacy or information gathering.

Cluster Scout Services, on the other hand, tend to favor smaller, multipurpose vessels than those preferred by the Naval Forces. While they may have bay weapons, they will usually not be organized strictly around fighting enemy vessels and will carry fewer nuclear weapons with them. They will often have decent combat capability (particularly destroyers and above), but they will also have non-combat options available to them including scientific, medical, and diplomatic services. When the situation requires delicacy or more information, CSS ships have more appropriate capabilities.

In terms of operational usage, Naval Forces go in where a fight is expected. Directly assaulting a pirate base, for example, is a job for a naval task force. Identifying the pirate base, however, requires more finesse and different skills than destroying the base. A smaller crew with clandestine spies, researchers who comb through system records looking for the discrepancies leading to the pirate base, or specialized sensors that secretly monitor the lawless system's asteroid field for the tell-tale

signs of jump engine use would all be options found more in the Scouts than the Navy. While there may be a certain amount of competition between the two services, at the end of the day they are both generally working toward the same goals using different tools.

Confederation Hierarchies

All Confederation branches are organized by the subsectors where they are based. Resources and base numbers vary dramatically between subsectors, and certain subsectors lack naval bases or consulates entirely. The subsector position in the cluster determines the numerical designation; thus the Confederation units based in the (2,4) Coiram subsector would be known as the 24th Fleet, 24th Scouts, 24th Ward, or 24th Corps as appropriate. For subsectors without a particular type of base, surrounding subsectors provide the necessary ships and authority. Under most circumstances the CSS and CNF maintain independent commands with the CSS typically very dispersed and the Navy and Marines concentrated at Naval bases or operating as a task force somewhere (not necessarily in the same subsector). In cases of actual military conflict, the Fleet Admiral assumes overall command of Confederation assets in the subsector as the CSS is not primarily a combat organization. If the military trouble is severe enough, even Consulates will work to support the military as the legal arm of the Pansophantic Council to help enforce its decisions and protect the peace.

Lower level officers in all services are expected to make decisions consistent with the rules and orders of their commanding officers as interpreted based upon local conditions. Communications between systems are slow, and dynamic situations often overtake the actual stated orders. The officer giving any order is responsible for the outcome of that order, and they will be evaluated based upon their actions. Merely 'following orders' that violate Confederation Principles or naval standing orders is not acceptable. Violating a legally given, appropriate order is equally punishable. Judges and Magistrates hold all officers (including their own) responsible for their actions. It's lonely at the top, even if 'top' is only command of a frigate.

The CSS is organized as a military organization, but it has many more diverse functions and specialization is typically more important than actual rank. Ship captains who disregard the chief scientist's opinion on the stability of an asteroid, for example, will have to answer for their decision. As such, the CSS tends to have more internal discussions and consensual actions than the CNF. Independent thought and individual skills are more important than rank as long as the ideas are good. Because CSS ships are ubiquitous and not really warships, they are often the target of misdirection and enemy operations. Loss of any CSS vessel typically draws a rapid investigation by the scouts, however, and few questionable organizations desire that type of scrutiny.

The CNF is a traditional top-down military force whose job is to enforce the decisions of the Pansophantic Advisory Board. Those orders are passed down from Admiral to Captain to Ensign to Spacer, and each rank is expected to follow the orders of their superiors. Even veteran Petty Officers with 30 years experience are expected to follow the orders of the newest Ensign, although the officer who disregards the advice of their senior NCOs is likely to have a very short career.

The marines are a subgroup within the CNF and many marines serve in small detachments aboard most naval vessels and some larger scout vessels. While just as loyal to their shipmates as other CNF

personnel, there can be a certain amount of tension between 'groundpounders' and 'button pushers'. There are also larger marine-only units that defend bases or serve as assault troops and occupying forces. Marines have their own traditions and a code of honor separate from the Navy, but when trouble arrives the two services usually work seamlessly with each other.

Within the CNF, whole fleets rarely operate as a single large command. Naval vessels tend to operate as part of a task force designated to perform a particular function. The task force can be further subdivided as necessary by the commanding officer, where even single ships may be assigned to 'show the flag' in an isolated system. While reminding locals of Confederation authority, dividing a command into units that are too small is also risky. Small naval ships operating alone are often targets for pirates who typically hate the CNF, and capturing or stripping a naval ship of its weapons would be an incredible win for the pirates and a serious black eye for the CNF's image. This is exactly the opposite effect intended, and woe betide a Commodore losing a vessel through negligence.

<u>rank level</u>	<u>Scouts</u>	<u>Navy</u>	<u>Marines</u>	<u>Consulates</u>
E-1	apprentice	apprentice	private	reporter
E-2		spacer	private first class	
E-3	specialist	petty officer	corporal	bailiff
E-4		chief petty officer (CPO)	sergeant	
E-5	scout	senior chief	staff sergeant	clerk
E-6		master chief	gunnery sergeant	
O-1	ensign	ensign	lieutenant	judge
0-2		junior lieutenant (jg)	first lieutenant	
O-3	lieutenant	lieutenant	captain	appellate judge
O-4		lieutenant commander	major	
0-5	commander	commander	lieutenant colonel	superior judge
O-6	captain	captain	colonel	
0-7		commodore	brigadier general	magistrate
O-8	admiral	rear admiral	major general	senior magistrate
0-9		vice admiral	lieutenant general	
O-10	senior admiral	fleet admiral	general	chief magistrate

Confederation Service Ranks Table

While both the CSS and CNF have many ships available overall, not every ship will be available every week. Training, maintenance, R&R, jump travel, etc all reduce the number of immediately available ships at any base. At any particular time, roughly 1/4 of the ships will be undergoing maintenance or refits, 1/4 will be jumping to a new destination and out of contact, 1/4 will be actively pursuing a mission somewhere else, and only 1/4 of the base's complement of ships will likely be available in system. A naval base with 4 battleships and a dozen cruisers rarely have their full force available.

Consulates are the least military unit of the Confederation branches, but their duty is to uphold Confederation rules just like the Scouts and Navy. Judges in particular will travel with larger CSS

vessels to make rulings on interstellar matters in more isolated systems. Many worlds without consulates will also have independent magistrates and judges if they are large enough and important enough in the Cluster as a whole. Chief magistrates always serve in consulates and are advised by a council of 6 senior magistrates who also oversee other judges and magistrates within the subsector. Chief magistrates also meet occasionally to review controversial decisions in nearby subsectors. All magistrate decisions are reversible by the Pansophantic Advisory Council which is the ultimate arbiter of what is legal or not.

Cluster Consulates

Consulates are essentially local judicial branches of the Confederation. They are primarily moderators and mediators between groups that have conflicts, whether it be mercantile, economic, or territorial. Although magistrates cannot call in CNF units to enforce their decisions, they often use the Scout service to investigate issues brought to their attention. In some cases, magistrates will travel with CSS vessels as diplomatic staff. Senior Magistrates often act as threesomes, and consulate decisions are always be reviewable by superiors away from the local jurisdiction to maintain impartiality. The Advisory Board of the Confederation is the ultimate appeals board and makes unappealable decisions.

For the most part, magistrates and judges are fair and well respected interpreters of the law. If they can obtain a negotiated settlement between 2 parties, they are generally satisfied with the result. Arbitration is a central function of magistrates, and while new developments or inventions can create unbalanced agreements there are usually termination clauses incorporated into longer term contracts.

Confederation Influence

Confederation influence is somewhat different than the influence of local governments. The Confederation is massively larger than any collection of local systems, but it is very decentralized and cannot be everywhere. Local When I examine a case, I try to get at the root of the conflict between the two sides. It may be as simple as money or previous agreements which are quite honestly petty and hardly worth working on. Oftentimes, though, there are fundamental moral and ethical standards that are at stake as well. Their beliefs and their feelings become tied up in their agreements bringing an entire moral weight to a case which I find disturbing. My job isn't to change minds, or create universal harmony; my goal is to solve a particular conflict between two sides. It doesn't have to be neat, and it certainly doesn't have to make everybody happy. But when I can bring two opposing sides to an agreement where they acknowledge each other's concerns and agree to a solution that at least minimally meets their needs, I feel I've done a good job. When I fail, there is often bloodshed and destruction that follow in its wake. I have no universal truth, no single idea that motivates me, other than the idea that true understanding and good faith can make almost anything possible and I utilize all of my skills to bring these twin pillars together.

Hui Ouichera, Senior Magistrate

naval bases, consulates, and scout bases serve as projections of the central authority. Distance from those bases weaken their influence. The sum of the influence from all Confederation outposts is known as the Confederation Influence. When the Confederation Influence is itself large and much larger than the local world, that system is going to follow the rules. There may be anti-Confederation activities such as piracy going on, but the system leaders will be opposed to those as well. When the local and Confederation influence are similar in scale, there will usually be a certain amount of testing the boundaries, but the Confederation still has substantial influence and open defiance is not likely. System rulers may break the rules, but anyone caught will be punished by the system. When the Confederation influence is truly low, systems are still willing to publicly follow the strictures of the Confederation, but may (generally secretly) be violating central principles of the Confederation. They typically will not openly defy the tenets of the Confederation- that type of behavior always brings main battle fleets. Their adherence to the Principles of Confederation, however, may be largely pro forma and designed to reduce Confederation attention. These are the worlds that systematically (if clandestinely) undercut key laws and strictures.

Because Confederation bases are the projection of Confederation influence, the building or destruction of bases can fundamentally alter the degree of independence various systems feel from Confederation rules. Even the development of Consulate offices in a nearby system can change the influence ratio substantially. The loss of a naval base, the most prominent symbol of Confederate

authority, can radically change the balance between local and Confederate influence across an entire subsector. Similarly, building a new base in a particular system could generate substantial political resistance among those who profit from the current distribution of power. All such decisions will have serious repercussions for those upsetting the status quo.

Pocket Empires and Influence

After the Unification Wars, every world was scarred by the centuries of warfare. Depending upon various factors, however, worlds emerged in different conditions than their neighbors regarding population, technology, and economies. Influence is a relative measure of a world's ability to pressure or dominate nearby systems in terms of culture, trade, and even voting in the Stellar Assembly. It is primarily a function of a system's population, tech level, and distance to the other world, but it is also modified by relative law level and government type. Worlds with the most influence have an outsized effect on their neighbors.

When a distant system's influence is higher than the home system, the home system is said to be dominated by that distant system. Small, low tech worlds are usually dominated by multiple different systems. When a system is dominated, that does not mean that the more powerful system controls the activities and functions of the smaller one. It does, however, mean

You think the Confederation Forces planned their bases? What naval commander in their right mind would **plan** to have overwhelming forces in half the Cluster and leave major systems hardly patrolled? I'm not worried about any world where we have overwhelming influence. I'm not even worried about worlds where Confederation influence equals the locals. Worlds that can build jump capable starships without us knowing about it scare me. Worlds that build meson armed cruisers as tough as the CNF that are sold on the black market actively annoy me. We know where pirate ships come from. We know about it, but we can't take care of the problem because we aren't allowed. I could wipe out piracy in 50 years without a single shot being fired simply by cutting off their effing ships. A dozen naval bases, strategically placed, would pretty much do the job. Too bad the effing politicians won't let the CNF do what they're afraid to do.

> Sven Geldern, age 37 lecturer in military history former CNF Vice Admiral, retired 4 time winner of the CNF Tactical Challenge Medal

that the trade, culture, philosophy, arts, politics, etc of the smaller world depends hugely on its larger neighbors. Decisions which will annoy those neighbors cannot be taken lightly. Small worlds (Frontier

worlds in the Confederation) usually keep a low profile and try to keep in the good graces of the local powers.

The most complicated relations show up between two powerful nearby worlds which have a similar law level and government type. In those situations, each world can technically be a member of the other system's pocket empire. This is a case of true friendship and strong alliance, where they independently agree with each other and share values but are so close in influence that neither one actually dominates the other. These allies are usually preeminent powers in their areas of space and have some of the most extensive and linked pocket empires. Politically minded players interested in breaking up such alliances may, of course, work on altering the laws or government types that allow such cooperation to exist. Dividing two close friends would invariably strengthen the political might of a nearby pocket empire and may gain them one or more border worlds as well.

Today, Advisory worlds have the largest say in the Confederation but also have the influence to drive trade, culture, and priorities in their local star systems. Especially in the less dense periphery of the Cluster, there may only BE one dominant world nearby. Cutting off one's source of ships and trade is usually not a good idea. Member worlds may also have pocket empires, but they are almost always smaller and less influential than those of Advisory worlds. Some systems are members of one Pocket Empire, but based on distance, law level, and government type, they sometimes have smaller pocket empires of their own. Alliances of several pocket empires can become influential enough to drive Cluster policies in the Stellar Assembly. Some truly isolated systems in the periphery may even be independent of local influence while still considered frontier worlds of the Confederation. These worlds almost always have limited contacts with the rest of the Cluster and almost no support when things go wrong.

Pocket empires and alliances in the M317 Cluster are always dynamic and often surprising. Because planetary influence is determined by multiple factors, changing any number of characteristics could alter the strategic balance and switch planetary allegiances. For small border worlds balanced between two pocket empires, changing something as simple as the law level by perhaps eliminating a pirate base could change the power dynamic. Players joining a resistance group to 'free' a captive government could alter allegiances within several pocket empires. Replacing a captive government having very restrictive laws with a republic or oligarchy having moderate laws in a system with a few hundred million sophonts and stellar level technology could dramatically change the power dynamic between a dozen worlds. A world that had been isolated by political factors would suddenly become more attractive and thus more influential. Player actions can have large scale consequences beyond those initially anticipated, and it would be a shame to deny them the responsibility (and the headaches) that go along with changing the world.

Explorer's Aid Society

Even in the far future, most people live close to where they were born. If a sophont does leave their planet of origin, most do so irregularly and tend to stay at or near to where they first settle. A minority of travelers, however, go anywhere and explore everything the Cluster has to offer. These individuals often push the boundaries of acceptable behavior (sometimes even unwittingly) and often

do not have any true contacts or allies on their side in any given system. This can lead to surprising, sometimes catastrophic, events which could have been prevented with better foreknowledge.

The Explorer's Aid Society offers travelers a relatively safe base of operations and reliable local services. Hostels charge fees depending upon the economy of the system, but they provide a cosmopolitan environment and experienced troubleshooters who can smooth over minor disagreements with local authorities rather effectively. Good information is priceless when trying to avoid unintended offense and legal entanglements. While less expensive options exist, they cannot provide the same reliability and reputation EAS does. Because of this, EAS hostels, restaurants, bars, offices, etc are a common place to find information and local workers who understand the traveler mindset and are less likely to take offense against cultural taboos or eccentricities.

Piracy

In every age there are those who act outside of the law and who refuse to acknowledge the rule of law over their actions. In the case of the M317 Cluster, the practice of piracy expanded during the Unification Wars when ships of a defeated system would escape and set up their own territory by force of arms. In other cases, privateers (sponsored pirates) were supplied ships and support by one combatant to attack and harass one of their foes in a semi-deniable

"In the immediate nearness of the gold, all else had been forgotten [...], and I could not doubt that he hoped to seize upon the treasure, find and board the *Hispanola* under cover of night, cut every honest throat about that island, and sail away as he had at first intended, laden with crimes and riches." *Robert Louis Stevenson, Treasure Island*

manner. Over the centuries pirate bands both large and small became established as a constant presence in the M317 cluster.

After the founding of the Confederation, many disaffected citizens found comfort in rebelling against a pan-Cluster government. This played directly into the pirates' hands, and support of pirates to attack and harass 'former' enemies was still all too common. As the Confederation was only just building its resources, pirates initially attacked with impunity. As the CNF grew, however, pirates were a natural target of their forces. Intent on establishing their own reputation and strengthening

their own esprit de corps, the CNF engaged the most blatant pirates and beat them into submission. State of the art warships simply outclassed and outgunned pirates accustomed to having their own way with lowly freighters. Systems supporting the pirates clandestinely may have been disappointed, but nobody wanted to restart the Unification Wars and slowly piracy became less common. The CNF won a victory for the rule of law, and even though not every engagement was a success the CNF developed the fighting capacity and core values which carry through the organization today.

Piracy still has its supporters among different factions and systems. Their support is far more secretive,

"Sure, we take what we want. And you know what? So do those damn megacorps. They take on a scale you can't believe! Most of ya just can't see it. Well I do, and while I may take for myself and my crew, it ain't **nothin**' like what the corps take. Most of us used to be nice little planet dwellers like you, 'til we got in their way. Now we're evil because we gotta make a livin' outside their rules? I may be a pirate, but I didn't start out that way. The megacorps **made** me what I am today." *Wingblade, Avian pirate captain* however, as openly supporting piracy in the modern age invites CNF retaliation for being a pirate. Pirate starships must be built somewhere, however, and some pirate vessels are known to be bought through reputable firms and later go 'missing and presumed lost' or 'destroyed'. Pirates also must purchase supplies and weapons somewhere as well as fence stolen cargo. Cargo can be transferred nearly anywhere in the empty void of space away from prying inspectors. Some 'legitimate' businesses are used for these purposes, but other times cargos and ships pass through ports known for their lax attitude toward paperwork. Some ports will even repair battle damage with no questions asked. Systems with low levels of law enforcement are scattered around the Cluster, and while the CNF and CSS investigate piracy, many legitimate vessels are armed and the origin of battle damage is hard to prove.

Several things might drive a sophont to become a pirate. Greed and lack of respect for laws is a simple motivation that drives criminal behavior anywhere. For other people, though, they may be driven by circumstances into a life of piracy. The earliest pirates were driven from their homeworlds by invading fleets. If a system, megacorp or the Confederation takes over a world for some reason (creating a captive government), it could happen again. Various types of corruption or errors have always led to innocent people being convicted of crimes they did not commit. If systems bar someone from most types of employment because they have a felony conviction on their record, they may not be able to use their skills to make a living. Pirates don't care about having a criminal past. Lack of legal opportunities can drive anyone into illegal options.

Pirate ships share a number of qualities based on their purpose. First, they do not usually carry heavy bay weapons as the goal isn't to kill ships, it is to plunder them. Secondly, pirates usually have a larger than normal number of 'marines' on them for capturing a ship and taking the valuables. Pirates that simply steal cargo are not exactly tolerated, but pirates that regularly butcher or enslave large crews provoke an extended and heavy handed CNF response. Third, pirate or raiding vessels require substantial cargo bays to collect their booty and at least a few low berths to contain captives. Finally, raider vessels tend to accelerate quickly as they have to be able to chase down a vessel before it can make jump range or evade a military vessel if things go badly. Ideally they have fast cycling jump drives to leave quickly if necessary, but they generally do not carry enough fuel for additional jumps as that cuts down on cargo capacity and limits their possible profit. Anyone looking to avoid risk does not become a pirate.

The CNF are still major opponents of the pirate trade, as are most local system navies. There are, however, many backwater worlds or hidden bases in otherwise safe systems that knowingly or unknowingly host pirate ships. Sometimes the systems buy protection, perhaps by passing on choice information or collecting equipment and supplies for their use. Others service pirate vessels to protect themselves against those same pirates. Still other cargo is supplied by free traders or shady captains who make deals with the pirates for the money. Whatever the reason, pirates exist because nobody has been willing to make the extended and expensive effort required to wipe them out across the Cluster. Individual bands are vaporized when they become too annoying or the CNF catches a break, but many other individuals have been seduced by greed, the mystique of the corsair, or driven into piracy by running out of options in their home system.

Besides commerce raiding, pirates typically make their money by smuggling or manufacturing drugs and stealing slaves. Slave taking is relatively easy- take several ships to a small colony or a backwater system and take the slowest people. These are often unskilled slaves, though, and aren't worth much individually so they must be collected in bulk. Another approach is to essentially kidnap desired technical people from a port somewhere, stash them in a low berth, and then revive them 20 parsecs away and inform them of their new reality. While risky, a well trained slave in the right area is worth a lot of cash. Naturally the slaves are not kept out in the open but are used and traded clandestinely.

Drug smuggling is usually accomplished through the use of middleman free traders or unscrupulous crew aboard more established regular trading vessels. For drugs that are not manufactured locally due to extremely strict laws or a particularly addictive quality, they are often made in remote facilities far removed from the eventual sale location. If they can be manufactured by a species that is not affect by the drug, even better. Because of their addictive nature, junkies always need more drug and provide a captive user base for their product. If enforcement reduces the supply of a drug temporarily, the price goes up; this increases the potential reward for a successful smuggler. As at least some of the drugs have been engineered to be as addictive as possible, this is a very difficult cycle to break.

Mercenaries

Whether they are called soldiers of fortune, private security or independent security contractors, mercenaries are people who fight for money rather than

"Look, I ain't in this for your revolution, and I'm not in it for you, Princess. I expect to be well paid. I'm in it for the money. " *Han Solo, Star Wars: A New Hope*

loyalty or beliefs. The difference between a mercenary and a pirate is that a mercenary's fighting is regulated by the Confederation and their contracts monitored for integrity. They are typically hired for a particular term contract, often for several weeks or months to protect individuals, ships, or operations from external interruptions. Magistrates are very picky that mercenary contracts are fulfilled to the letter on both sides; besides, crossing a heavily armed, violent, trained fighter is not usually in a customer's best interest. By monitoring the contracts and making sure that the terms are honored scrupulously, mercenaries are considered a legitimate interstellar business while piracy is a scourge to be eliminated.

A bodyguard is a low end mercenary, often independent, and good for their purpose. Reoccupying a held facility and rescuing hostages, however, requires a lot more firepower and experience than most bodyguards can supply. Mercenary forces range from a squad of experts all the way up to the Pulsars, a private organization which can execute military operations anywhere in the Cluster. Most outfits have defined roles and somewhat limited operational capabilities. Even the largest organization cannot overpower a pocket empire or an Advisory World fleet, but they have Epitaph on an Army of Mercenaries These, in the day when heaven was falling, The hour when earth's foundations fled, Followed their mercenary calling, And took their wages, and are dead.

Their shoulders held the sky suspended; They stood, and earth's foundations stay; What God abandoned, these defended, And saved the sum of things for pay. *A.E. Housman*

been known to defeat task forces while carrying out their mission.

In general, mercenaries are frowned upon by the CNF and system navies as inferior fighters and lacking in professional esteem. In reality, mercs fight for pay and are willing to take risks that most people would avoid. They often have the most up-to-date equipment available, their ships are kept ready for a fight, and most warriors have more actual battle experience than any local naval type. They are professional soldiers who focus on the job and ignore issues like morals or justification of the cause. Mercenaries also typically carry repatriation insurance so that if they need to surrender the capturing world can be assured of being reimbursed for their trouble. When they fight, they fight hard and professionally, kill only when necessary, and they expect nothing less in return.

M317 Interstellar Bank (MIB)

MIB is ubiquitous across starfaring systems in M317. They collect the tithe and transfer money everywhere the Cluster military travels and have offices on every planet with at least space capability. Modest sums may be carried in exchangeable notes (which have not been successfully counterfeited in well over 100 years). Exchangeable currency units range from the decicredit coins used for vending machines to the kilocredit notes which are used for purchasing supplies and many vehicles. For big megacredit deals and above, however, electronic credit transfers are essential for legal reasons. Large transactions that do not take place electronically usually attract the attention of the Cluster Scout and Consulate services as potentially illegal transactions. Even illegal organizations prefer to have mechanisms to transfer money electronically and launder their untaxed gains.

MIB transfers of banking and credit information between systems and are both ubiquitous and discreet. Secrecy is only broken for Consulate Warrants, but MIB is known to adhere scrupulously to the laws. Each system updates citizen financial records and disseminates them within the subsector and all bordering subsectors along with mail services, thus shortening the time taken for credit checks. Conspiracy theorists love to target MIB due to their ubiquitous presence (and their black suited, sun-glass wearing corporate uniform), but without a reliable intermediary trade within the Cluster would dwindle quickly.

Tithe

Scout forces, naval forces and consulates all cost money. In order to pay for things, the Confederation collects a tithe from every system as well as additional money from corporations doing business in multiple systems. Expenses for a cluster spanning loose government are relatively modest, amounting to only 3% of GDP (gross system product) or 6% of profits for multi-system corporations (in addition to local taxes, if any). Costs are so low because the central government enforces few rules and has minimal impact on concerns within a system. They have no interest in health care, education, social services, etc and leave such issues to local jurisdiction. Areas of concern are restricted to the principles of the Confederation and summarized as stars, drugs, piracy, war, trade and slavery.

MIB and magistrates are both particularly attentive to matters regarding the tithe, which reaches every world in the Confederation. Consulates and the CSS collect and collate data regarding Cluster economics, trade, etc and use that information to calculate the tithe. When errors are discovered (as they often are), the offenders are summoned to the Consulates to explain themselves and provide compensation. If tithe amounts cannot be settled locally, results move up the chain and if they reach the Advisory Board, bad things happen. The Confederation wants a balanced budget and no

government or corporation wants to be forced to pay tithe under the jurisdiction of the CNF. When tithe matters reach the Advisory Council, offenders usually have to pay stiff penalties (and deployment costs) along with the original tithe. Systems have been placed under temporary Confederate jurisdiction as a captive government until tithe has been repaid. This is an extreme reaction and it does not usually reach this level, but the Confederation has certain principles it holds very dearly and the tithe funds all of them.

The Confederation has expenses, and accountants demand that the books balance (eventually). If some worlds are not paying their fair share, everyone else is paying more than their fair share. Systems are expected to police themselves regarding tithe; having few laws is not an excuse for avoiding tithe. Even lawless trading posts collect the tithe if they wish to remain in operation for very long. No 'free' port likes having a CNF Admiral 'conducting maneuvers' around their world, but overt

"Little else is requisite to carry a state to the highest degree of opulence from the lowest barbarism but peace, easy taxes, and a tolerable administration of justice: all the rest being brought about by the natural course of things."

-Adam Smith

action would be suicidal and semi-legal traders would quickly learn to avoid the place. In addition, magistrates usually demand systems or companies pay a penalty for 'forgotten' or avoided obligations, thus making tithe evasion economically unsound. If the tithe decision is announced when a CNF task force is on hand, well, that usually speeds payment substantially.

Naturally individuals, corporations, and even systems work to minimize their tithe through both legal and illegal means. CSS agents collect information, and fraud investigators use any available assets to collect tithe. Note that competitors and/or hostile neighboring worlds will often provide information (accurate or not) regarding fraud to the CSS or consulates to embarrass or embroil their enemies in legal trouble.

Not everyone in the Cluster pays tithe. Pirates certainly don't report their activities, nor do drug dealers, slavers, or the like. Free traders who stretch the rules (or clandestinely break them) rarely report their true earnings. A number of megacorps (not just the criminal ones) have a reputation for skirting the rules. Worlds with weak Confederation influence generally stretch that boundary between acceptable and unacceptable behavior. Some are even powerful enough to get away with it, where the CNF deems it too expensive to enforce their mandate. If the situation changes, however, or the rogue world goes beyond what the Cluster can tolerate, the CNF are forced to respond and a large scale battle occasionally develops. This happens rarely, but it has so far proven to be disastrous for the offending system and no more than painful or annoying to the CNF.

Megacorps and Their Spheres of Interest

Megacorps are the holders of the purse strings of the Confederation. The key differentiator between a megacorp and a random stellar corporation is scale- companies that operate in only a dozen systems are small fry. Several dozen megacorps span the Cluster, and large powerful corporations are a law unto themselves. For the most part, megacorps usually follow the law, with any transgressions kept well hidden and legal maneuverings taking the place of space battles. Megacorps can call on at least a modest sized armed force when diplomacy fails, but talk is relatively cheap and large scale pitched battles are in nobody's financial interest. Given their vast trading empires, however, it would be irresponsible to rely solely upon their name for protection. Corporations will almost always prefer to work behind the scenes rather than engage in a space battle, but self defense is a valid legal argument for deadly force.

To be successful, every company specializes in particular areas or products. Even corporations that span dozens of parsecs have a primary interest which focuses their attention. For megacorps, they have many related products that support one another. For larger stellar society, however, megacorps have reputations and general recognition for certain specialties. Not every system has every megacorp; many small systems won't have any representatives at all. Larger systems, however, will likely have most if not all of the common giants.

"Like casinos, large corporate entities have studied the numbers and the ways in which people respond to them. These are not con tricks - they're not even necessarily against our direct interests, although sometimes they can be - but they are hacks for the human mind, ways of manipulating us into particular decisions we otherwise might not make."

Nick Harkaway

Advertising and Sales Allied Advertising

Allied started out as a series of independents who banded together to improve their chances when going after a large contract. They succeeded well beyond their original intentions, and are now known around the Cluster for their professionalism and quality. Each system's offices work independently to offer personalized services to local corporations, but they have the scale to be heard across the Cluster if necessary.

CrioPoetics

This company is widely recognized as the most creative advertiser in the Cluster. They specialize in catchy phrases, images, and slogans that resonate across species. They are not cheap, but their skill and reputation have transformed several small companies into subsector giants with just a few clever words. Even their failures are noteworthy- epic fails that people remember years later.

Interworld Agency

Interworld specializes in celebrity and endorsement deals across the Cluster. Most celebrities are local; Interworld works to change that and spread a popular phenomenon beyond its original system. They are not always successful, but they are highly sought after to represent famous clients and are known to have an extensive set of social connections to

facilitate key meetings.

Touchstones

Touchstones specializes in creating a buzz around new products and getting noticed in a crowded

"Without promotion, something terrible happens... nothing!"

P.T. Barnum

marketplace. They prefer trendy, cutting edge products and their culture doesn't work well with most conservative megacorp norms. Once they have a hit in one system, they will then transfer their newest fad to other systems and use the novelty as a selling point.

Computing Services

Javai Informatics

Javai Informatics is one of the premier expert system programming companies available. Specializing in artificial intelligence, they produce many of the skill-3 expert programs used by AIs for specialized tasks. They develop novel computational approaches to classifying and interpreting data with the goal of extending AI into areas such as art, poetry and holoimagery that is currently the realm of sophont experts.

Polysynaptics

Polysynaptics pushes what can be done with the advanced parallel synaptic processors that are available in the highest tech computer systems. Their expertise is in developing novel applications and solving new types of problems associated with advanced computer architectures. If it can't be done with current computer technology, Polysynaptics is interested in trying to find a workaround.

Programming Partners

Programming Partners work with whatever tech level a system has to develop the best and most effective applications possible. They provide a supportive programming environment designed to keep the users protected and safe even from advanced computer threats. They are not the fastest, nor do they push borders, but their systems run routinely and reliably with few attack surfaces to protect them even from more advanced systems.

<u>Criminal Organizations</u>

Altrav

The Altrav are the largest drug manufacturing and smuggling organization in the Cluster. They are known to manufacture the most addictive, high value illegal drugs around, and are ruthless in defending their employees and their territory. Once a semi-legitimate organization, the Confederation illegalized their primary products used to quell restive populations. They hate the CNF with a passion, and will take some risks to discredit or destroy their ships, reputation, and personnel.

El Chisme

This is the organization to contact to spread false information and rumors. They specialize in character assassination, rumor mongering, setups, disinformation campaigns, and selective release of documents and information to smear their target's reputation. Their services are arranged by politicians, companies, neighborhood activists, inside traders, and anyone who wants to discredit another person. They are the least violent criminal organization in the Cluster, and will target their enemies reputation instead of harming them physically.

Ninkyro Dantai

The Ninkyro Dantai are a collection of interlocking criminal enterprises that work to make money and stay out of the spotlight. They work behind the scenes and use threats and intimidation instead of brute force to meet their goals. Resorting to violence is seen as an admission of defeat; killing the opponent is an act of revenge, but vengeance is a useful motivating force. They are into smuggling, bribery, blackmail, protection rackets, etc.

Sokoto Caliphate

The Sokoto Caliphate are the largest slaver group in the Cluster. They exploit poor or desperate worlds for bulk laborers and are happy to take commissions for obtaining particular specialists. They are a very tight knit organization, and individuals and ships have been known to suicide to allow their companions to escape. Given the penalties for slavery, suicide is often one of the least painful options available to such criminals.

Entertainment Enjoyamania

This company provides big budget, mass produced shows that entertain and make a profit but do not tend to have deeper meanings. They distribute entertainment to all tech levels and species, with offerings tailored to the local sensitivities. While they occasionally produce flops, they dominate the popular media of larger Cluster worlds.

"What the mass media offers is not popular art, but entertainment which is intended to be consumed like food, forgotten, and replaced by a new dish. " *W. H. Auden*

House of Duzhu

This megacorp is the largest gambling house in the Cluster, with a reputation for quality and honesty of games that local casinos may or may not have. A favorite of free traders due to their presence in most any port that permits gambling, they will take bets on almost anything and for a 1% fee will act as middleman and arbiter for any wager sophonts wish to make. They will also transfer money between ports (up to 100,000 Cr) which does not go through MIB but which may only be withdrawn in house credits.

lorquin Holograms

Holograms can range from the simple 3-D cards available around TL 6-7 to moving images in free space that are nearly impossible to distinguish from the real thing by sight alone. Iorquin holograms specialize in telling stories and entertaining billions with their carefully crafted creations.

Republic of Gamers

Video games cover the gamut from single player ship board units to enjoy during jumpspace to planetwide sensations simultaneously played by a billion people or more. The best known publisher in the Cluster puts out games for all tech levels and styles of play because not everybody lives on the network; those who do merely have the best response times.

Sensualia

This entertainment powerhouse is focused on creating live shows that captivate the senses. Some of their most controversial clubs involve sexual pleasures, but they have shows that cover everything from music to historical productions to zero-G dances. Where allowed, they have even provided psionic enhancements to various presentations that can become almost addictive in nature due to the intensity of the feelings evoked.

Viviation Entertainment

Viviation celebrates life, and does their best to create immersive experiences that capture special feelings using everything from words to emotions. Deeply into personal experience and empowerment, their goal is to allow others to feel and empathize with the characters in their stories. They make an effort to include all lives including the hurts and fears that everyone suffers at one time or another. (Personal note: Consider carefully if you really want to go to a Viviation horror experience.)

Foods and Livestock

Edible Organics (EO)

EO provide many forms of pre-packaged foods for everything from emergency rations to their 'Banquet' line of prepared servings for dozens. The price paid relates to the quality, and they are trustworthy in that you get what you pay for. The food is all nutritious and safe to eat, but the cheaper meals definitely do not stack up to the high end foods.

Gourmet Delights

Gourmet Delights focus on the exotic upper end of the food market. They ship food in ultra-cold vacuum sealed containers across subsectors, bringing unusual and rare foods to the discerning public. They charge more for their delicacies, but if an unusual ingredient is needed, they are the best bet for finding it.

Ogrenth Industries

A conglomerate of many different brands and tastes, Ogrenth targets the mass market with consistent quality and moderate prices. They carry what sells best, and if it's well known and mainstream, Ogrenth likely controls the brand. They are known to be competitive to a fault, and have been accused of everything from psionic manipulation to releasing biological attacks on their competitors. No cases have reach the advisory council, however, and they continue to make money and pay tithe across the Cluster.

Thyller Stockyards

Bulk sellers of all foods, they specialize in providing animals for eating, either processed or still alive for the true carnivore looking for the hunt. Despised by some (particularly Unists, PETA and vegetarians), they fulfill a general need and are known for the freshest, healthiest game around.

Xylvan Gardens

Xylvan is known for their plant based foods and herbs. They maintain growing areas on a number of planets, and purchase all of their food locally (no more than 1 jump away). They are known for devoting 5% of their profits to supplying emergency (vegetarian) rations during emergency situations.

"The time will come when men such as I will look upon the murder of animals as they now look on the murder of men." *Leonardo da Vinci*

<u>High Technology</u> Illuminarius

This is perhaps the most secretive of any megacorp in existence. They have research branches in many subsectors but everyone who works for them is paranoid about giving away ideas. Some believe that they are controlled by aliens who otherwise died out millennia ago and are trying to take over the Cluster. They have, however, licensed a number of technologies that require rare and difficult to obtain materials which are nothing short of revolutionary. They are the Cluster supplier of black globe devices for cutting edge defense companies.

Micronomics

Micronomics is a contract research and development agency that has invented and sold more patents than any other company in the Cluster. They get paid top dollar for their work, and use the extra to perform their own research. They are very aggressive about people stealing their technology, and will go after thieves with armies of lawyers as well as 'fixers' or mercenaries to protect their intellectual property. Commercial designs they produce naturally include full indemnity for their own patents.

Nanova Technology

Specializing in nanodevices, they provide many of the cutting edge self-organizing smart equipment that is slowly being produced. They perform a lot of research and development on futuristic technologies, and promise to beat any price for ancient technology from the 'Big 3' civilizations that surpass current tech levels but died out millennia ago. They are always looking for new artifacts and are the first choice for most freelancers and lucky amateurs.

Hospitality Industry

Doyen Lodges

Doyen targets the mass market for resorts, sophonts with some money to spend on leisure but stretch their budgets on vacations. They favor appearance, designing places that seem high end but lack the care and detail found in true elite resorts. They are always acceptable and clean, however, and they are found at all famous and popular attractions that the middle class worker aspires to visit.

Econoclub Resorts

Econoclub provides basic accomodations for modest prices. Never fancy or up-scale, they have facilities in almost every port and maintain individual environmental controls for all common races. They are not for the princes, but they also won't cost a king's ransom.

Miramar Products

Miramar branded resorts and expeditions are strictly for the upper class of Cluster society. Usually having a strict dress code and requiring an invite from an acceptable sponsor for entry, they provide the ultimate in luxury rooms and travel for the wealthy to venture forth in comfort. Yachts sponsored by Miramar are a favorite target of pirates due to the wealthy clients aboard.

Rustic Lodges

This megacorp makes primitive and unimproved planets fit for visiting by higher tech travelers. Their specialty is fitting in to the local environment and allow sophonts to feel close to nature again. Within

the confines of the resort, however, modern luxuries are available for only modestly inflated fees. While many of their facilities aim to bring patrons closer to nature, a few focus on low tech primitive societies. Note these facilities only allow races found on the planet to visit and require guests to keep a very low profile.

Investments and Financing

Intraspace Mortgage

Specializing in starship mortgages, they have a Cluster spanning series of offices and close contacts to all three shipbuilding megacorps as well as many of the local licensees and contractors. They understand the high

"No man's credit is as good as his money." *E.W. Howe*

cost of freighters and ships of all types, and will work with creditworthy borrowers to arrange a mortgage to suit the ship. They also have standing arrangements to repossess delinquent ships with a number of organizations when payments go astray.

Wotethan Group

They are an investment firm which links systems needing capital with the rich systems floating in credits. Their specialty involves funding for larger scale projects usually with a government backed organization on one side of the transaction. Their efforts tend to be fairly conservative and generally make a solid but unexceptional profit.

Outsystem Creditors

This company arranges large scale funding for less secure projects that Wotethan Group will not cover. They rarely involve any level of official government and while they take great care in screening their clients the occasional scam gets through. They do, however, make more profit on average than Wotethan Group investors to justify their higher risks.

Leisure and Luxury

Decoutage

A prime mover in modern fashion, this firm is found across all technologically advanced worlds with outlets in major cities and fashionable districts. While best known for their high end creations, mid-upper fashion trends are planned in advance and rolled out everywhere at the same time to make keeping up with modern dress practical anywhere in the Cluster. While they participate at the very high end, their main profit center is the mid-upper end trendsetters.

Elitonics

These products cost at least twice as much as any other brand, but whether clothes or perfume, it will always be top quality. Elitonics products will be recognized by most cluster sophonts as luxury items with a luxury price tag.

Fristian Events

This company brings high-end, in person performers to discerning crowds across the Cluster. Eschewing the mass market for the upper crust, Fristian performances always emphasize elegance

and exclusivity. Events cover the gamut from traveling museum exhibits to outworld musical performances so long as the expected clientele are the society elite and occur at exclusive venues.

Jorgasian Auctions

Collectors around the Cluster are desperate for places to acquire rare and exotic specimens. Jorgasian Auctions specializes in acquiring, transporting, and selling rarities and one of a kind items to those who appreciate their worth. While they are most commonly known for artwork and antiquities of any planet sold to the highest bidder, their very aggressive acquisition services are available to connoisseurs when cost is not an issue. They do not deal in sophonts, but plants, creatures, minerals, restricted antiquities, or famously unavailable items are accessible to those with deep enough pockets.

Logistics and Transportation

Bulk Traffickers

Specializing in large freighters, bulk traffickers only operate ships 2000 tons and above. They serve all major worlds and often employ their own fleet of small craft at common ports for their ships. They have a reputation for carrying fighters aboard some of their ships and not being intimidated by threats. Pirates preying on their vessels generally come in shooting.

Latrian Transport

This is a shipping and logistics firm that covers most of the Cluster, including the more out of the way places. Their bread and butter is to carry mail and MIB records to smaller worlds. They prefer less expensive ground starports as opposed to highports, and all of their craft are streamlined with fuel processors aboard.

Parsec Express

If speed is of the essence, Parsec Express is your company. They specialize in rapid transport between systems and employ nothing less than Jump-4 vessels to make their trips. Interstellar corporations of all types that want to get the jump on their competition will pre-station ships ready to depart the moment a critical result or decision is made. Billions of credits can be made or lost in the time it takes to jump between systems. Mail contracts between isolated Confederation bases are one of their major revenue streams.

Poliva Lines

Poliva lines offers many types of shipping options, but they are known best for the variety of sophont transfers they take compared to cargo. From colonists to cruise lines to planetary shuttles, they convey people and goods wherever they wish to go.

Stellar Shipping

SS is perhaps the largest and most affordable shipper in that they prefer asteroid based hulls that are not streamlined. Most of their ports are highports, although they do have shuttle fleets at certain locations to speed their operations. They are slower than many other shippers, but their ships are inexpensive to purchase and quite cost effective.

<u>Manufacturing</u> Anthropocene Construction

This company specializes in mass produced habitat and environmental systems for everything from station modules to taint removal filters to cooling towers. Whatever the environment, they have products that will fit the need and construction staff that can build at whatever scale is desired.

Epochal Manufacturing

They manufacture everything from screws to plasma cutters to densitometers. They cover pretty much any type of device, electronic or manual, with emphasis on smaller scale operations. Their tools have good reputations for quality and longevity, making them a common choice for spacecraft of all types. Whether you need one or a billion widgets, Epochal has the scale necessary to meet your needs.

Oceanhome Industries

Best known for aquatic devices and underwater gear, they make nearly anything desired for atmospheric, intertidal, or open ocean technology. Some equipment is easier to build underwater, and they take advantage of their familiarity with aquatic living.

Ultronic Machines

This is another generalized manufacturing company, specializing in industrial scale equipment and integration of design pathways. They make additive and transformative machining that is the best in the Cluster and commonly found in workshops aboard starships around the Confederation.

Medicine and Genetic Engineering

Bioregenerative Systems

Their therapies are aimed at regenerating what a sophont had and returning damaged or lost tissue to full natural function. Inducing transformed stem cells to become new tissue along with drugs and agents to direct tissue formation along the correct pathway, they also provide some of the general healing salves that rescue damaged cells.

Genomonetics

A major player in uplift and biological augmentations, their therapies are cutting edge and targeted by a number of extremist groups as being immoral. They claim to have researchers on every planet with an intelligent race so that they have access to all available gene sources. Common augmentations are their bread and butter, but uplifts and xenotransplantations capture the spotlight. "We live in a dancing matrix of viruses; they dart, rather like bees, from organism to organism, from plant to insect to mammal to me and back again, and into the sea, tugging along pieces of this genome, strings of genes from that, transplanting grafts of DNA, passing around heredity as though at a great party."

Lewis Thomas

Hanavera Therapeutics

This company is known for their anti-virals and antibiotics that can target whole taxa of organisms. Their pharmaceuticals and healing methods are meant primarily for field treatment and stabilizing organisms until they can reach a low berth and transport to a full scale medical facility.
Pansophontics

Pansophontics is a mega-corporation which focuses primarily on pharmaceuticals, but also invest in obtaining raw materials used for making drugs so that they have a more guaranteed cheaper supply. They try to undercut competitors by having more efficient synthesis and consequently lower prices for the same effectiveness. Their psi drugs are widely recognized as being the most competitive in the Cluster. They are fair minded and treat reliable customers honorably and well, earning the trust of sophonts everywhere.

<u>Mining and Minerals</u> Aaergian Refining

Aaergian Refining focuses on bleeding and belting operations throughout known space. They are a major player in buying and selling unrefined ores and providing purified metals and minerals to system corporations and megacorps. They have a reputation for being pushy negotiators and exploiting workers using semi-legal (some say illegal) activities to get what they want. What they demand is success, and they have a history of achieving it. Well we're waiting here in Allentown, For the Pennsylvania we never found, For the promises our teachers gave, If we worked hard, if we behaved... So the graduations hang on the wall, But they never really helped us at all, No they never taught us what was real, Iron and coke, chromium steel, And we're waiting here in Allentown... But they've taken all the coal from the ground, And the union people crawled away...

Billy Joel

Aquaticarius

This company specializes in extracting minerals and specialized chemicals from aquatic worlds, either through conventional mining or as bio-mineral complexes. Given the large volumes of water found on water worlds, even a low concentration of valuable minerals can be economically feasible given a high enough throughput.

Celestial Resources

The largest mining megacorp in the Cluster, they extract minerals wherever they can make money at it. They are more than willing to share the wealth with the local systems, and are known to give better rates to their workers than most miners. They are very efficient and drive hard bargains with people needing their products, but their workers are almost always glad to be working for them.

Planetesimals

Worlds with higher gravities require slightly different extraction equipment, and Planetesimals build extremely solid and reliable stations for conditions where the atmosphere is important. Whether it is in keeping pollution out of the atmosphere or keeping insidious atmospheres out of the equipment, they know how to isolate the minerals from the gasses.

Vacuum Extractors

This megacorp's strength is in belting equipment, particularly collecting and removing the valuable ores from the waste material. Their products are generally optimized for use under zero gravity conditions and offer substantial protection against atmospheric loss.

News and Indexing

Cluster Today

For those interested in the social and cultural scene of the Cluster, this news service is the best available source for the 'current' information. Since information flows at the speed of Jump traffic, worlds receive information at different times. Other stories are covered as well, but the primary focus is on the sophonts and cultural trends of the Cluster.

Confederation Times

Businesses and megacorps are constantly making deals with one another. The Confederation Times discusses the implications and consequences of various events in major systems and how they will affect various businesses.

Interstellar Network News (ISN)

ISN is the political and governmental focused news service supported by the CSS and Magistrates. It contains the most critical information regarding new proposals and agreements formed in the Pansophantic Council. These decisions eventually affect the entire Cluster, and traders and businesses are advised to keep up with current governmental events.

Systematic Records, Inc.

Every bureaucracy keeps records, and the M317 Cluster is no exception. Search access is provided fairly inexpensively by Systematic Records at every Consulate, Naval or Scout base in the Cluster. Access is available by planetary network for rapid access or via radio or meson link for speed of light searching. Information is updated within hours of being jumped into the system, and data is kept indefinitely for all regions of the Cluster. Naturally more distant data is out of date as data only flows as fast as the most recent ship.

<u>Retail Merchants</u>

Credishop Discounters

A large discount chain, they sell inexpensive items even more inexpensively. The quality is low (-1 DM) and the price is low (-10%), but somedays that is all you need. They primarily exist on planets or planetoids as rents are generally cheaper than stations and orbital habitats.

Extended Trends

A fashionable store, they specialize in new fashions and new artsy items from around the Cluster. In many places they become the driving force for those cultural shifts that had begun but needed the reinforcement of other systems before they really took off. Their prices are typically about 10% higher than comparable stores, but discount clothes at the back of the store have fallen afoul of current trends and are on sale for 25% less.

"You walk into a retail store, whatever it is, and if there's a sense of entertainment and excitement and electricity, you wanna be there. "

Howard Shultz

Flavian and Sibs

A somewhat higher class establishment, they target a more upscale clientele and have merchandise that appeals to more sophisticated tastes. It will not have a full variety of goods, but what it has will be typically high quality and aiming for more status conscious individuals.

Hassan's Bazaar

The bazaar is a collection of many merchants joined under one roof, giving scale to many smaller corporations. As a group, they cover nearly every item imaginable, and prices and quality range dramatically. Merchandise is priced according to quality, and they carry anything legal in the systems where they are located.

Spacemart

Spacemart is a giant megacorp known across the Cluster for it's general merchandise. They are fully above board, and no 'special' merchandise is ever available from them. They offer standard prices on all goods appropriate to the tech level and will pretty much have them in stock. They do not traffic in weapons, armor, ships, or drugs at all; they specialize in moderately priced goods that sell to a broad market.

Universal Purchases

A store selling anything and everything, they provide a 5% discount on items they have but they only stock items they can purchase at a discount. Their stock varies regularly, and it depends on local law and availability. They do not always keep good records of exactly where their products come from.

Wholesale Retailers

This company is known for selling bulk packages of items at only somewhat inflated wholesale prices. They provide 10% off when buying in quantity (as determined by the referee depending on quantity). This is not the place to go for one-off purchases.

<u>Robots</u> Intelligent Systems

This company specializes in inexpensive, lower tech drones and robots, although they do sell high function robots as well. They make quality devices that perform as advertised, and the low cost of many of their designs gives them an advantage over the high tech units. They are also very active in the cybernetics field, again focusing on the lower tech, common improvements rather than pushing technolgocial limits.

Stellarmech

Stellarmech sells all types of robots but are best known for their functional lines that are designed for particular jobs such as vehicle repair or gardening. They make few biomimetic robots. They make several master/slave combos which leverage a few high power AIs to control multiple less expensive drones to get the best of both worlds. They also have a reputation for putting function ahead of ethics, and have been known to design and build robots that lack emotive controls because that is what the customer requested.

Transophontics

This megacorp is known for their high end robots that are hard to distinguish from natural organisms. Biomimetic robots are expensive and have somewhat limited uses, but their AI is recognized across the Cluster as some of the most advanced. They sell many standard robots as well, but all are selfmotivated and relatively advanced.

Cyberdyne

As the name suggests, Cyberdyne is the Cluster leader in cybernetic enhancements. They push the technological limits for mechanical enhancements, but are also active in cyborg support and augmentation. They have a solid reputation for excellence, and tend to hire augmented employees.

<u>Spacecraft</u> Barulian Hulls

They license designs for all types of ships but are best known for their planetoid hulls used for everything from a cheap freighter to system defense outposts. Large ships are often constructed in the system where they will be stationed since no ships over 5000 tons can enter jumpspace. Their station modules are also highly regarded.

Lightyear Jumpships

This company specializes in jumpships and interplanetary craft as opposed to small vessels. They sell many mid-sized starships, but they are best known for their larger military and commercial craft. "If you are in a spaceship that is traveling at the speed of light, and you turn on the headlights, does anything happen? " *Steven Wright*

Reactor Shipyards

They sell mostly smaller ships, primarily those under 1000 tons and have patents on many of the best selling small craft including the extremely popular modular cutter. They have a few larger models, but their reputation is squarely in the smaller end of the market where most independent traders operate.

Planetary Vehicles

Atmospherics Incorporated

This company is famous for their varied flying craft, everything from airships to hypersonic grav transports. Several varieties of their craft are able to reach orbit, and their most famous craft are designed for very inhospitable atmospheres.

Durant Planetary Conveyances (DPC)

DPC is best known for vehicles that travel near the surface of the planet. Their vehicles tend to favor low price and efficiency over speed and flash. They have a number of flying or grav vehicles in their inventory as well.

General Fusion, Inc.

Specializing in fusion powered vehicles, they build everything from small speeder bikes to 100,000 ton planetary freighters. Their generators are considered some of the most reliable in the Cluster and come in all different sizes.

Weapons and Military

Cosmic Defense Systems

This company specializes in armor and protective systems for vehicles and individuals. Their battle dress is widely considered the most formidable in the Cluster, and their heavy weapon mounts are second to none.

Energy Dynamics

Energy Dynamics sells primarily directed energy weapons for offense and anti-missile defenses. Their lasers and fusion technology are well regarded and their damper technology (both meson and nuclear) is the best seller in the category.

Lethality Systems

Explosives and projectiles are the focus of Lethality Systems. Their ACR rifles and Gauss rifles are state of the art, and their heavier weapons for vehicles are also well known. They also sell the largest selection of grenades among the megacorps of the Cluster.

Pulsars

The Pulsars are a Cluster-wide mercenary service with a reputation for integrity and grit. They became the biggest mercenary outfit in the Cluster by outfighting every other outfit; unsurprisingly, smaller outfits would love some revenge. The CNF and system militaries also don't like the Pulsars (or any Mercs), but they are tolerated as long as they are appropriately regulated and bonded. They have offices on most mid-sized and larger worlds, although they congregate in low law, low government areas with high populations. Few sophonts pick a fight with warriors trained to fight back, and several otherwise low law systems pay the Pulsars a retainer to keep substantial personnel in their sector as a military deterrent.

Non-Governmental Organizations (NGOs)

Not every large organization is interested in making money. Many groups are focused on a cause that is not a religious calling but a heartfelt goal for some substantial number of people. Many worlds have such organizations, but only a few of them are recognized around the Cluster for what they represent. Note that not every chapter of an organization will have exactly the same beliefs or operations as every other chapter. Just as on Earth, such organizations are made up of individuals and everyone has their own approach to improving society.

Green Angels

The M317 Cluster has not yet recovered from the years of conflict before and including the Unification Wars. Over 400 inhabited systems (about 20%) have pre-space societies. In many cases, they have lost the technology that made their world prosperous, and some are barely surviving. Others have formed stable, if non-stellar, governments. Only a bit more than 2% of worlds have

reached the highest two tech levels in the Cluster. Indeed, there are worlds with billions of sophonts who are only barely able to produce jump level technology. The goal of the Green Angels is to spread and disseminate technology to lower end worlds. This generally does not including shipping a few dozen crates of high technology gear to a planet and giving them free reign; rather, they provide technical assistance and support to lower tech worlds and try to help them develop their own ideas and inventions. Oftentimes the Green Angels operate clandestinely on a world as the government or occupying power is more interested in their own enrichment than the technological advencement of their planet or system.

Economic Resistance Council

The ERC is a direct action group which supports sustainable mineral and resource extraction on habitable worlds. While there may be thousands of habitable worlds in the M317 Cluster, most of them are not ideal for any species through either nature, contamination, or overuse. The ERC is mostly interested in forcing industries, particularly polluting non-sustainable industries, to develop their factories in space or on uninhabitable worlds. If pickets, threats and lawsuits don't work, sabotage and murder are considered acceptable by many in the ERC. While most communities do not want the ERC operating in their territory, they are less worried about supporting 'progressive' ideas where it won't disrupt their lives.

Knights of the Cluster

The Pansophantic Council has just over 800 voting members across the Cluster. For those interested in the honor and the expense of obtaining it, the Council will declare a sophont as a Knight of the Cluster for services rendered. This has limited practical benefit to the individual directly, but it immediately increases their Social Standing by +2 and is often the culmination of a long distinguished career. Knights almost universally have substantial wealth, significant regional ties, and are powerful individuals even without the bestowed title. Note that this title is not transferable or heritable, and while it enhances ones standing in their community it comes with many expectations and obligations.

d'Trellieth Prize

Scientific progress in the M317 Cluster is different than in many isolated societies without a historical collection of advanced civilizations. Three different societies clearly surpassed the current technological level of the M317 Cluster thousands of years ago, and much experimentation and research is devoted to discovering what was previously known. The d'Trellieth prize is awarded by the CSS to scientists and engineers who made a substantial material contribution to the technological improvement of their society. The award is generally restricted to early stellar level societies (TL8 and above) as lower tech worlds often have little, if any, contact with the larger Confederation.

Pathfinders Society

This CSS sponsored organization focuses on giving urban youth experience in more primitive styles of living. Most sophonts of the Cluster live in systems with populations measured in the billions. On many of those worlds, there is not much habitable space which remains in its natural state. The Pathfinders offer scholarships, trips, and experiences living more in tune with nature. While rural kids may laugh at many of their activities, the Scouts actively encourage and reward those with a true interest in survival skills. Many current and past CSS leaders started in the Pathfinders, and with such

a large majority of people living in cities it behooves the Scouts to diversify their potential recruits. They are the primary provider of Survival skill training to young individuals.

Communal History Association

This group includes many amateur or professional archeologists and others interested in learning about the vast history of sophonts in the M317 Cluster. Although they share an interest in history with Ancestralism, most members of this group want to understand how history has shaped current society and to learn from the mistakes of the past. Rather than locking away and worshipping previous societies, the CHA tries to learn how they lived and developed, often working hand in hand with scientists and engineers trying to recreate technologies that previous societies developed. They are perhaps most interested in early versions of technology currently in use as a tool for understanding how modern society is similar as well as different from the past.

People for the Ethical Treatment of Animals (PETA)

There are many individuals who for various ethical reasons are committed to protecting the health and welfare of animals. Those animals range from endangered species to pets to working animals to (gasp!) food animals. PETA is the most noted organization in this area and is known for promoting activists who create extravagant events that gain publicity for their cause. PETA is most at odds with races who developed from carnivores that simply cannot relate to the basic issues raised by this group. They are most contentious with Thyller Stockyards despite the quality of their fresh game because of the 'barbaric' treatment of the animals at the end of their lives.

Next Step for Evolution

This organization promotes the advancement of sophonts through directed engineering, whether it be uplifted races or genomic manipulation to improve society. They focus on presenting xenoengineering, gengineering, and biological augments as a way to improve society as a whole. While reviled in some quarters, certain populations are able to thrive in environments that would be less appealing without the proper augmentations.

Brighter Future Society

This group wants to leverage the sophisticated computers and artificial intelligences available to hgihly advanced worlds as a way to optimize bringing less developed worlds into the digital future. They intend to use carefully selected robots to shepherd low tech worlds through the various technological transitions into a society where the robot rulers may be safely unveiled in their true forms. By regulating and controlling biologicals, the Brighter Future Society wants to create their utopia and avoid many of the ills of modern society.

Red Crescent

Disasters strike developed and developing worlds regardless of their technological level. The Red Crescent organization has teams of doctors, logistic workers, freighters, and care groups scattered on many worlds across the Cluster. They are known for helping anyone in need, and as such are almost entirely safe from pirates and other criminals. They cross borders and enter systems wherever they are needed, and are often among the first responders to any crisis. The CSS and CNF have mixed

feelings about the group because of their willingness to help criminals as well as law abiding citizens, but everyone is glad to see them when emergencies occur.

Universal Independence League

While many individuals find that the current Cluster political organization works, there are always those that disagree. The UIL is a recognized political movement that works to destabilize pocket empires where their influence is least dominant. Many worlds have 2 or 3 different pocket empires which have similar levels of influence on a particular system. These individuals encourage playing one pocket empire against another in terms of encouraging more trade and cultural exchanges with the less dominant empire. They do this by emphasizing differences in behaviors and attitudes with the more dominant empire and similarities to the non-dominant one. These campaigns have changed the status of more than one world in the Cluster and reignited low level fighting between hostile pocket empries. The CNF and CSS universally oppose this group, but they have political backing from powerful groups intent on using the UIL for their own agenda.

Mutual Self Defense Alliance

These are individuals who push for self-reliance and separate identities for all worlds in the M317 Cluster. While their primary focus is on having the means and skills to protect their property and families without assistance, they are also major supporters of local industries. Their attitude is that if it cannot be made locally it can be avoided. They receive substantial funding from several arms manufacturers and are major providers of training for all of the melee and gun combat skills.

Protomentalists

Psionics are a skill which which requires training to use and master. Many individuals, however, never have access to psionic mentors due to limited availability and cultural aversion. The protomentalists are an organized society whose goal is to provide psionic training to those with the ability. They focus on the ethics of psionic use as well as basic skills, and are not aligned with the Psionism religion which encourages psionic superiority. Rather, they teach how psionics can be useful to everyone in a society and have substantial backing from several races where most members are psionic. Worlds that reject psionics, however, see no reason to instruct others in their use and often consider protomentalists as criminals or subversives for endangering public safety.



Chapter 3: Worlds and Technologies

M317 Naming Conventions

With ships jumping across the subsector every few days, having a systematic naming convention for worlds and stellar systems makes life much simpler. The population might not call a world by its systematic name, but navigation charts and data records ought to be consistent with each other. Unfortunately the 20th century astronomers began naming stars using capital letters for the largest or brightest star in the system and going outward alphabetically. They then began using lowercase letters for planets working outward from stars without regard to how "Somestar-ABc" might actually be pronounced.

To help distinguish between stars and planets, stars are referred to by system name and the Greek letters alpha, beta, or gamma, with the largest star in the system being alpha. (Even though charts write the most distant trinary star as -C, it is pronounced gamma.) Stars can be referred to as alpha even when they are the only star in the system to distinguish between the system and the star itself although the 'A' is often not written. Planets are referred to by lower case letter based on which orbital position they occupy, so Sol-c would refer to the third rock from the sun. Larger moons (those greater than size 0) are referred to by numbers, and smaller moons are denoted by a decimal point followed by a number. Thus Sol-f2 would refer to the second innermost large moon of Jupiter, and Sol-d.1 would refer to Deimos, a name that only a local would recognize as being the innermost small moon of Mars.

Note that asteroid belts are counted as occupying orbital positions as many space-faring sophonts use asteroids for mining operations and living space. For asteroids, there are many many rocks that could presumably have a base or an outpost on them and their exact orbital distance is not all that informative or even consistent. Therefore for asteroid belts only the decimal number used is based upon their official order of founding. Thus Sol-e.7 would be the 7th oldest settlement in the asteroid belt of the Sol system. For highly populated asteroid systems the numbers can range into the hundreds and are best handled by a computer. Secret bases are not numbered or indexed- they're secret after all. Navigation to such bases should only be done with permission or overwhelming firepower.

Trojan asteroids provide an exception to the normal naming rules. Trojans are asteroid clusters that are found in the same solar orbit as a larger body (typically a giant planet), and are stably held at their gravitational balancing points known as Lagrange Points. These regions are located 60 degrees ahead and behind the planet in the same orbit and, because of this unique geometry, are roughly the same distance from the planet as the star itself. While trojan asteroids may be found near any medium large planet (even Earth has at least one trojan asteroid), they are most prevalent in the orbits of giant planets next to asteroid belts. Jupiter, for example, is estimated to have as many 1 km+ diameter asteroids in its trojan groups as the entire asteroid belt itself. In order to distinguish trojans from small moons, (+) refers to trojan asteroids orbiting in front of the planet and (-) refers to trailing trojans. Thus Sol-f.-3 refers to the 3rd settled base of the trailing Jupiter trojans.

Systems and Stars

The M317 Cluster is a very small galactic star cluster of more than 3500 stars. It contains just under 2000 inhabited systems spread out over 80 subsectors. Beyond the Cluster is the vast emptiness of intergalactic space, with at least 5,000 parsecs separating the edge of the Cluster from the nearest systems of the Milky Way galaxy. The densest accumulation of stars sit in the middle of the Cluster, with decreasing densities as one travels out toward the edges. All of the stars rotate around the common center of gravity, thus requiring regular updates and recalculation of Jump coordinates in order not to misjump. Naturally there are local concentrations of systems in some regions of the Cluster, just as there are stellar deserts that require circuitous routes or high Jump multiple ships to



reach the nearest stellar neighbors. Secret supply bases developed and forgotten over millennia dot the periphery, but the chances of randomly finding such depositories when needed are virtually nil.

The Cluster is mapped onto an arbitrary coordinate plane that rotates clockwise (spinward) with the average velocity of the Cluster to keep systems in their relative locations with respect to one another. The rotation of the Cluster matches the plane of the Milky Way. For historical reasons, each

subsector is 8 parsecs by 10 parsecs in size and named after the system with the largest GDP in that subsector. The arbitrary cluster 'North' originally pointed to the center of the Milky Way galaxy along the Y-axis, with higher numbers closer to the galaxy. M317 rotates, but it rotates slowly enough that the orientation of stars is only slightly changed from the initial description. The arbitrary X-axis (numbered 1-10) of the Cluster is perpendicular to the Y axis (numbered 1 to 8), with the center of the range passing through the center of the Cluster. Thus [5,4] is near the center of the M317 Cluster, while [2,8] is currently found close to the galaxy and spinning clockwise toward it. More typically people speak about the 'central worlds' of the Cluster versus the more diffuse (wilder, less sophisticated) 'periphery'. Worlds are certainly closer together in the central worlds, although high tech, high population worlds can be found in any part of the Cluster. CNS influence is typically lower in the periphery as it is much harder to project influence over many parsecs of empty space, but political maneuvers have created some central areas where Confederation influence is slim.

Habitable planets in the M317 Cluster may orbit unitary, binary, or trinary star systems. Binary star systems may either be close binaries where planets orbit both stars in a Ptype circumbinary orbit, or they may be distant binaries in which case each star might have its own collection of planets in orbit. In the case of binary stars, the largest star (by gravitational field) is '-A' and the smaller is '-B', where planets might orbit around A, B, or AB depending upon the type of binary system present. Trinary star systems are composed of one close companion and one distant companion where the largest star is labeled '-A', it's close companion is '-B', and the distant companion is '-C'.



Only 4 major types of stars are known to support habitable worlds. Red dwarfs (Type M) are about one third the mass of Sol and are the most common star type, with some examples having existed for nearly the age of the universe. Orange Type K stars are brighter and larger than red dwarfs, but still quite stable and mass roughly 70% of Sol. Yellow Type G stars such as Sol are brighter still, and average about one stellar mass. The largest and hottest type of star with habitable planets are White Type F stars which are about twice the mass of Sol. While there are both larger and smaller stars than those listed above, those smaller than Type M do not put out enough energy for life to develop and the giant, ultra hot stars are generally unstable, blowing up before life can develop.

Stars larger than the white type F stars do exist, but they are so bright and so short lived that life (and usually planets) do not survive. Type B blue-white subgiants are relatively common but are unapproachable due to their energy output and have usually consumed all nearby materials so no planets typically orbit these stars. The same is true for the even brighter Type A blue subgiants, only

more so. Type O blue supergiants are extremely rare and very short lived, typically exploding as a supernova within 10's of millions of years after formation.

Red supergiant stars are old stars which have expended most of their hydrogen and are fusing heavier atoms into even heavier elements, typically forming carbon, nitrogen, and many of the lighter metals stellar society depends upon. Red giants will eventually collapse into white dwarfs. They have lost all of their planets by either consuming them or blowing them out of their orbits. Wolf-Rayet stars are extremely rare and among the brightest stars in the universe. They too fuse heavy metals but have sucked in all nearby matter and put out so much energy that approaching such stars is suicidal. Neutron stars are the remnants of relatively large star supernovas that do not have enough mass to form a black hole. They contain neutronium, the densest known form of matter and their gravitational influence can overwhelm all known propulsion techniques.

Protostar systems are still in the process of condensing and forming planets. They make excellent self-service fueling stations due to the quantities of gas available. T Tauri systems also have extensive supplies of hydrogen available for skimming, but these systems are more mature and the star is in the process of igniting. This is inherently dangerous and unstable and radiation flares are quite common. Severe flares have been known to sterilize even shielded starships.

Brown Dwarfs are too big to be considered planets but did not have enough mass to create sustainable fusion. They are warmed by internal compressive forces, but do not give out appreciable energy to support life. They may be found alone or in combination with other star types. White Dwarfs are the remnants of ancient stars that have exhausted their fuel supply. They are composed of superdense matter where stellar masses are compressed into planetary sized bodies. The original source of superdense matter for armor, the material is difficult to obtain naturally as it must be collected from material thrown off from white dwarfs. They are slowly cooling, but the process takes billions of years to finish and mass eruptions during cooling are common. White dwarfs may be found with other main sequence stars,



and may also be found alone at the center of a planetary nebula after blowing away most of their remaining gas and any planets by going nova. Planetary nebula may be skimmed for fuel, but there is enough non-hydrogen that they are treated as ice giants for skimming.

In addition to these more stable star types, there are several types of variable stars. Planets do not form around variables due to their unstable gravity wells and flaring cycles which blow away gasses around the primaries. Flaring stars are roughly the size of red dwarfs but are unstable, putting out massive energy fluctuations on an irregular basis. They are never safe to approach. RR Lyrae stars are periodic variable stars that fluctuate on a regular time schedule based on their brightness. They are often used by early space societies to determine stellar distances. MIRA variables are stars in the

process of becoming red giants. The process is not smooth, however, and their energy output increases fitfully over somewhat longer periods compared to other stars. The rare Cepheid variables are formed from larger stars and have a very predictable cycle of brightening. Like the RR Lyrae stars they can be used for measuring distance, but because of their intensity and energy output are not safe to approach.

While main sequence stars are required for life to form, it is on the planets and moons where humans and other races live most of their lives. There are usually 2d6+2 planets per star system, and while planets follow elliptical orbits they are usually symmetrical enough to be estimated as circular. Inner planets are too close to the stars and are boiling hot, while outer planets are generally too cold for life. The middle planets of the system are at just the right distance where sophonts can potentially thrive. For this reason, most inhabited worlds fall within a narrow region of a solar system, although valuable minerals, gas giants for free fuel, or particularly interesting areas of inner or outer planets may attract



bases in any region. Distant or infrequently traveled parts of the system may be entirely empty or only serviced by automated supply bases with out-of-date emergency ration packets and just enough air to save the desperate.

When multiple stars are present, many possible planetary orbits become unstable. For close binaries, orbits must be elliptical around both stars, and the minimum orbit distance is approximately 4x the distance between the binary stars. The two stars always orbit their common center of mass. The jump shadow of the pair is generally determined by the larger of the two stars.

For distant binaries or trinary star systems, far orbits may be disrupted as the distant companion can attract the outer planet and eject it into deep space. This is where many wandering interstellar objects are believed to have originated. Stable planets may only orbit near one of the primaries, where 'near' depends upon the mass ratio of the stars involved. The larger star can support planets with somewhat larger orbits.

The smallest planetoids are generally found in asteroid belts that orbit stars and range in size from a grain of sand to perhaps a thousand kilometers in diameter (size 0). While there are many many rocks present, they are spread out over an incredibly large orbital area so are still relatively far apart. Planets range from size 4 through size A, with 4 being smallest and lowest gravity and A being the largest and highest gravity of the rocky planets. Solid planets may have a small number of moons

associated with them, most of them size 0 or less and too small to support independent life. As planets get larger they can have more small moons and may even have one or two large moons (like Luna) that may or may not have an atmosphere. Large moons range in size from 1 to 4, the largest being about the same size as a small planet.



There are two types of giant planets found in M317. Gas giants (size F) have no true surface, with only an increasing density and pressure of gasses (mostly hydrogen) that eventually liquefy deep within the atmosphere. Only specially designed vessels can enter the deeper layers of gas giants, but many vessels can skim the surface and pick up tons of free hydrogen gas for fuel. Gas giants typically

have many moons, mostly small, but will often have several larger moons as well. Gas giants in the habitable zone of a system can even have several moons that may support life. The common oath 'By the 6 moons of Fethatti!', for example, refers to the 6 habitable moons of the gas giant Fethatti-b.

Ice giants (size E) are similar to gas giants in terms of planetary diameter and number of moons but have substantially lower amounts of hydrogen and contain elements such as carbon, oxygen, nitrogen or silicon in compounds more typically found on terrestrial worlds. Unlike gas giants that may be found anywhere in the solar system, ice giants are only found among the outer planets. In game terms, ice giants may be used for fuel skimming but it takes twice as long to collect the necessary fuel. In some systems, however, ice giants may be the only fueling option available.



Habitable Worlds

While there are many theories as to what worlds might support life, extensive millennia of terraforming by current and extinct races suggest that there could easily be more than one 'habitable' world per system, with 'habitable' being broadly defined. Habitable worlds have the combination of atmosphere, water, size, and temperature that may support life. All known forms of life require liquid water, and that fundamentally limits where those worlds may be found in relation to stars. Planetary factors and geology are also going to affect the type and quality of the atmosphere around a planet. Finally the size of the planet will affect how well it retains its atmosphere and water.

Habitable worlds are divided into 3 main types. The best type are easily habitable, with an uncontaminated oxygen atmosphere, near temperate temperature, and reasonable amounts of easily accessible water on the surface. Semi-habitable worlds are deficient in one of these three conditions. A world might have a cool temperature (good) but a tainted atmosphere that

"The sun, with all those planets revolving around it and dependent on it, can still ripen a bunch of grapes as if it had nothing else in the universe to do."

Galileo Galilei

requires a breather unit (bad). Barely habitable worlds are even further from ideal (cold temperatures that requires living near the equator and an atmospheric taint) or one extreme condition (a roasting hot world where it's only possible to live near the poles without cooling units).

While easily habitable worlds are clearly the most desirable, even terraforming cannot recreate the garden of Eden on every planet. In addition, the ideal conditions for habitability are chosen based on human standard. Other sophonts may have different ideal conditions, and species native to particular planets would obviously consider their homeworld temperatures and atmosphere as ideal (assuming it was not contaminated later by war or industrial activity). Within the Cluster there are over 1100 easily and semi-habitable worlds each and nearly 1400 barely habitable worlds according to human preferences. With over 70 sophont races currently living in M317, however, even some barely habitable snowball is likely perfect for one or more races.

Many of the easily habitable worlds of M317 have humans and other sophonts living on them. A few uninhabited systems, however, have planets that seem like they should support a population easily but nobody is living there. Is there a reason these worlds have been bypassed? A long forgotten plague? A voracious killer? Or are these worlds ripe for clever colonists who can tame these wilds? There are also a number of semi- or barely habitable worlds in unpopulated systems that may be colonized. Perhaps they were accidentally bypassed after the Unification Wars, or maybe they were so unsafe that everybody who knew to avoid them are long dead. Only exploration can answer these questions.

World Temperatures

Temperature is one of the key factors which determines where sophonts may comfortably live. Worlds without atmospheres typically alternate between freezing and boiling depending upon the direct sunlight levels. Worlds closest to the star(s) of a system are too hot for liquid water to exist and therefore too hot for life. Worlds distant from the star(s) are too cold for liquid water to exist (and

sometimes cold enough to liquefy normally gaseous material). It is the middle range of temperatures where life exists. Most star systems have planets which potentially fall within this habitable range.

Very cold worlds have average temperatures of -19 °C to -10 °C. The poles of these worlds will be pretty much off limits. Most of the planet will have frozen water, and only at the equator will liquid water be available. Water with high salt concentrations can stay liquid below 0 °C. Cold world temperatures average between -9 °C and 0 °C. Their habitable area will be larger, but the equator will still be the best place for humans to survive. Poles may be visitable, but not very pleasant places to be.

Cool worlds have average temperatures between 1 °C and 10 °C. Liquid water will be easily available, and the polar areas will still be harsh environments but may have short growing seasons. Temperate planets with temperatures between 11 °C and 20 °C

will be habitable over most of their surface area. They have the most hospitable climate (for humans at least). Warm worlds with temperatures of 21 °C to 29 °C will be more habitable at higher latitudes. The hottest equatorial regions may be too hot for humans and water there could reach quite high temperatures. Ice at the poles will be limited and likely seasonal in nature.

Truly hot worlds of 30 °C- 39 °C are unbearable at the equator, and even the poles will have only liquid water. Most surface water will be at high latitudes and higher elevations. Roasting worlds of 40 °C - 49 °C average temperature are pushing the limit where humans can live naturally. Only the polar regions and high elevations will be habitable. Surface ice will be nonexistent, and even liquid water may be restricted to the colder regions of the planet.

While stars provide almost all of the energy used by living beings, volcanic activity can be used as a source of energy. Deep sea vents on Earth receive no solar energy but heat and inorganic molecules released from the vents support life. Over 140 planets and moons of M317 systems put out enough geothermal energy to liquify water and create a potentially habitable environment.

There are about 3,800 at least minimally habitable worlds within the M317 Cluster. More than 2,000 of them are in the mid temperature range (cool, temperate, warm), with roughly 1100 colder worlds and over 450 hotter worlds. Temperature-wise, the mid-range worlds represent the optimum temperature for humans and many alien species.

The size and orbit of planets and their atmosphere will also play a role in temperatures. Planets and moons often rotate on an axis that is inclined from their orbital plane. This causes light to hit one hemisphere more directly for half of the year and the other hemisphere more directly for the other





half of the year. Depending upon the inclination of the axis and the latitude involved, a temperature difference of 30 °C between winter and summer is not uncommon. Near the equator, temperatures vary very little due to seasons but variation increases dramatically as one approaches the poles. Beyond seasons, a thicker atmosphere traps more solar energy than a thin atmosphere. These two features can make even barely habitable worlds survivable for humans over at least part of the planet's surface. Native life, however, may easily be found in more extreme parts of the biosphere. There are bacteria which live in the hot springs of Yellowstone, for example, that live fine at over 70 °C!

Confederation Worlds of Concern

Most worlds of the M317 Cluster follow the rules of the Pansophantic Assembly. These rules are enforced by the CNF and CSS which encourages worlds to obey the regulations designed to protect people from exploitation and abuse. Typically Confederation influence equals or exceeds that of the system governments. Yet some worlds have influence ratings which are substantially greater than that of the Confederation in their area and where the regulations of the Assembly are most likely to be circumvented. These systems are often controlled by planetary governments that publicly support the Confederation rules but secretly promote their own agenda. Those worlds with the most difference in influence are invariably major worlds as they must have high populations and tech levels to have a high influence in the first place. They may support the pan-Cluster rules in general by punishing slavery for example, but privately they could produce an addictive drug sold to their historically hostile neighboring empire.

These worlds present the Confederation with serious issues. Systems with Class A starports which build jump capable ships and have low Confederation oversight are the largest source of military grade pirate vessels in the Cluster. System agencies may work to actively stymie investigations into their supported illegal activities and will use their extensive resources to make problems or investigators go away. The lack of Confederation influence allows these activities to be organized by system governments on a scale that far surpasses those in more patrolled regions. High tech worlds with limited Confederation influence can produce state of the art contraband and have the technology to distribute it well beyond their immediate borders.

Another class of worlds which concern the Confederation are those that have status in the Stellar Assembly, a low law level, and a weak Confederation influence. In these systems, the lack of local rules and weak Confederation influence combine to create an area where illegal commerce tends to flow. These worlds generally have enough population and technology to take part in the larger Cluster but are not willing to enforce inconvenient Confederation rules. They may not interfere with Confederation forces on patrol, but they are also unlikely to provide much information or support, either.

All frontier systems have serious risks associated with them. These are systems that may want to enforce laws more fully, but they may not have the necessary resources to monitor or resist an outlaw organization that is using them as a base of operations. Low tech worlds may not even know that there are aliens plotting criminal activity in secret bases around their system. A mining outpost or a small colony may know about ships coming and going within the system but are afraid to tell

anyone for fear of retribution. Low population worlds cannot afford to pay a significant, full time military force to protect them, thus necessitating an accommodation that keeps the outpost quiet about the questionable activities. A few murders of outspoken critics can do wonders to remind sophonts of their insecurity. Scout ships often report rumors that reach their ears privately, but in order to make a difference it often takes more investigation that can put the system at risk of retaliation before the threat can be eliminated. Even a naval cruiser may choose to protect a low population world from retribution and let a band of pirates escape rather than take out a pirate base while other ships attack civilians.

Unpopulated systems are also dangerous locations for outsiders (which means pretty much everybody). If nobody lives in a system, there is no support and likely little information regarding dangers in the system. Hazards include everything from pirate bases to rogue science bases, secret corporate stations, mysterious or unknown phenomena, dangerous creatures, or almost anything else imaginable. Exploring unpopulated systems can be a potentially lucrative activity, but it should be approached with caution. While the Confederation does patrol uninhabited systems occasionally, they usually have more pressing missions requiring their attention.

Influential Worlds of M317

Worlds can be influential in several different ways. Worlds with high populations (population A) and high technology (E or F) will generally have a lot of influence. These advisory worlds of the Confederation will have high end military ships and a lot of them. They will dominate planets for a number of parsecs around themselves, and some of those worlds will be influential in themselves. These will tend to be the largest, most impressive pocket empires around. In the M317 Cluster, large pocket empires max out at around 4 dozen systems, with about 20 or so pocket empires consisting of 2 dozen or more systems.

Some worlds may have a more limited technology base but have a large pocket empire which looks to the mainworld as a source of guidance, culture, and support when things go wrong. Particularly in the periphery of the Cluster, population 8 or 9 worlds with Jump-2 technology or better may be the most powerful system in the area. In some cases there are frontier worlds which are not only independent but may have the largest GDP in the subsector and therefore the subsector is named after them. Any moderately powerful world in a less populated or less advanced section of the subsector will be a local power and may well have outsized influence throughout the Cluster because of this.

Another way to measure influence is simply by money. Large economies can essentially buy power and prestige compared to poorer systems around them. Here, a large population is very helpful as there are so many people producing so much economic output. An otherwise poor system with a huge population still has considerable economic clout as long as it has a minimum amount of technology. There may be amazing resources scattered throughout the system, but without the technology to access those resources they may as well be lost in deep space because that's essentially where they are.

There are 96 systems with a population of 10 billion or more sophonts. If the populations average 50 billion, that gives roughly 4.8 trillion sophonts or more than 80% of the total population of the Cluster.

Add in the 113 systems with a population in the single digit billions, and the total becomes more than 90% of the population. The other 90% of inhabited worlds have less than 10% of the Cluster population. The largest population systems clearly dominate everyone else in terms of income, influence, and military force.

Some systems may be quite wealthy per person, but because there are few people living there they have little to no influence in the Cluster. These worlds may be garden worlds providing food for billions in a nearby system, asteroid rich systems with abundant mineral wealth, or a Corporate controlled system which is incredibly profitable for the owners who share the wealth with their stockholders. Income is very unequally distributed in the Cluster, with small, low-tech worlds having a GDP per person of only a few thousand credits, while the richest handful of worlds make over 70,000 credits per person. Details will vary, but there is much wealth available for those willing to take risks.

Spacecraft and Technology

For a space faring civilization, spacecraft are the tool used to disseminate sophonts, goods and ideas throughout the Cluster. The most primitive spacecraft are only useful in system and cannot easily reach other systems. Jump technology (at tech level 9) is a key level that allows a race to expand beyond their own neighbors. immediate planetary While technology levels vary from primitive bronze age through to Jump-6 spacecraft, the average technology among inhabited systems across the Cluster is a bit over the Jump-1 minimum.

Each world that manufactures spacecraft does



so within its own technological limits. Constructing a starship able to use Jump engines requires a class A starport. These ports may build, upgrade or repair ships up to 1 tech level above their own with a maximum tech level of F. Systems with class B starports may build spacecraft that are not Jump capable, and can construct whole ships up to their tech level. They may repair but not upgrade systems 1 tech level above theirs. Worlds with class C starports are more restricted and can only repair ships up to their tech level (no upgrades) and can only build small craft for local use, at best. If a ship system is destroyed or is to be upgraded, class A or B starports are required. Thus a TL 10 world with a class B starport can repair engine systems up to Jump-2 (TL-11) but can only build spacecraft for in system use up to TL 10. They could fix a damaged meson bay but could not install a new one.

The Confederation military and larger pocket empires do have high tech repair tenders that can fix any type of ship no matter what the problem. These ships are very expensive to contract, however, as they have relatively large crews and must carry essential replacement parts that may weigh many tons. They are also going to be much slower than working in a repair dock with all of the necessary infrastructure present. Replacing destroyed systems typically take 2 days per MCr value of the system being replaced. As these ships are often only called in when Jump engines are offline, these repairs have been known to stretch over a year for the largest vessels. Unless the ship is especially valuable or is particularly sentimental or relevant, many navies and companies will disable key systems and 'scuttle' the ship as too expensive to repair. Such hulks, however, have been known to be recommissioned by enterprising individuals for commercial and sometimes illegal activities. A well financed, lucky pirate who comes across a scuttled capital ship could have a nasty surprise waiting for the next CNF patrol they encounter. Battleships and cruisers are expensive to operate, but not many convoy escorts are going to test their weaponry when ordered to halt and be boarded.

Temporary repairs to ships systems may be jury rigged in space, but permanent repairs require a Class C starport or better. Damaged but functional systems may have temporary repairs attempted for 1 space of spare parts and 10-60 minutes of effort. There are 12 'spaces' of spare parts per ton stored. Repairs may be attempted as many times as necessary, each costing 1 space of spare parts. Critically failed repair rolls (effect of -4 or worse) cause an additional point of damage to the affected system. Marginally effective repairs will function, but the system will have a 'peculiarity' associated with it, such as dimming lights every time a weapon is fired, a loud grinding noise when engaging the landing gear, etc. Older ships develop 'character' this way. Extending the repair time gives the standard improvement to the skill check, so extending to 1-6 hours gives +1 DM, 4-24 hours gives +2 DM, etc.

In many cases, particularly armored warships, higher tech levels can be a distinct advantage. The most sophisticated systems, however, are quite expensive and may not be needed for every purpose. An old, reliable Jump-1 trader that can be repaired anywhere in the Cluster might be more practical than a state-of-the art long range transport which can jump across half a subsector but is so expensive to operate and repair that it can't pay off its mortgage. This fact allows many mid-tech planets to have large shipbuilding industries despite not having the latest and greatest technologies.

As with every piece of equipment, spacecraft have their own maintenance requirements. Whether from battle damage, an unfortunate encounter with a solar flare, or even general wear and tear, damage accumulates and eventually causes critical systems to fail. Routine maintenance can be supplied by any class C or better starport and the tech level is not important. Once a system has taken hits, however, permanent repairs require at least a class C starport with a planetary tech level equal to the system damaged. Thus a Jump-3 starship could get their fuel



scoops repaired at a TL-8 world, but their Model 3 computer will not be repairable at the same base. High tech ships that need a major overhaul require high tech ports to repair it. Ships with destroyed systems may be stranded until an expensive jump tug is available or, in the case of a large valuable vessel, until repairs can be completed in space by a specialized tender.

Naval and Scout bases are also able to service civilian spacecraft for a price. Scout bases are smaller and less advanced, equivalent to a class B starport of TL-12, while naval bases have advanced facilities

equivalent to a class A starport that can repair through TL15. Note that while bases have the facilities to repair ships, repairs are expensive. Typically military bases require excess payments if transactions take place in credits (the ships must be desperate), but the Scouts in particular are always interested in obtaining services or information in exchange for their assistance. Private contractors are a valuable commodity to both services, and the Naval and Scout services are often willing to trade repairs for services with reliable captains. Contacts and reputations within these services are particularly valuable for obtaining repairs at bases. When dealing with questionable ships that might be smugglers or pirates, though, both CSS and CNF bases are far more likely to impound a suspect vessel than to fix it no matter the credits. Duty comes before profit.

Fuel Skimming

Hydrogen is the universal fuel for fusion powered starships. It is used both to power the grav drives as well as to inflate jump bubbles for interstellar transport. Ships equipped with fuel processors are able to use fusion power to purify hydrogen gas from several different sources. Water is a common source on more habitable planets, but water on frozen outer planets is more difficult to obtain and purify (-2 DM). The common hydrogen source in most solar systems are giant planets. These huge planets are composed mostly of gasses that are rich in hydrogen, usually with several impurities such as methane, nitrogen, carbon dioxide, etc. Protostar systems, T Tauri stars, and planetary nebulae around white dwarfs are less common but can also provide hydrogen gas if needed. Using impure fuel in the fusion reactor is not usually a problem. When making a jump, however, impure fuel makes it more difficult to jump accurately, giving a -2 DM for jumping successfully.



In order to skim hydrogen fuel, the navigator plots an orbit where the ship drops into the upper layers of the atmosphere and gas is

sucked into the fuel scoops and funneled into the fuel processors. Each successful dip into the atmosphere takes approximately 6 hours and the amount of fuel obtained is dependent upon a successful skimming task chain as described below. Shorter dips are possible, but the risks are the same whether 6 hours or 30 minutes. A ship may make as many skimming passes as they wish to refuel their tanks, but each pass requires a new task chain. Gas giants and protostar systems are best for skimming and provide 20 tons of impure fuel per fuel processor. Ice giants, planetary nebulae around isolated white dwarfs, and T-Tauri systems are less efficient and provide 10 tons of impure fuel per fuel processor.

A skimming task chain starts with an easy (+2 DM) sensors roll modified by the quality of the ship's sensor array, an easy (+2 DM) navigation roll, and then a piloting roll (+2 DM for ships equipped with aerofins, -2 DM for non-streamlined ships, -6 DM for dispersed structure ships). The effects of these rolls are added to an easy engineering (+2 DM) check to determine the overall effectiveness of the skimming operation on the table below.

<u>roll</u>	<u>effect</u>
<0	you are caught in a violent storm. Take d3 single hits to your ship and roll piloting checks until you succeed. Take d3 additional single hits for each failed roll. No fuel.
1-3	you encounter significant turbulence. Take 1 random single hit to your ship. No fuel.
4-7	your skimming pass was not very effective. collect only 1/2 the expected fuel.
8+	success. You collect the full amount of fuel.

Collecting fuel from water is somewhat different. Liquid water may be pumped through the fuel processors to collect hydrogen at 5 tons per 6 hours pumping per fuel processor (ie. water must be passed continuously through the system to extract the hydrogen). Whatever hazards exist on the chosen planet (storms, sea monsters, corrosive algae, angry locals, etc) may affect the ship. Frozen planets, even those with water on them, are not good fuel stations because it takes so much energy just to keep the water melted (-2 DM).

Jumps and Misjumps

Starships travel to nearby systems by jumping. This takes 6 days + 6d6 hours and uses refined hydrogen gas to inflate a jump bubble. More advanced jump engines can use less hydrogen per ton of ship to inflate their jump bubble making them more efficient to operate per parsec. Jump-1 and Jump-2 maximum ships use 10 tons of hydrogen per 100 tons of ship. Jump-3 and Jump-4 maximum vessels only need 9 tons of hydrogen per 100 tons of ship, and the most advanced Jump-5 and above ships only need 8 tons of hydrogen per 100 tons of ship. High jump capable ships are more efficient in their fuel usage, but that efficiency is balanced by the larger size of their engines and larger fuel tanks necessary for the longer jumps. Generally the most successful ships use their full jump multiple for every voyage, but that is often impractical. It is also difficult to find a system able to repair the highest tech systems in some regions of the Cluster.

The actual process of jumping requires a task chain of three rolls. First, a course through jump space must be plotted as a very easy (+4 DM) Int based navigation roll with -1 DM per parsec jumped and normally takes 10-60 minutes. The course may be calculated using a jump program on a ship's computer or purchased from a class C or better starport for 500 Cr per parsec to be jumped. Purchased plots are only good for 1 month, then suffer a -1 DM per month penalty. Newly purchased plots nearly always work (unless sabotaged, intentionally misdirected, virus infected, etc) with a +1 DM on the task chain. The second roll is an average Edu based Engineering (Jump Drive) check taking 10-60 seconds. The effects of these two rolls are added to an Edu based Piloting roll modified as described below. Success on the first try gives an accurate jump to the desired location which must be at least 100 diameters from any nearby body. Jump diameters for stars are determined by their gravity well rather than by actual diameter, with 1 solar mass producing a jump shadow of 140 million km based on Sol as a 'standard' star. White dwarfs are far denser; red supergiants much less dense.

If more than 1 ship jumps together, they are guaranteed to come out of jump at the same place, as determined by the largest ship's jump roll. Ships and their crew which miss a jump piloting roll have

double the effect (ie. as if they failed 2 piloting rolls). This can cause serious damage very quickly, so extra time is often taken to make the piloting roll safer.

Jump Modifiers						
+ effect of Navigation roll						
+ effect of Engineering roll						
-1 per month of outdated jump course						
-2 per Jump drive hit						
-2 using unrefined fuel						
-1 per 10 planetary radii short of the 100 radius jump limit (starting or leaving)						
-1 per 10% of the ship's jump drive regeneration time						
-1 for 2-3 ships, -2 for 4-6 ships, -3 for 7-10 ships, etc. (increases by partial sums)						

If the piloting roll fails, it is rerolled with all the same modifiers until success is achieved. The more sequential failures, the worse the result for the location as well as the jump's effect on it's crew. For each failed roll, each crew member makes an End check and counts the failures. If there are 3 failed rolls, each crew member makes 3 End checks to see how much they suffer upon exiting jump space. Note that many ships that suffer serious misjumps never return, and there are quite a few derelict starships drifting about the endless reaches of deep space. Lost ships are regularly recovered after drifting into inhabited space, and those lucky enough to find such a treasure often profit handsomely. The lost crews, however, are usually quite dead.

<u># failed</u>	ship effects	<u>crew effects</u>					
1	3d6 million km from desired location	concussion; -1DM for all skills for 1d6 hours					
2	100x d6 million km from desired location	severe concussion; -1 for all skills for 1d6 days					
3	1-3 parsecs from desired location, 1 random hit	unconscious d6 hours + severe concussion					
4	2d6 parsecs from desired location, 1-3 hits	unconscious 6d6 hours + severe concussion					
5	10d6 parsecs from desired location, 1-6 hits	2d6 damage, unconscious, + severe concussion					
6+	unknown- nobody has ever returned	bad very bad					

High Gravity Planets

A number of worlds in the M317 Cluster have surface gravities higher than 1g. For ships equipped with 2g or better maneuver engines, this is not a problem- their engines can provide plenty of thrust and only the normal challenges of landing a spaceship apply. For ships equipped with only a 1g maneuver drive, however, the drive must strain to cope with the planetary gravity well. A 5% tolerance is built into the drive, so a 1g drive can (barely) handle 1.05g surface gravity. Above this, a DM penalty of -1 to the piloting roll is assessed per 0.1g. Thus on a planet with a 1.17g surface gravity, a ship with a 1g maneuver drive has a -2 DM penalty to the piloting roll. Aerofins give a +2 DM to all piloting rolls in atmospheres, even with low power engines. If this additional piloting roll fails, 1 hit is done to the maneuver drives and a second piloting roll is required. (An emergency repair

roll by someone else aboard the ship is highly recommended.) Continue rolling until the piloting roll is successful or the maneuver drive takes 3 hits and fails permanently. If the maneuver drive fails, the ship will suffer a crash landing. Make piloting rolls until a success is obtained, but the ship takes 2d6 damage from the crash landing per piloting roll attempted (minimum of 1). For ships with 1g maneuver drives, highports or shuttle flights to high gravity planets are highly recommended to save wear and tear on the ship.

Bleeding the Easy Way

Collecting the valuable liquids of frozen hydrocarbons from 'Fluid' worlds is known as bleeding. Several skills play a role in maximizing the yield of rare liquids as



opposed to methane or other common hydrocarbon. Each week, a 10 ton mining rig can collect and process 1 unit of liquids from the planet per 8 hour shift. The higher the score, the more valuable the cargo. Each rig requires at least 1 person to run it per shift; a maximum of 3 shifts per week can use the same rig. To determine success, 4 rolls are required: 1 pilot roll (depends upon the type of vessel), 1 physical sciences and 1 sensors roll followed by 1 Bleeding roll in a task chain. Ships with the best sensors tend to find the best quality elixirs. Depending upon the gravity of the fluid world, anyone not adapted to the planetary gravity receives a -2 DM to any skill roll involved in bleeding. Any number of people may operate a rig together, but one person may only operate on 1 rig in 1 shift per week. There must also be 1 pilot per shift whose job is to keep the ship stable; their roll applies to all bleeding operations from that ship during that shift. The results of the bleeding roll (as modified by the other rolls) is determined on the table below.

mod roll	<u>effect</u>	volume (tons)	<u>Cr/ton</u>
15+	surpassingly pure elixir- the best quality you can find	1d6	5000
13-14	top quality complex hydrocarbons	1d6	3500
11-12	very good material- high purity material needing less purification	1d6	2000
10	better than average- high percentage of the rarer complex molecules	1d6	1500
9	good quality mix of complex hydrocarbons	1d6	1000
8	solid, unremarkable liquids	2d6	500
7	lower grade liquids, but usable amounts of complex hydrocarbons	2d6	250
6	low grade liquids	2d6	100
2-5	no usable material- clogged intakes and needed regular cleaning	0	0
1 or less	1d3 damage to mining equipment; each operator roll 8+ on remote operations or take 3d6 damage from a catastrophic failure	0	0

Ships and equipment may operate as long as they have fuel, supplies, and cargo room. Maintenance rolls must be made monthly. Each full month of delayed maintenance gives a -1 DM to the bleeding roll, and mining equipment starts failing after delaying 2 work-months. Damaged mining equipment

may be jury rigged, but each month the temporary repairs may fail. Full repairs will require a Class C starport or better. A mining system that suffers 3 points of damage is destroyed and must be replaced at a Class B or better starport.

Belting the Easy Way

Similar to bleeding, belting is extracting valuable materials from asteroids. The minerals differ, but the same general approach applies for all belts. Each week, a 10 ton mining rig can collect and process 1 unit of asteroid per 8 hour shift. The higher the score, the more valuable the cargo. Each rig requires 1 person to run it per shift; a maximum of 3 shifts per week can use the same rig. To determine success, 4 rolls are required: 1 pilot roll per shift, 1 physical sciences and 1 sensors roll followed by 1 belting roll in a task chain. As much of belting takes place in zero-G, belters without any zero-G score have a -3 DM penalty and (zero-G skill +1) sets an upper bound for any skill roll other than piloting. Any number of people may operate a rig together, but one person may only operate on 1 rig in 1 shift per week. There must also be at least 1 pilot per shift whose job is to keep the ship stable; their roll applies to all belting operations from that ship during that shift. The results of the belting roll (as modified by the other rolls) is determined on the table below.

Ships and equipment may operate as long as they have fuel, supplies, and cargo room. Maintenance rolls must be made monthly. Each full month of delayed maintenance gives a -1 DM to the bleeding roll, and mining equipment starts failing after delaying 3 work-months. Thus after 1 month of working 3 shifts per day equipment starts breaking down. Damaged mining equipment may be jury rigged, but each week the temporary repairs may fail. Full repairs will require a Class C starport or better. A mining system that suffers 3 points of damage is destroyed and must be replaced at a Class B or better starport.

<u>mod roll</u>	<u>effect</u>	<u>volume (tons)</u>	<u>Cr/ton</u>
15+	high quality radioactive ore- the best stuff you can find	1d6	5000
13-14	rare metal ores- very valuable and hard to find	1d6	3500
11-12	very good metal ore- high percentage of desirable metals	1d6	2000
10	high quality metal ore	1d6	1500
9	minerals with reasonable metal content	1d6	1000
8	decent quality minerals but low metal content	2d6	500
7	half ice*, but usable amounts minerals	2d6	250
6	dense ice* usable as unrefined fuel	2d6	100
2-5	no usable material- clogged intakes and needed regular cleaning	0	0
1 or less	1d3 damage to mining equipment; each operator roll 8+ on remote operations or take 3d6 damage from a catastrophic failure	0	0

* If the asteroid belt is in the inner solar system, ice is treated as no usable material. If half ice, treat as 2d6 tons of 125 Cr/ton raw material.

Hazards of Mineral Extraction

Bleeding and belting involve a lot of time being cut off from support and away from immediate help. Bleeding is more physically hazardous as many vessels cannot handle the fluid ocean environment very well. Storms are a common issue, and hydrocarbon typhoons are beautiful to see and deadly to encounter. Corrosive or insidious gasses can accidentally be released into the ship, and having a medic on board is an expensive luxury for small scale operations. Fortunately bleeding activities are confined to a single planet which may be patrolled more easily than an entire belt. Perhaps the most dangerous time is the trip from the planet to an orbital station rendezvous with a mothership. Pirates can lie in wait to either steal the entire ship if it is a small craft or pump out the cargo before help can arrive. Bleeders, particularly small scale independents, live life on the edge.

Belters have their own issues to deal with. Not only do they have the standard dangers of space, but because asteroids are very spread out it is almost impossible to patrol a belt closely. If they run into a

pirate, there is usually nobody nearby who can get to them in time. Even when a ship does respond, pirate vessels don't have to travel far before they can jump out of the system so there is very little time to actually catch the thieves. Zero-G operations are always more challenging than planetary activities, and accidents are all too common. Mechanical problems or collision with even a modest size rock can be lethal and a ship focused on processing ore doesn't dodge well. As belters often have to travel fairly long distances for resupply, they often push the limit of their fuel and supplies to spend as much time as possible actually in the belt.

"Claiming that the destructive practice of mountaintop removal mining, blowing the tops off mountains to get at the coal beneath, performs the "necessary" function of creating flat land for development. To tear treasure out of the bowels of the land was their desire, with no more moral purpose at the back of it than there is in burglars breaking into a safe. "

Joseph Conrad

Depending upon the law level and government type a system has, resource extraction laws vary dramatically. A small system with low technology and a low law level may not even care if a belt is being mined, while higher law systems may have a detailed permitting process that takes 6 months and many admin rolls to navigate the myriad twists and turns of the bureaucracy. Most space faring systems tax mineral extractions, but the rate of taxation will vary. At the very least they will collect the tithe for the Confederation. Some systems will use the taxes to support security patrols and installations that benefit bleeders and belters. Other systems will simply use taxes as a means for extracting money from the workers to support a wealthy elite who oversee the extractions, whips in hand. The Confederation lets systems police their own resources as long as they receive their share of the proceeds.

Ancient Technology

The Mega-Jump gate is not the only piece of old technology found in the M317 Cluster. With a documented history going back hundreds of millennia, countless races have risen and fallen over the course of time. Several races have discovered ruins of various technology levels, and a number of races have used the

"Professor of Archaeology, expert on the occult and...how does one say it? Obtainer of rare antiquities. "

Major Eaton Raiders of the Lost Ark

devices discovered to propel their own sciences forward. For the most part, though, the known devices are similar to what can be constructed today with the right equipment. They may have done

things differently and used somewhat different approaches, but only 3 races or 'schools' of devices have consistently surpassed the current maximum level of technology in the Cluster.

MJ tech seems to be the most advanced, and is related to the builders of the Mega-Jump gate. This society was prevalent approximately 300,000 years ago and is estimated to have a tech level of approximately 23, but what happened to them is unknown. Just like today, not all MJ devices used the highest technology, of course; they do, however, share a blocky aesthetic and tend to lack obvious controls. It is theorized that the race who developed the MJ tech was psionic, but that is mostly conjecture as even psionics have been unable to operate many of the objects so far discovered. They were clearly scaled, however, as one of their devices is an electrostatic cleaner that removes dirt and oils from scales but burns most skin or fur and positively destroys feathers. The general technique used is mostly understood, but the megacredits needed to build and maintain the machinery needed to duplicate the technology is not going to be economical anytime soon. Various other artifacts are known to exist, but most are either inoperable or highly secret.

The Tadinuish, named after the first ruins in the Tadinux system where their technology was discovered, existed about 450,000 years ago and reached approximately TL 20. Their devices are probably the most like what are used today, and much of what is known about synaptic computers is based on damaged specimens from their time. This serves as a warning as well- the Tadinuish apparently fought a massive war against an AI overlord who worked to enslave all intelligent beings. The sophonts won, but society was so damaged that their civilization crumbled as they rejected computer technology but had no effective substitute.

The only other beings who surpassed current tech levels were the Triegans/Preravilans. They lived almost exclusively underground in large cities and preferred hot to roasting planets with relatively little surface water. Skeletons from the 2 known installations place them at roughly 80 cm tall, with 4 radially symmetric arms/feet with very dexterous 4 fingered hands at each end, and each city identified so far had millions of bodies. They were masters of solar energy, and modern panels are entirely of their origin. They achieved TL 17-18 approximately 90,000 years ago, but died out rapidly from some form of mutated nanovirus. They used robots for many purposes and preferred designs that mimic their quadraradial symmetry. None of their robots used synaptic technology, however, and while their skills were perhaps more limited than those available in today's advanced models, they built robots that lasted. Several working designs have been identified and have been heavily researched for new alloys and self-repair systems.

Any ancient technology is valuable, and a single item can fund a lifetime of leisure. The technology can also be deadly, as the discoverer of the MJ anti-matter powerplant learned the hard way. Recovery workers were able to identify the type of device based on subatomic signatures measured after studying the destroyed research vessel, the shattered asteroid it was on, and the 14 lethally irradiated ships which happened to be nearby. Be warned.

Robots and Augments in the M317 Cluster

The Cluster is such a large political unit that it is impossible to speak of a single attitude toward robots. Some worlds do not have the technology or interest to support robots at all, making the

question moot. Others systems may enjoy developing and using advanced technology. 'Gearhead' races in particular have a strong affinity toward robots and can be counted on to have some of the most advanced models. Laws within the Pansophantic Assembly are quite specific that robots, including the highest high synaptic brain models, are considered property and do not have the rights of sophonts and may not petition the Advisory Council for slavery or any other 'crime'. Individual worlds within the Cluster may give a different status to robots than those enforced by the Magistrates and CNF, but they are in the minority and are expected to follow Confederation law regarding the possession and seizure of property. CNF policy is to support the property owners, but robot 'rights' is not a pressing issue for the military overall. The robot programmer and/or owner is responsible for any and all actions carried about by even highly intelligent robots.

This does not prevent there from being different points of view on robots, however. Senticients, those who believe that sentience is the goal of the Universe, strongly support sophisticated robots as unique sentients that deserve protection. Some cultures will go so far as to help smuggle robots who wish to leave their owners to worlds where robots are given more rights. It may be illegal, but that by itself is not sufficient to stop some people. An analogy would be the Underground Railroad in the United States before the Civil War. While technically illegal and despised by slave owning states,

many citizens in the North tolerated or tacitly supported this organization as it smuggled slaves to 'free' states away from the South.

Conversely, there are some worlds that ban robots entirely or refuse to allow them to operate beyond a certain tech level (typically synaptic technology is the cutoff point). Some worlds had a bad experience with synaptic technology, a deadly rogue android, or some other calamity which soured the people

"I am the culmination of one man's dream. This is not ego, or vanity. But when Dr. Soong created me, he added to the substance of the universe. If, by your experiments, I am destroyed, something unique, something wonderful will be lost. "

> Lieutenant Commander Data Star Trek: The Next Generation

towards robotics. There have been cases where booby-trapped robots have killed thousands, or an assassin droid managed to sneak through the best preventative measures to kill a beloved influential (but inconvenient) politician. Moderate worlds will typically fine captains for bringing autonomous high tech robots to a planet where they are illegal. Imports to a system with extreme restrictions against robots are typically destroyed by the authorities and the smugglers imprisoned for their reckless behavior.

Attitudes toward cybernetic or genetic augmentation are just as variable across the Cluster. Medically necessary augmentation is the most tolerated. Prosthetics are unfortunately common given the dangers of space and modern military combat. Luckily regrown tissue is difficult to distinguish from natural growth. Genetic enhancement, however, varies greatly in its acceptance. Some societies reject it utterly, while others are more concerned with the purpose of the augmentation. Developing improved pathogens or biowarfare weapons will attract the attention of every naval vessel in the subsector (and probably beyond). Cybernetic enhancements are very common and highly desired in some societies, but obvious mechanical enhancements will be a mark of shame on other worlds. The more extensive and obvious the changes are, the more discrimination a sophont will experience in worlds that oppose such modifications.

Scientific Research

While combat is common among travellers, scientific research is a much safer and more regularly practiced activity among the sophonts in the M317 Cluster. Despite the many advanced instruments and cultures there is always the damaged alien relic to analyze, the MIRA variable star to study, or the sociological implications of technology transfer to consider. Dedicated lab facilities are available on most worlds and even some ships specifically for these purposes. The quality of the lab, their specialization (if any), and the tech level of the instruments all affect the chance of success. A biology field researcher without a mass spectrometer will not be able to analyze isotope abundance in the wild. Similarly, a TL15 lab may find it easy to extract information from a meson communicator while a TL9 lab would have to figure out what a meson is first.

Straightforward scientific tasks may be undertaken with a single task roll. Larger projects, however, may take multiple rolls or a variety of different skill checks to accomplish the final goal. Interim achievements may mark progress toward a goal, and repeated failures may cause a regression so that some intermediate must be retested and recalculated. The difficulty and time scale of a project should be determined secretly by the referee and revealed to the players indirectly. While they may not know if a particular problem requires an effect of 3 or 5 to answer, they should realize that designing an anti-matter power plant is a massive undertaking best left to experts.

Science has many disciplines, and in the Cluster they are broken down into 4 main skill specializations: life sciences, physcial sciences, social sciences, and space sciences. Social sciences gain bonuses when they have libraries available; the other 3 specializations use laboratories. General purpose labs allow research to take place without penalties; specialized labs give a +1 DM within their field and no help outside of that area. More advanced labs are available at TL 12 (C) which give +1 for general research or +2 in their specialized field at twice the cost. Field instruments may allow research to take place in particular areas, but a fully equipped lab will always be better and faster than portable instruments.

In the far future, science means something different than it does to a developing society. Sophonts of the M317 Cluster know from an early age that there are peoples who came before and had surpassed the highest technology of modern times. In many cases it is not about finding something new, but rather developing a new mindset or interpreting old technology. There are absolutely 'discoveries' which are known nowhere else in the Cluster, but given the vast difference it technology today vs. the Old Races it is very likely they had equivalent technology. That is not to say that megacorps and planets are not interested in gaining an advantage- far from it. The sense of KNOWING that something is possible gives many researchers a drive to explore that someone who only thinks they know what is going on cannot equal.

Chapter 4: Sophonts and their Way of Life

Time and Distance

Jump travel reduces the time it takes to travel between 'close' systems to about a week and sets the maximum travel time between any 2 planets in a system. Jumps between distant companions are almost always the fastest way to reach companion systems. In system jumps are expensive, though, and class B spaceports can only build non-jump capable craft. Direct travel and communication within a system are limited by the speed of light and the laws of motion. It may be more cost effective or technologically more practical to use standard M-drives to go from planet to planet, necessitating a slow trip. Travel time between 2 places in normal space is given by t=2*sqrt(d/a), where t is the time (generally in seconds), d is the distance to be covered (generally in meters) and a is the acceleration (usually m/sec²). For acceleration, maneuver drives measure thrust in standard gravities defined as 10 m/sec², so thrust-2 is 2g or 20 m/sec². Because planetary orbits are mostly circular and the average location is therefore the center, the time it takes to travel to the star from the most distant planet (ie. the far planetary orbit) is a good approximation for the average distance between planets. (Purists are welcome to determine the exact location of each planet in their orbits and then their distance from each other.) To calculate travel time using a faster ship, simply divide the number of hours it takes by the square root of the thrust. Travel can still be quite slow, however, and keeping the travel time low may be what keeps a small transport company in the black.

Asteroid belts provide a challenge to determine distances between particular bases. Because they all orbit at approximately the same distance from the star, using an approximate distance of 0 is clearly not acceptable. Three potentially reasonable solutions: 1) assume an average distance to the star is the distance between bases; 2) the referee assigns the angular location on a circle where an asteroid lies in relation to other asteroid bases, and then the travel distance becomes $2r^s \sin (\theta/2)$; or 3) define an arbitrary lag of 10^* (orbit number)+2d6 hours between any 2 outposts for a thrust 1 vessel. With this third method, any 2 outposts in the Sol system asteroid belt would be $(10^*5)+2d6$ hours apart. For all 3 methods, simplicity is the enemy of accuracy. (The author tends to favor solution 1 as a reasonable mix between accuracy and simplicity.)

Even using advanced technology, radio and meson communication is still limited by the speed of light. While planetary data nets provide nearly simultaneous communication anywhere on the surface, it takes minutes for a radio signal to travel between two close planets, and can easily be hours for more distant worlds. To calculate the time it takes, t (in seconds) = d/c, where d is the distance and c is the speed of light (in the same units as distance). For two planets 30 million kilometers apart, t= $3x10^8/3x10^5 = 1000$



seconds, or more than 16 minutes one way. It only gets worse for distant planets. This severely limits the resources one can easily use in more remote areas of solar systems, and even searching a planetary archive at a secure location from another world will take a few hours for any results. Even a short 'lag' would make something like remote surgery incredibly dangerous. Video gamers hate even a few hundred milliseconds of lag which severely impacts survivability and playability, so artificial intelligences are critical for automated ships or stations to avoid lag and be practical in daily operation. Companion star systems often have high bandwidth communications between the stellar neighbors, but a 3,000 million kilometer distance (100x the close planetary one) gives 100,000 seconds or nearly a 28 hour delay.

The limits on communication and travel time to reach other planets create a dangerous situation which vexes most systems in the Cluster. Worlds are quite spread out and travel time between planets is typically measured in days. Therefore each important location in a system requires its own significant defensive bases and weaponry that can be used on short notice. The larger and more important an outpost is, the more likely it is to have substantial defenses. Less important outposts such as mining bases and small research stations are thus easy to overwhelm by even a modest strike force. If the limited defensive forces are spread too thinly around the system, however, a large strike force might be able to devastate a key world in the system and dramatically change the balance of local power. Offensive potential is thus critical and retaliatory threats are perhaps the only thing keeping two systems from coming to blows.

For outlaws and pirates, these circumstances present an optimal situation. Even if a system knows that a pirate ship is in orbit around a gas giant, there may be nothing they can do about it in the near term. A ship in distress or under attack can be too far away from help such that attackers can take their time stripping a ship bare knowing that nobody can catch them. For ships jumping in to reach a particular outpost, pirates could be waiting at their destination to take their cargo if they have accurate information beforehand. Since common jump drives have a 24 hour minimum recharge time, even having enough fuel to jump again quickly isn't sufficient protection against this strategy.

Larger and richer worlds try to combat the time-distance problem by jumping ships around the system randomly so that surprises can work both ways. CNF naval actions are often about catching pirates unaware, and so if they have information in advance about where pirate ships may be headed, the pirates might get a far warmer reception than they were expecting. Information, particularly departure and next port-of-call information, is worth a lot to the right people. It is also why military first strike vessels often have fast cycle jump drives and multi-jump fuel tanks- if their destination is somehow learned by spies they may be able to survive long enough to jump out of the system before they are caught and destroyed.

This travel time conundrum is also why ships are not only expected but required to respond to distress signals if at all possible. In many cases there simply will not be any other ship close enough to make a difference. Relying on the authorities to respond is inviting a potentially fixable problem to become a life ending crisis. Aid provided to other ships is typically compensated by the vessel being helped. Pirates faking a distress call, however, tend to take rather than give. Nevertheless, failing to

respond to a distress call will usually get a ship and her captain barred from future business in the system.

Major, Uplifted and Minor Races

Major races in M317 are found on dozens or hundreds of worlds in the Cluster but do not have an identified homeworld nearby. These races are scattered throughout the Cluster but will tend to live in environments that best fit their physiology. Avians prefer smaller, low gravity worlds with

"I believe alien life is quite common in the universe, although intelligent life is less so. Some say it has yet to appear on planet Earth." *Stephen Hawking*

denser atmospheres to support their flight, while merfolk avoid desert systems, etc. None of these races have identified evolutionary origins within the Cluster. Humans are by far the most numerous race in the Cluster and can be found in substantial numbers in over 80% of inhabited systems.

Uplifted species are those which have been genetically altered from a base species by another race. Uplifted races do not have a homeworld of their own as they did not evolve naturally. Because of this, they tend to be organized into colonies that exist on various worlds in the Cluster. Perhaps due to some ancient bias, creatures from Earth are particularly common among the uplifted races. Uplifted individuals are generally found near breeding clusters of their species or as crew of visiting spacecraft. They typically do not make up a majority of any densely populated planet's population, but uplifted species can be the primary sophonts of low population frontier worlds where they settled as a group.

Minor races in M317 are races which evolved on a homeworld within the M317 Cluster. They may be the majority race on a few worlds, but their population is clearly centered in a single portion of the Cluster. Some minor races may not be technologically developed and therefore trapped on their planet of origin, while others have adapted well to technology and taken to the stars along with dozens of other races. Wotethids, for example, can be found on over 100 worlds and have a net population well over 100 billion. The number of individuals varies depending upon their environment, their lifespan, and many other characteristics unique to the race, but in all cases they are considered full citizens of the Confederation regarding population, tithe, and military service. On larger cosmopolitan worlds it is very common to find significant populations of several different alien species. While many are not particularly common, there are over 70 distinct races found within the Cluster. Highly populated systems can easily have small groups of any species which are not numerous enough to appear in the system population data.

Humans are the majority species in M317 and are the baseline to which all species are compared. They are quite adaptable, and are known to live on dramatically different worlds in terms of climate, atmosphere, and hydrology. While humans easily interbreed with other humans, there are many ethnicities and subspecies which are culturally and sometimes physiologically distinct from one another. Note that these human ethnicities separated long before the discovery of the Mega-Jump Gate and the Unification Wars that followed. While human ethnic tendencies still exist to some extent, none of the worlds which survived the Unification Wars did so unscathed. Ethnic differences are less important today because of the Pansophantic Council, but societal norms and cultural taboos can and often do cause excessive tension and sometimes violence when a deeply held belief is violated.

Merfolk (*Homo aquaticus*) are a major race genetically derived from humans in the distant past. They have been engineered to have gills as well as lungs and are fully capable of living in both water and standard atmosphere although they always depend on having water available. Merfolk strongly prefer worlds with a high percentage of water on them to live, but use well developed wet-suit technology which allows them to live safely in terrestrial environments. Merfolk wetsuits are available at TL 6, cost 150 Cr, weigh 1 kg, and provide adequate exposure to water for up to 1 week before needing to be cleaned/recharged. Extremist groups such as Humaniti despise merfolk as being subhuman mongrels; merfolk extremists tend to respond by drowning their troubles.

Espers (*Homo psionicalis,* sometimes *homo superioris*) are closely related to normal humans, although their origins and ancestry are not clear. Espers are psionically active individuals found among all strains of humans who appear normal except for a stronger mental signature in neural activity scanners. Discriminated against in the Milky Way, many Espers came through the Mega-Jump gate in order to live safely and develop their psionic powers more fully. While not exactly trusted by normals, Espers in M317 are more of an accepted part of life in the Cluster and there are laws and technologies developed specifically for their abilities. They are relatively rare, however, and are very practiced at hiding in the general population when they wish. Because many systems discriminate against Espers is nearly impossible to get an accurate count of Espers in the Cluster.

As with any group that has powers beyond the norm, some societies blatantly discriminate against psionically active sophonts (human or not), while psionic minor races feel more at home with Espers than normal humans. Reptilians notably reject Espers, and there are a number of psionically resistant or immune races which never develop Psi powers and are difficult to affect psionically. Espers are able to interbreed fully with normal humans, and some Espers claim that all humans have innate psionic

"In the first three years of life, the foundations of physical and also of psychic health are laid. In these years, the child not only increases in size but passes through great transformations. This is the age in which language and movement develop. The child must be safeguarded in order that these activities may develop freely." *Maria Montessori*

abilities and it is only their cultural fears which inhibit their full development. Other Espers, however, consider 'normals' to be essentially mentally retarded and inferior to their more evolved brethren. These Espers tend to manipulate and dominate normals, thus encouraging all of the negative stereotypes regarding psionics in general.

Insectans are perhaps the most alien of the Major Races, certainly by appearance. Quick and agile, Insectans have an armored carapace that provides 1 point of natural armor and they speak in a high pitched voice that can be difficult for humans to understand. They are also socially connected to their society in a way which most other species are not, where the good of society is more important than any individual's happiness or well being. There are exceptions to this behavior; those individuals tend to be more traveled outside of Insectan communities and are not trusted by other Insectans. Instead of social standing, Insectans use a different stat called Caste. Caste refers to their standing within

their gender (sterile male/female or fertile male/female) and determines who might be a respectable mate for a particular individual. Insectans who do not place society higher than the individual are Outcaste (Caste=0) and are not considered part of Insectan society or permitted to mate. Outcaste individuals are exiled as dangerous traitors by other Insectans and are typically forced to live with other sophonts or are driven insane by the level of racial rejection. Caste otherwise denotes social ranking as usual, and lower caste individuals defer to the higher castes. Because of their hive mentality, if Insectans are found in numbers on a world they will generally make up at least 20% of the population. Insectans also prefer tainted atmospheres; for Insectans, treat tainted atmospheres as standard (ie. no filters required) and standard atmospheres as tainted. They also tend to prefer drier worlds with less than one third surface water.

Reptilians are a race of carnivores who love nothing better than to hunt dangerous prey. They are most at home on warm worlds with at least 40% water, with jungle being their ideal habitat. They are physically strong and quick, but do not have the endurance that other races often have. They have a natural shield against all forms of psionics and consider Espers in particular annoying and disgusting individuals. They will regularly use weapons targeting psionics as their own people are immune due to their natural shields. Reptilians prefer warm, moist worlds with jungles and they tend to avoid worlds with cold temperatures. They function well at higher gravities due to their notable strength, but can adapt perfectly to lower gravities as well.

Avians are small, warm blooded fliers with very low strength and endurance but nearly unbeatable dexterity. Amazingly quick, their ability to fly gives them outstanding spatial awareness and they make some of the best pilots in the Cluster. Avians strongly prefer low gravity worlds with standard or denser atmospheres where they are able to take advantage of their wings. While not tied to the air as Merfolk are to the water, the sheer freedom of flying is a natural joy to avians. For visiting higher gravity worlds, particularly those with dense atmospheres, richer avians will wear a low-power grav belt (TL12, 25,000 Cr, weighs 2 kg unpowered, 12 hr battery) which will allow them to fly despite the gravity. This capability often surprises denizens of those worlds as flying is not a common means of locomotion above 1.2 gravities.

Uplifted Species

Genetic engineering has created many different adaptations in the far future, much to the dismay of racial purists. One of the most common manipulations is the maximizing of intelligence for a given species. If the original base species is fairly intelligent (on the animal scale), it is not too difficult for advanced stellar empires to increase that base to the levels of a sophont. Several uplifted species are extant in M317. Some extremists despise uplifted species on principle and consider them no better than animals. Naturally this provokes a hostile counteraction among uplifted species against those

views. Unfortunately Humaniti is the largest racist organization in the Cluster so all humans tend to be more suspect in the eyes of uplifted species until proven otherwise.

Uplifted apes were originally developed as enforcers or soldiers, but their limited skill

"We are not angels, we are merely sophisticated apes. Yet we feel like angels trapped inside the bodies of beasts, craving transcendence and all the time trying to spread our wings and fly off, and it's really a very odd predicament to be in, if you think about it." *Vilayanur S. Ramachandran* sets prevent them from ever becoming highly skilled professionals. They are often found as muscle or bouncers, though. They have notable strength and endurance (2d6+2) as well as thick fur and fat that gives them +1 natural armor, but weak dexterity, intelligence and social standing (2d6-2). Apes are gendermorphic, where males stand 130 +10d6 cm tall and mass 130+10d6 kg and females are about 1/2 that size (80+8d6 cm and 70+8d6 kg). Both genders mature at age 18 and start aging at 34 (4 terms). They all have improved reach due to their unusually long arms and are resistant to fear.

Uplifted dolphins are aquatic, air breathing mammals who are powerful in the water but lack the manual dexterity and fine manipulation skills that would allow them to thrive in a technological society. They are highly social creatures but depend upon others for technology. Dolphins are deep divers and natural swimmers (swim 12m and can put on a burst of speed), but have no land movement due to their fins and have a racial fear of fire (average Int roll to overcome or be at -2 for all actions near or involving flame). They have notable strength and endurance (2d6+2), but weak in intelligence, dexterity, and social standing (2d6-2). They mature quickly starting at 14 years and begin aging 3 terms (12 years) later with a -1DM aging modifier. Dolphins mass 22+4d6 kg and are 100+4d6 cm long (on the small side overall). Surprisingly, uplifted dolphins and merfolk tend not to trust each other, perhaps fearing another race adapted to life in the water as a competitor for living space.

Uplifted felines are one of the more attractive uplifted species. Somewhat smaller than humans at 110 + 6d6 cm and 40+3d6 kg, they have short and pointy upturned ears, a layer of short, soft fur which covers their entire bodies, and a movable but very weak and non-prehensile tail. They are quick (Dex 2d6+1), but are indifferent to study and learning in general (2d6-1 for Edu and Int). They do, however, have the following traits: Alertness (+2 rolls for observing or hearing something), Athletic (+2 racial bonus to athletics rolls), low light vision, uplifted, and a Racial Phobia about Open Water (average Int check or -2 on rolls when functioning near, above, or under a large quantity of water). Felines tend to be very independent creatures and difficult to impress, but they can form close friendships with sophonts who treat them well. They are often aloof, but they are rarely surprised and do not like being manipulated. They mature faster than humans, starting at 14 and have 3 terms (12 years) before aging starts, with no DM modifier of their aging roll.

Uplifted mongoose are tiny in size (7+1d6 kg and 42+1d6 cm tall) and somewhat insecure about their stature. They are fast for their size (4.5 m), but considered slow overall because their legs are simply too short. They have very weak strength and endurance (1d6 each) but are clever (2d6+1 intelligence), quick (3d6-1) and generally looked down upon (2d6-1 social standing). They have a natural weapon (teeth, 1d6) and a very acute sense of smell beyond human norm. They mature quickly at age 10 and start aging at 18 (2 terms) with a -1DM on their aging roll. As a species they are very aggressive and intolerant, overreacting to the slightest provocation (particularly regarding their size) and receiving a +2 initiative due to their quick temper. They are natural bullies, and despite their diminutive size they won't back down from a fight.

Minor Races

Minor races cover a very broad range of sophonts, ranging from photosynthetic organisms which can manufacture their own air supply to 400kg carnivorous behemoths that barely fit into an average starship stateroom. There are 77 currently living minor races which all have homeworlds somewhere

within the M317 Cluster. Depending upon their numbers and racial inclinations, each race lives on one or more worlds within the Cluster. Some races exist on only one world, while others have expanded to dozens of worlds with numbers equaling major races. Homeworlds are distributed very unevenly around the Cluster, with some subsectors having no indigenous sophonts while other subsectors have several different homeworlds. Life has evolved on worlds with a variety of conditions such that nearly any planet can make a fine home for one race or another in the Cluster.

So far, no system has produced more than one co-existing intelligent race naturally. There is abundant evidence on many planets, however, that intelligent life has developed multiple times over many millennia. Indeed, several races have developed technologies based on earlier races. While there is no explicit evidence that two developing sophont races create an incompatible environment, there are also no examples of two races developing in the same system at the same time.

The Pansophantic Council is very clear on the fact that all sophonts, no matter their numbers or technology level, deserve protection as a race. As such, genocide, enslavement, or any form of racial exploitation in the Cluster will result in the active engagement of the CNF as soon as ships can arrive. The Humaniti religion (described below) avoids confrontation with the CNF because they claim only to want human rulership, not enslavement or genocide per se. While many officers in the CNF scoff at such claims, Humaniti has managed to win Advisory Council acceptance of their activities despite some vocal objections by representatives of other races.

M317 Minor Races

Each race has its own unique combination of attributes and characteristics which affect how extensively they are distributed as well as their interactions with other races. Races with higher populations, higher tech levels, or more xenophillic personality spread out further than those without the technology for jump travel or a cultural aversion to novelty. In addition, some races are more restricted than others due to physiological limitations of the race. Within their region of the Cluster, minor races may outnumber any of the major races, including humans. The table below lists the various alien races and several of their key characteristics.

<u>Name</u>	<u>X</u>	<u>Y</u>	<u>worlds</u>	<u>TL</u>	<u>size</u>	<u>move</u>	<u>gravity</u>	<u>breathe</u>	<u>temp</u>	<u>armor</u>	<u>PSY</u>	<u>weapons</u>
Agquatcid	3	7	11	9	small	3 land	norm	taint	warm	0	norm	none
										regen		
Aidyazian	8	5	1	8	avg	6 land	v low	air	cold	0	anti	imp reach
						6 climb						
Antenoid	8	4	1	8	avg	9 land	norm	air+taint	hot	0	norm	none
Arehonid	1	6	1	9	avg	6 land	norm	air	v cold	0	norm	none
						6 climb				regen		
Ayeithpid	2	2	1	5	avg	6 land	v low	air+trace	warm	0	norm	teeth
						12 swim						
Azeianid	3	4	1	3	avg	9 land	high	taint	cool	0	norm	hoof, teeth
												stench
Bangesan	6	8	2	С	avg	6 land	norm	taint	cold	0	norm	imp grab

Cluster Minor Races
Binryezoid	8	8	1	9	small	4.5 land	low	air	cold	1	norm	none
Budoxian	5	6	10	9	avg	6 land	low	air	temp	0	norm	imp grab acid spit
Chiretwhian	10	5	1	6	avg	6 land	low	air+trace	temp	0	norm	none
Copelian	7	4	1	8	avg	9 land	v low	air	warm	2 regen	anti	none
Cromodan	10	2	15	D	large	9 land	norm	air	temp	1	norm	stench
Danhonfrian	3	2	1	8	avg	6 land	v low	air+trace	temp	0 fragile	norm	blindfight
Eatavepan	4	6	1	9	small	4.5 land	v low	air	cool	0	norm	none
Eenohan	6	3	1	7	avg	6 land 12 swim	norm	air	cool	0 regen	norm	none
Egebanian	5	4	5	9	avg	6 land	low	air+trace	temp	0	resist	blindfight
Etledestoid	4	5	1	9	small	0 land 12 fly	v low	air	temp	0 heal	norm	none
Fadzoid	7	3	1	9	avg	6 land	v low	taint	cold	0 heal	norm	none
Fanfoguid	8	3	1	6	avg	6 land	high	air	v cold	0	anti	imp reach
Febwopbian	6	5	13	В	avg	6 land 6 climb	norm	air	warm	0	norm	imp grab
Fethattan	3	4	11	Α	avg	9 land	v low	air+trace	temp	0	norm	acid spit
Fobtarmid	5	1	14	Α	avg	6 land	norm	air	v cold	1	norm	none
Fotdosuid	6	3	10	С	avg	6 land 6 climb	low	taint	temp	0	psion	none
Funlavsluid	4	5	3	С	avg	6 land	v low	air	v cold	0	norm	hoof, teeth
Gnesedwid	4	4	7	9	small	4.5 land 6 climb	norm	air+taint	cool	1	norm	none
Hagemian	10	4	1	A	avg	9 land	high	taint	hot	2	norm	none
Hoonicpid	5	1	2	A	avg	6 land 12 fly	low	air	temp	1 heal	norm	thrasher
Hozinlid	6	6	42	Α	avg	6 land	norm	air	cool	0	psion	bio shock
lckpewtan	1	4	33	Α	avg	6 land	low	air	cool	0	norm	none
Kinripid	5	8	19	9	avg	6 land	norm	air	temp	0 fragile	norm	claws
Letuxan	3	4	6	A	avg	6 land 6 climb	norm	air	v cold	0	norm	none
Lipithslid	9	4	1	Α	avg	9 land	high	air+taint	warm	2	norm	imp grab
Mesmoid	5	5	1	6	small	7.5 land	norm	air	temp	0	norm	none
Mintustoid	10	5	1	8	avg	12 land	v low	air+taint	cool	0	norm	thrasher
Mobfunid	1	1	2	Α	avg	12 land	low	air	temp	0	psion	none
Mobocan	8	3	1	С	small	4.5 land 9 fly	low	air	cold	0 fragile	anti	none

Napdoan	7	4	3	C	avg	6 land	norm	air	hot	0	norm	none
Nevedian	4	5	23	A	large	0 land 18 swim	norm	water	cool	2	norm	none
Nospetewan	9	5	3	9	avg	6 land	high	air	cool	0	norm	none
Noxpidchan	6	7	1	6	small	9 land	norm	air	hot	0	norm	imp grab stench
Onefedian	10	2	2	C	avg	6 land	norm	air	cold	0	norm	none
Onvitendan	3	5	2	A	avg	9 land	low	taint	temp	0	resist	blindfight
Paizoodan	3	5	1	5	avg	6 land 12 swim	low	air	v cold	0	norm	none
Pidfunid	9	7	13	С	small	4.5 land	norm	air	hot	0 fragile	norm	imp grab
Pidravid	4	1	1	9	avg	6 land	v low	taint	cold	0	resist	none
Pigran	5	7	5	F	tiny	4.5 land 7.5 fly	v low	air	cold	0 fragile	norm	none
Pilranwoid	1	2	1	8	avg	6 land	high	taint	warm	0	norm	none
Plivenan	7	7	11	D	avg	6 land	norm	air	cold	0	anti	bio shock
Podireethan	9	3	1	6	avg	6 land 12 swim	norm	air+ water	v cold	0	psion	none
Podockan	3	7	1	5	avg	9 land	norm	air	v cold	0	norm	none
Podzalan	5	5	1	7	avg	9 land	norm	air	temp	1	norm	none
Rammawan	6	6	3	9	tiny	3 land 6 fly	v low	air	cold	0	norm	none
Rimzalmid	4	6	9	A	avg	6 land	high	air	temp	0	norm	bio shock
Rinlinman	9	1	1	9	avg	6 land	v low	taint	hot	0 regen	norm	none
Rolrusan	1	8	2	A	avg	6 land	high	air	warm	1	norm	none
Rotentid	7	4	8	A	avg	9 land 18 swim	high	air+ water	cool	0	norm	none
Ruploid	6	6	1	9	small	4.5 land	v low	air+trace	cool	1	psion	thrasher
Sepapetid	7	8	3	В	avg	6 land 12 swim	low	water	warm	0	resist	imp reach
Serfeboid	3	5	3	С	tiny	3 land 6 fly	v low	air	v cold	0	anti	none
Shenatoid	4	3	48	A	avg	9 land	v low	air	cool	0	norm	imp grab stench
Sidsenian	2	3	4	9	tiny	1.5 land 0.2 burrow	norm	air	hot	0	resist	blindfight
Sinwapid	2	5	1	D	avg	6 land	v low	air	v cold	0	norm	blindfight acid spit
Sitchepian	3	4	1	D	large	9 land	low	air	warm	0	norm	acid spit
Snehoan	6	3	1	9	tiny	3 land	high	air	v cold	0	anti	none

Spejistoid	9	7	1	8	avg	9 land 18 swim	low	water	warm	0	norm	none
Stehotman	4	7	1	8	avg	9 land	v low	air+trace	cool	0	norm	imp grab stench
Tanlidgoid	3	6	40	9	avg	4.5 land 6 fly	low	air	temp	1	norm	none
Tieianid	8	6	10	A	avg	6 land 12 fly	low	air	warm	0 fragile	norm	none
Triinthoid	6	7	5	A	tiny	3 land	norm	air+taint	hot	0	norm	none
Tritagoid	6	3	2	Α	small	4.5 land	high	taint	cold	0	norm	thrasher
Ushaidan	9	5	6	9	tiny	3 land	low	air	warm	0	norm	none
Venadnian	3	6	1	8	avg	6 land 12 swim	low	water	temp	0	norm	none
Vessnebran	10	1	1	A	small	4.5 land	low	air	cold	0	norm	stinger poison
Vitnoyan	10	4	1	A	tiny	3 land 0.6 burrow	norm	air+taint	temp	0	norm	bio shock
Wotethid	6	3	120	F	small	6 land 9 climb	norm	air	cool	0	norm	imp grab
Xenparan	8	4	12	F	avg	6 land	norm	air	cold	0	norm	none
Zalmodan	3	7	10	Α	avg	6 land	v low	air	cold	0	psion	imp grab

Selected Minor Race Details

All races and cultures have unique features which make them different from everyone else. These cultural tendencies are influential, but they do not force an individual or a race to adopt particular attitudes or behaviors. Physiological features of a race (perhaps the ability to swim or fly) can pattern a particular mindset, but the cultural features discussed below are more like stereotypes of the particular races rather than a pattern. Just because many Texans wear cowboy boots does not mean all Texans must wear cowboy boots. Racial stereotypes will also be influenced by the society where individuals live and work. A pocket empire which has a low law level, for example, may have a race which has a tendency towards liking rules. They may be more inclined to follow or make rules than others in their culture, but that does not mean they will be as rule bound as those brought up in a more strict culture.

Aidyazians

Aidyazians are roughly human sized, averaging a bit over 1.5m tall and massing about 90 kg. They evolved on the innermost moon of Aidyazig-d1, an ice giant planet, and this has greatly affected their development in 2 major ways. First, they are excellent climbers with a very good dexterity and able to climb as quickly as they can walk. Secondly, their vision is very good and extends well into the IR range which allows them to see the heat sources on which life depends. They are well adapted to low gravity and cooler environments, but are not adversely affected by normal gravity. They have 4 limbs that may be used as arms or legs and which are quite long, giving them an extended reach compared to other average sized sophonts. Aidyazians also have a very dense mental shield which makes them immune to all forms of psionics. While they have 2 distinct sexes, Aidyazians reproduce by budding.

Once in their lives Aidyazians choose a partner and enter seclusion for 1 period of rotation around their ice giant (about 6 days). During this time they exchange genetic information which each parent stores internally. Over the next decade, both parents form buds inside a protected pouch where the infant sophont develops externally over the course of 24 periods (about 20 weeks). Once they detach, the single parent cares for their offspring as they develop. Only a single bud may develop at once, but as soon as their bud detaches they may choose to begin another bud whenever they wish.

Ayeithpids

Ayeithpids are a developing race in the M317 Cluster. An amphibious but primarily aquatic race, they have developed industrial factories connected by radio communications on the surface of the world and have recently taken to the skies for the first time. They are generous to a fault with one another, and are very open-minded and optimistic about their new developments above the surface of their small moon. They are very unused to gravity, living in the water most of the time, and consume little oxygen due to the low concentrations present in their atmosphere. Ayeithpids spend most of their lives as females, but are able to induce maleness by eating certain common fish when they are well fed and content. Maleness only lasts 4 periods (1 rotation around their gas giant), where 1 period is spent changing to male, 2 periods as male where they fertilize 2 chosen partners, and a final period changing back to male. All 3 parents raise the children cooperatively and stay as a committed triplet until their children are mature. At this point in time the 75 million Ayeithpids are aware there are other races in the Cluster but have very little if any contact with them. Heux is the pocket empire with the most influence here and they maintain an observation station on Ayeithpea AB-c, but there are no formal relations despite promptings by uplifted dolphins on Heux.

Binryezoids

Binryezoids are small sophonts, standing roughly 1m tall and massing just over 40 kg on average. They have 4 limbs, although none of their limbs have fine manipulators to do detailed work. They typically employ drone arms controlled by overly large limb movements as tools to manipulate everything from coin size items to microscopic semiconductors. They prefer low gravity and cooler planets, but can function in higher gravity after they adapt to it. Their senses are roughly human norm, although they are somewhat slower than humans due to their small size. They have several bony plates that provide significant protection to their most sensitive organs. Binryezoids may enter a hyperalert mental state they refer to as "Conazz" which allows them to gain +2 DM on perception and interrogation rolls. In order to reproduce, Binryezoids must join each other in a reproductive sleep cycle that lasts about a standard week. If the two are compatable, the female lays a single egg approximately 1 week after coupling which matures in roughly 69 days.

Cromodans

Cromodans are large plains-dwelling herbivores standing about 2.7 meters tall and weighing about 245 kg. They are able to see well in the low levels of light given off by their Type M red dwarf star. Their favorite foods are various leafy vegetables such as olquith and lettuce, which they graze in packs of 20-30 individuals. They evolved under regular predatory threats and have several ways of avoiding them. First, they are relatively quick moving at 9m/sec; they also have 1 point of natural armor and an oil gland which produces a foul stench which can drive away most sophonts. Unfortunately the scent is somewhat clingy and takes a while to get used to, which usually gives other sophonts a poor

first impression. Cromodans are egg layers and while the females must lay the clutch of 2-4 eggs (each weighing over 5 kgs!), the males fertilize and incubate them for the roughly 8 standard months (2 full revolutions around their star) for the eggs to develop. Historic sources suggest the eggs are quite tasty and are an aphrodesiac, but naturally the Cromodans strongly object to this practice. After hatching, young Cromodans are then carried by the father in a pouch for protection for another revolution, then spend increasing amounts of time on their own as they grow rapidly over 18 years into their adult form. Once out of the pouch, young Cromodans are raised by the pack at large and generally lack a family oriented social structure.

Febwopbians

Febwopbians are a relatively tribal people, organized around clans that govern most of their daily interactions. Clans are competitive with each other, but also cooperative and try to outdo one another to gain prestige on their planet. One of the main methods for increasing a clan's prestige is to win fayuga competitions. The fayuga is probably the most ubiquitous element of Febwopbian culture and is tied to any number of the critical events in their past. Today it is the preferred hand-to-hand weapon of their species, and has been adapted by a number of others due to its small size and general utility. It most resembles a fighting staff with a sharp blade on one end (treat as a spear or dagger for damage/fighting purposes depending upon whether it is extended or not.) They have developed several specialized combat techniques which combine the fayuga, their natural ability to grab enemies in combat using their 4 arms and their multitasking ability which make them masters of their honor combats. Aliens who involve themselves in honor combats are treated harshly, win or lose, and few ever attain enough skill with a fayuga to win against competent natives. As desert adapted people, Febwopbians value water and practice stringent water conservation even in environments where water is plentiful. They require relatively little water for themselves and rarely suffer from dehydration until most other sophonts are incapacitated.

Reproduction is considered a key interest of the clans, and the decision of who reproduces with whom are made at the inter- clan level. Having offspring with someone from one's own clan is equivalent to incest in most societies. Eggs generated from matings are shared between the two clans equally, with every member of the clan taking some responsibility for all offspring. During the 14 year maturation process of a clutch, both clans are mutually pledged to defend one another as if 'their eggs are one'. Clans can gain prestige by sharing eggs with more or wealthier clans, and violating egg-pact is a terrible crime. By sharing eggs with different clans whenever possible, Febwopbians diversify their gene pool and limit clan conflict to honor battles between individuals.

Fethattans

Fethattans are an unusual trilaterally symmetric sophont species with 3 arms and 6 pairs of legs. Although it sounds ungainly, they are able to move at 9m/sec and are very stable when standing. They are slightly smaller than humans, standing about 1.2m tall on average, and weigh around 60kg. They require low gravity to live comfortably, and are able to function up to an hour in trace atmospheres common on the moons of their homeworld. Indeed, "By the 6 moons of Fethatti!" is a legendary curse in the M317 Cluster. Fethattans are known for throwing themselves into projects enthusiastically, and have noted interests in cybernetics and gengineering to allow them to function more easily in higher gravities. Indeed, Fethatti travel frequently and are very interested in other cultures. They are also quite observant with excellent hearing, and often overhear things others might have wished to keep secret. When threatened, they are able to secrete an acid spit which is quite caustic and will damage unprotected sophonts. Fethattan families are composed of a mother and a father who agree to mutually support and raise their offspring until they mature. While many Fethattans remain paired during that time, parents do not always remain together but society expects both mother and father to support their offspring.

Funlaysluids

Funlavsluids are long-lived omnivores of average size who evolved on a very cold moon and quickly found two additional worlds in their system which fit their physiology reasonably well. Although they are well adapted to low gravity situations, they are functional, if not completely comfortable, in normal gravity environments as well. They are adapted to cold temperatures and are particularly sensitive to fire and heat. As hunters, they have hard hooves and sharp teeth as natural weapons. They are also able to give off a pleasant smelling phermone which originally aided the Funlavluids in attracting prey to them. They are resistant to electricity and are able to sense magnetic fields, making them very useful in many gas giant moon systems with high electromagnetic fields similar to their home moon. Funlavsluids mate for life and together raise 1 egg every 3-5 years.

Hozinlids

Hozinlids are human sized sophonts massing roughly 100kg and standing 1.6m tall. They have pale blue skin, with protuberant eyes giving them excellent vision but no external ears giving them worse hearing. They are otherwise physically similar to humans, with a head, 2 arms, 2 legs, and 2 genders. Mentally, however, Hozinlids have developed psionics with nearly universally telepathy and have an unconscious psionic projection which encourages people to like them. Within the race, this psionic projection identifies which clan they belong to and facilitates cooperation between individuals of the clan. In addition, they can produce a bioelectric shock when startled, an ability which can be a rude surprise during an unexpected assault.

Lipithslids

Lipithslids are perhaps the most alien appearing organisms in the M317 Cluster. Their barrel-shaped rigid carapace is heavily built and somewhat larger than humans at ~1.85m tall and ~125kg, but has 3 pairs of arms and 3 pairs of legs which coordinate seamlessly with each other during movement. Each trilateral pair of arms and legs have a separate nerve cord symmetrically arranged around the barrel axis with their brain located in the upper center of the barrel. A half-sperical head sits atop the barrel with eyes on 3 sides (giving 360 degree vision) but with less acuity than humans. A single olfactory/ respiratory organ sits atop the head and carefully filters incoming gasses making Lipithslids insensitive to atmospheric taint but also reducing their olfactory sensation. Both arms and legs are tentacle-like, each with 3 digits for grasping or stabilizing their body. Based on their flexible and numerous appendages they are very stable when being pushed and also very adept in grabbing an enemy. They are generally not fond of humans since a period of pre- Confederation enslavement, and they have developed very effective combat techniques which give Lipithslids +2 defense during personal combat against humans. During reproduction, 4 separate genders work together to invigorate a clutch: 2 genders provide the genetic material, a third gender provides the bulk of the nutrients during early

growth, and the final gender incubates and instructs the embryos inside their protective carapace until they are deposited 1 revolution (285 standard days) later.

Nospetewans

Nospetewans are roughly human size aliens with 4 fingered limbs and peach colored scales covering most of their body. They are egg layers, producing 30-40 eggs every 5 cycles (roughly 4 standard years). The eggs hatch after 3 months, and the young are barely sentient and not particularly protected by the adults for the first 2 years. Once they reach the 2 year mark and develop rudimentary reasoning skills, they begin their early training. They are adapted to high gravity and low light, where bright light causes them temporary blindness and disorientation. Their scales, however, have insulating properties which protect them from both electricity and radiation. Nospetewans are particularly good at talking and justifying themselves, with a +2 DM on verbal deception checks. They are particularly sensitive regarding the Ushaidans, a nearby sentient race which they helped to 'develop' and who are very ungrateful. There are still Ushaidans living on the Nospetewan homeworld as servants and menials (whom most other Ushaidans regard as weaklings and traitors). Their home system is divided into competing domains, each trying to outdo and outmaneuver the others.

Pidfunids

Pidfunids are a race of extremes and contradictions. Each of their 8 limbs may be used as arms or legs, and each limb is rather deft and precise. They are small sophonts, standing at just about a meter and weighing a little over 40 kg, and are particularly fragile, taking extra damage from blunt weapons. Despite low strength, endurance and a relatively slow move rate, Pidfunids are very aggressive, taking any slight personally but hiding their emotions until the very last second. Using their many limbs they get additional actions during combat and are adept at squeezing their opponents. If they don't finish their enemy quickly, however, they are relatively easy to injure and do not have the staying power of most other races. They have outstanding eyesight, seeing into both the UV and IR, along with excellent scent discrimination on the order of terran bloodhounds. Outside of combat they are very opinionated and set in their ways, not liking anyone or anything challenging their beliefs or way of living. They are generally materialistic, but have a strong sense of religious obligations and are generous to their own. They prefer living in warmer environments as their young are unable to regulate their temperature and suffer at temperatures below 35 °C. Despite all of their ideosyncracies and extreme behaviors, more than 90% of Pidfunids live away from their homeworld.

Rimzalmids

Rimzalmids are average sized sophonts who evolved in a high gravity environment but totally comfortable at normal gravity as well. They are able to sense vibrations in the air, but the vibration detection confuses normal hearing in most other cases. Rimzalmids are typically more aggressive when they believe they have the upper hand and will often bully those they think are in a weaker position. They are difficult to read, making it hard to tell if they are seriously threatening or simply bluffing. When they become incensed, they are able to generative a bioelectric shock once every 12 hours. During an actual attack, they will concentrate their shocks on a single individual to disable them and force any remaining opponents to back down. Their skin is particularly sensitive to acids due to a natural secretion which keeps their skin elastic but rapidly breaks down in acidic conditions.

Rimzalmids usually live in packs of 12-18 individuals where all of females in a group share child care duties.

Sidsenians

Sidsenians are tiny, long lived desert dwellers who live in underground burrows to protect them from the heat and the deserts of their home world. They are coated in a waxy oil which reduces evaporation and which appears brownish-red like the soils of their home planet. They are carnivores and strongly prefer to surprise their prey which they like to eat fresh. They are psychologically well adapted to the stellar mainstream (with the exception of PETA who confuse them), and have a healthy desire to improve their material circumstances. They are not great fighters, but like to maneuver their opponents in either combat or business into situations where the Sidsenians have the advantage. Although they see as well as humans, they can sense their nearby environment without light and that allows them to function very well in caves and underground.

Snehoans

Snehoans are tiny cold loving sophonts who live on a single high gravity planet in 6,3 Woteth subsector. Standing about 55 cm tall and massing about 20 kg on average, they move relatively slowly and are quite weak given their high gravity environment. They are very stable, however, and with 4 agile limbs they are able to carry out 2 major actions per turn. Their eyes are less sensitive than humans, but they have strong mental shields making them immune to psionic effects and defeating all training in psionics. They are generally predisposed toward violence, and have a detailed code of honor that incorporates dueling to settle disputes. Their honor weapon is a Fizan, a 3 bladed throwing star (treat as a dagger) which Snehoans begin using as soon as they can walk. The traditional bladed form is always used for honor combats, but during actual fighting or attacking larger enemies they will typically poison their blades or incorporate a mini-grenade into the weapon's structure. Pregnant females are the only individuals immune from duels or fighting of any sort, and harming a mother-to-be or immature offspring is considered a grave offense. Snehoans have a matriarchal clan structure, where the females who produced the most children decide on family matters while males concentrate outside the clan with status determined by ability with the Fizan.

Stehotmans

Stehotmans are a smallish sophont, averaging under 120cm tall and just under 60 kg. They evolved on a low gravity, very thin atmosphere moon and are well adapted to space environments of low gravity and trace atmospheres. Their eyesight is relatively poor but they can move quickly at 9m/sec and use their long, whip-like arms to grab and squeeze opponents. They are also able to release a noxious sulfuric hydrocarbon offensive to most sophonts when threatened or they become anxious. The Stehotman have only recently acquired the gravitic drive, but with the assistance of Hamzigawe they are trying to learn as much as they can about other races in the Cluster. Stehotman offspring require 3 parents, 2 'males' and one female, with all 3 parents taking part in raising the litter of 5-7 offspring. Most families will only be able to have 2 litters in a lifetime, but those families having a third litter are celebrated and the bonus offspring are believed to be destined for great things.

Triinthoids

Triinthoids are among the smallest sophonts of M317 at a bit over 40cm tall and 11.5kg on average. They are trilaterally symmetric, with 3 arms and 3 legs which provide them a relatively stable base

when pulling or for balance. Their small arms are quite dexterous and they are fascinated by machinery of all types, particularly cybernetics and robots. They have a reputation for building some of the best walker vehicles in the Cluster, although many of their most famous designs are suitable only for other tiny occupants. Their limbs are shorter than most sophonts in the Cluster, though, and they move at about 1/2 the speed of a typical human. They are entirely hairless, and are covered in a pale green oily sweat which helps to cool them at hotter temperatures which would quickly kill humans. They are also insensitive to atmospheric taints, but require a low dose of gaseous ammonia on a regular basis. Most Triinthoids carry an ammonia inhaler with them at all times when off planet so they always have access to this essential nutrient. This ammonia dependence interacts badly with acids such that they take 50% more damage from acids than other sophonts. Their vision isn't as good as humans, but they have 3 eyes, 3 ears and a good attention span which makes them very difficult to surprise. While only 1 mother and father are required to produce genetically identical twin offspring, Triinthoids believe that 3 pairs of parents provide a more stable family environment. When they choose to reproduce, parents select their mate as well as their family partners for the duration of their reproductive cycle so that 6 children of nearly the same age are raised together. Children mature in about 10 standard years, after which the family unit breaks up and a new family unit is formed if an individual wishes to have a second pair of offspring.

Ushaidans

Ushaidans are tiny sophonts, standing only 43cm tall and massing slightly more than 12 kg. They are quite nimble with long flexible arms, but are not very strong and rather slow due to their short legs. Their faces and bodies are covered in deep pits and what appear to be oozing sores which give those first encountering Ushaidans a very bad first impression. The sores and secretions, however, are a method to remove radioactive compounds and damaged cells from their body, making them quite resistant to radiation. Female Ushaidans bear a litter of 4 pups once in their lives which grow slowly and mature over a long period of 26 standard years. The race has an ongoing hostile relationship with the Nospetewans, a neighboring race which had enslaved the Ushaidans for centuries before the Confederation ended the practice. The Ushaidans remember, though, and have a +1 DM attack bonus against Nospetewans. Additionally, they blame the Nospetewans for encouraging antithetical political units within their home system that to this day vie for supremacy within their system, sharing little except for hatred of their sworn enemy.

Wotethids

Wotethids are by far the most dispersed and most numerous of the minor races found in the M317 Cluster. Standing roughly 80 cm tall and averaging just under 30 kilograms, Wotethids climb extremely well and are hard to displace once they grab something (or someone). They are not known for combat skills, but are outstanding negotiators because they intuitively understand alien motivations and are nearly impossible to read or manipulate. They helped negotiate several of the key agreements which underlie the Pansophontic Confederation, and are widely recognized as the Grandfathers of the Confederation. They hear noises quite well (particularly in the ultrasonic range), and like to establish rules of behavior everyone understands. Wotethids excel at cooperative endeavors, and live in over 100 systems. Unlike many species, Wotethids prefer eating alone rather than in a group, possibly due to their need for slightly rancid foods as they cannot digest fresh foods (it makes them nauseous).

Xenparans

Xenparans are slightly larger than humans, averaging about 1.8m tall and nearly 125 kg. While they have similar abilities and senses to humans, Xenparans are short lived and always hurrying, while humans are sluggish in comparison. Xenparans mature in only 10 years, and they have a very strong urge to reproduce immediately after their maturity. They typically live as in extended family structure, where the previous generation often takes care of the young while the middle generation build their careers. Xenparans adore technology, are quite open to new ideas and optimistic about their immediate future. They enjoy hearing about and working with various alien species, and are happy to adapt other sophont's ways when they seem a good fit. The one behavior Xenparans seem unable to adopt is the ability to lie. Lies, even social lies, are very difficult for them to tell and this occasionally leads to socially awkward moments. In terms of habitat, they strongly prefer cooler, drier climates and easily tolerate different gravity.

Zalmodans

Zalmodans are one of the more common psionic races of the M317 Cluster. They are unusual in that they evolved on the innermost moon circling a distant ice giant where life depended upon volcanic vents induced by the nearby giant planet. As such, vision is less important to them and they lack any form of color vision. They are adapted to both colder and low gravity environments, but are able to function in normal gravity and warm conditions even if uncomfortable. During reproduction, females lay eggs every 3-6 months and each egg is fertilized by a genetically selected male. The young are raised by a small number of specially trained females in a creche where they spend the first 9 standard years of their development. There they are trained in basic mental and physical behaviors as their bodies mature and their psionic skills start to appear. Once they reach a minimal stage of maturity, they join a pod of 3-5 younger mature Zalmodans where they receive more advanced training and career preparation. Zalmodans all learn telepathy as a key psionic skill which helps keep them sane and in regular contact with others. Individuals who cannot develop this skill are outcast, with most committing suicide and the few who survive considered mental deviants. Zalmodans are ill prepared for any form of isolation, and solitary confinement is their worst fear. In combat they are very coordinated and have developed a martial art where grabbing and immobilizing an opponent (physically and sometimes psionically) is a common feature.

Religions of the M317 Cluster

Sophonts everywhere work to understand how their small existence fits into the immense story of life and the greater universe. There is no agreement on this issue, although many have died supporting one view over all others. Quite a few different belief systems exist that are unique to a single race or culture in the Cluster. There are several, though, which have a substantial following among many

different worlds and are at least recognized if not practiced nearly everywhere. Some of them came to M317 through the Mega Jump gate, while others are native to the Cluster itself. All of them have enough followers in various systems of the Cluster to make their influence and beliefs known. The Pansophantic Council supports freedom of religion

"Those ancients who in poetry presented the golden age, who sang its happy state, perhaps, in their Parnassus, dreamt this place. Here, mankind's root was innocent; and here were every fruit and never-ending spring; these streams--the nectar of which poets sing." Dante Alighieri, The Divine Comedy for all, provided they do not violate any of the key Confederation Principles that philosophically hold the Cluster together.

Agnosticism, or the belief that there is a greater being even if their identity is not proven, is one of the more general beliefs within the Cluster. It tends to be less dogmatic than many of the other religions of the Cluster because it not only accepts alternatives as possibilities but actively supports them. While commonly considered a weak and uncommitted faith, agnostics may believe strongly that there is a supreme being but only feel unsure of that being's exact nature while knowing that it may be beyond sophont understanding.

Ancestralism is a belief that races and peoples that came before have progressed and that current sophonts are merely the continuation of their spirits. While not a veneration of elders, the emphasis is on the continuity of life and that the universe and its planets, stars, and people are truly special creations in the interstellar void of space-time. Archaeologists are typically well respected among Ancestralists, although those same archaeologists often have unkind words when their sites are disturbed by amateurs searching for 'religious' artifacts.

Atheism is the belief that there is no higher being or higher purpose to life and that what can be seen and measured is the sum of the universe. While it firmly agrees that not everything is known, atheists do not believe that any being knows the whole 'truth' of creation. The lack of belief in a supreme being does not prevent them from loving, helping, and trusting others, but they do not ascribe this behavior to wanting to please a God. Ethics can exist without a supreme being.

Christianity is one of the three major religions which arrived through the Mega Jump gate. It follows the teachings of a human who was also God and whose teachings are written down in a book known as the Bible. His teachings focus on living a good life and honoring the Lord, but there are several contradictory passages which create various schisms within the greater religion. Christianity is notorious for developing extreme factions that are hostile to other Christian faiths yet all claim to be the one true way to follow the Bible. It also emphasizes a human god which tends to link Christianity to Humaniti (see below) in the eyes of many non-humans.

Devourism is a belief system that is based upon exhaustion. Everything has an end, whether it be individual lives, civilizations, or eventually even stars. Naturally the supreme being would encompass and be the source of this ending. Devourism emphasizes willing sacrifices as the primary religious observance, allowing the rest of life to go on. The most disturbing Devourist practice is the willing sacrifice of a sophont who kills themselves as an act of devotion. Sacrifices are typically things such as not doing something pleasurable, or giving time away, or destroying something valuable to a person, but the majority demand that it be a purposeful willing sacrifice for it to be acceptable. Extremists get rid of the willing part and will take property or lives from others for their God. This sets up many confrontations against those unwilling to be sacrificed for Devourist beliefs. Extremists are hunted by the CNF and CSS as deadly deviants, and even most Devourists draw a distinction between willing and unwilling sacrifices.

Eggists are believers in the First Egg, or the origin of life. The Egg is more than just the origin of life however; it represents the potential for all life that must be nurtured. Supporting others, helping them achieve their dreams and goals, those are some of what Eggists desire as part of their religious beliefs. All life begins in a vulnerable state, subject to externalities that can destroy it. Only by supporting others can any life reach its pinnacle. Eggists and Devourists have a long history of conflict for hundreds of years in the M317 Cluster. Atrocities have been committed on both sides, for Eggists view sacrifice as the opposite of nurturing and extremists (on both sides) feed this animosity to motivate their followers.

Hinduism mirrors aspects of Unity and Senticience, but developed separately as it came through the Mega Jump gate to enter M317. It combines belief in a single 'Truth', or universal soul, but includes concepts of dharma (moral order) and karma (good or evil payback). It supports a caste system of 4 major groups- Religious, Military, Entrepreneurs, and Laborers, as well as those below, or outcaste. The universal 'Truth' expresses itself through personifications of aspects of that 'Truth', so the Creator (Brahma), Preserver (Vishnu), Destroyer (Shiva) or any other avatar of that greater 'Truth' is really only part of the whole. Avatars may have different names, so for a Hindi, Shiva and the Devourer are really the same Avatar and both represent the same aspect of 'Truth'. Similarly, Brahma and the Ocean Mother are merely two names for the same Avatar.

Humaniti encompasses a religious and political belief that humans are the most superior form of life. To be fair, most races have a minority that believes in their own superiority, but because humans are by far the most numerous race in the Cluster, Humaniti exists in more places and is therefore more dangerous.

"God designed life to be enjoyed by all, but human beings turned things around and made it to be endured." *Bamigboye Olurotimi*

Humanists resent other races, and push for humans to be in charge with the other races meant to serve humans. Extremists have been known to harass or murder nonhumans in order to achieve their aims, although the CSS and CNF try to put a stop to this whenever possible. Humaniti generates a lot of resentment among other races and gives all humans a bad name despite most humans deploring such behavior.

Islam is another of the major religions delivered through the Mega Jump gate. It posits the belief in a single God as revealed by his prophet Muhammed and is related to Christianity by a shared reverence for part of the Bible. Muslims, however, diverge from them in terms of beliefs, daily religious practices, and prescribed actions. Unlike almost every other religion, Islam was founded by a military man and as such, includes explicit support for violently defending and expanding the faith. Muslim extremists therefore tend toward violent conflict, believing that martyrdom leads to eternal salvation.

The **Ocean Mother** is a common religion among aquatic races. She is a creation goddess who brings life through the mixture of her breath and the waters of the world. Those who live in the water are particularly blessed by her graces due to their close association with the water. Belief in the Ocean Mother is most common on high water worlds, but her followers can be found wherever aquatic races live. Religious rites are typically held underwater, substantially limiting the ability of other races to attend services.

Psionism is a belief that psionic individuals are superior to others due to their paranormal abilities. This is one of the most dangerous belief systems because psionics really do have measurable and usable abilities most sophonts lack. The belief that they are superior, that they are better than their fellow sophonts, encourages them to manipulate and use other people for their own gain. Because they are superior they obviously deserve to have more than others. Not all Espers or races that have psionic powers believe this, but those who exploit non-psionics provide a rationalization for discriminating against all of those with paranormal powers. Races which are anti-psionic, particularly Reptilians, despise Psionism and work tirelessly to publicly discredit their beliefs and expose psionic misbehavior.

Senticience is the belief that sentience is the purpose of the universe. While this is related to Unity, Senticience is much more restricted to emphasizing thinking, intelligent life over life in general. Senticients often attempt to practice what they preach and work to enhance the abilities of life forms to think more or be more creative. They hold uplifted races and advanced robots, those that were given sentience, as paragons of what is possible. While some uplifts accept this belief system, many others find Senticients creepy and resent being glorified merely for existing. Note that Senticients emphasis on gengineering puts them at odds with those intent on restricting such experiments.

Unity is a belief that all life comes from the a single source and that no matter its form or complexity, life is holy. Because all life is related, it is incumbent upon everyone to help support life wherever it exists and, where possible, to help it express itself. Unists are typically very environmentally aware, as life only develops on a subset of worlds and can be easily marginalized or destroyed by sophont activity. Extreme Unists push for protecting all life forms, and activities like hunting or experimentation on animals are terrible crimes. Unists are almost always vegetarians or producers, working to reduce the loss of life required for their own survival. Eating is the most common Unist religious activity and requires thanking the food for becoming part of their existence. Gluttony and being overweight are common sins, as it is wasteful of life. Fasting is a common atonement for many sins, thus not partaking in their most common religious experience.

System Populations

Worlds with very small populations (less than 4) fall into essentially two categories: outposts and vestigials. Outposts are installations that were set up by an outside organization and receive regular supplies and personnel rotations from them. They are usually set up for a particular purpose such as archaeological research, mining, or the like, and are not expected to be self sustaining. They will also typically have a tech level that allows them to interact with stellar society (usually TL8 or better). Because of their small size they will typically have mostly one race present in order to simplify things. With such a small population it would actually be rare not to know all of the key decision makers personally. Outposts are aware of and take part in stellar society, although they are considered frontier worlds and have no votes in the Stellar assembly and have no Cluster-wide influence.

After the Unification Wars, many planets were crippled and help was rare. Some systems were never able to achieve a viable culture and lost much of what they had. Vestigial worlds have populations that are shrinking because they are too isolated or too small to survive independently. They do not have the technology to survive in an interstellar society and lack a sufficient population to do well on

their own. They are slowing dying, and for the most part the rest of the Cluster isn't sure what to do with them. These low population, low tech systems offer little profit to anyone, and the expense of moving, supporting, training, and reintegrating these worlds has not proven popular or economical. These worlds are not threatening anyone or violating any Cluster policies so the CNF and CSS have no justification for or compelling interest in getting involved. While one or two systems may be easy to handle, there are over 150 vestigial systems Cluster-wide, a substantial number that would take significant resources to help. As the years pass, the vestigial worlds are slowly becoming more inbred and even less able to support themselves, making their problems even more severe.

In many ways, these worlds are sad reminders of the wars that nearly depopulated the M317 Cluster. Such loss is all too common, with 7% of all inhabited worlds falling into the vestigial category. Socially and economically they are failing, but there is no consensus about what should be done with these worlds. Some groups want to reintroduce them to interstellar society, while others would prefer to allow them to fade away. Still others think that combining several vestigial cultures onto one or a few worlds will give all of them their best hope for eventual survival with the least culture shock. As it is, these worlds struggle on the fringes of more advanced worlds and really play no role in the larger Cluster. Systems may be used as refueling points on trade routes or even unknowingly host pirate bases in their system, but the people themselves do not have the technology or size to have any say about what goes on outside of their immediate settlement.

For an independent population to have enough genetic diversity to maintain a reasonable likelihood of survival, generally at least a thousand individuals (population code 3) should be present. They also typically start at TL8 or above to stay in contact with their homeworld. Lower technology levels require those worlds need more people to prosper (typically population code 4). Many colonies try to begin with at least this many settlers and oftentimes more than the minimum due to the inevitable losses as they adapt to their new planet. Colonies tend to know about the Pansophantic Confederation and will deal with them more or less willingly. Because population size 3 or smaller systems are so small, they are typically made up of only a single species with perhaps a few oddballs living there temporarily or passing through on various ships or serving in the Scouts. Some groups are genetically modified to better fit the planet, but many worlds are being colonized by regular citizens looking for a better life.

By the time a population reaches 10 thousand or so individuals (population 4), another species that is at home in the environments available in the system often lives in the system with the originating race. One species is usually more numerous (typically humans, but that is certainly not guaranteed), but some worlds have environments that may naturally favor a non-human species. Merfolk like water worlds, Insectans do better in tainted atmospheres, etc.

After a million or so sophonts, populations become even more diverse. With the establishment of consulates, Explorer's Aid Society hostels, Naval bases, etc. there are pretty much always populations of alien species present on a world. They may not be a large percentage, but power centers in an interstellar society will attract extra notice from other races. Confederation policy stipulates that all sophont races deserve equal treatment and Confederation facilities are always mixed race (though practicality tends to favor posts with native sophonts of the same species). Some worlds may not be

hospitable for all races (deserts and merfolk don't mix well) and so not every race will be found on every world. The more important a system is in the Confederation, however, the more likely it is that major races and perhaps even several minor races will have at least enclaves in that system.

All sophonts tend to live in groups for mutual protection, support, and reproduction. The typical size of a community will naturally be dependent upon how

many individuals live in a particular system. When populations are small, there are likely to be only one or two major settlements. The smallest settlements are hamlets or outposts where only a few hundred sophonts live and villages with only thousands of individuals. Towns contain tens of thousands of people, while small cities contain hundreds of thousands and large cities millions of residents. The largest settlements are the metropolis with tens of millions and arcologies with hundreds of millions of sophonts. Naturally only the most populous systems will have the largest settlements, but with densely populated systems having tens of *billions* of inhabitants, large municipalities become very common.

With Insectans, because of their hive mentality they tend to live together more closely than other races, and because they give most people a bad first impression they further tend to live with other Insectans. When they are present as more than diplomatic or trade enclaves, Insectans will always make up at least 20% of the total system population due to their community centeredness.

"You ask why I defend Espers? I think you misunderstand. Have you ever heard the prayer 'Great Spirit — Grant that I may not criticize my neighbor until I have walked a mile in his moccasins.' Hearsay attributes that prayer to Chief Joseph of the Nez Perce Indians. I don't have to walk that mile. When I touch another telepath's mind, I can feel that mile. I can feel **any** mile they ever walked. I not only know what they did, I know why they did it, how it felt as they were doing it. You are trapped in your own mind. There's no possible way to even **describe** how personal it is, how intense it is to share thoughts between two telepaths. I may not agree with them; hell, I may think that what they did was wrong. But unless I am convinced beyond doubt that my own inaction will contribute even more harm, I'll be damned if I'm going to help you track any of us down. The question isn't why I defend Espers. The question is sometimes why I ever help those who aren't." Rachel Yvonas, licensed telepath

Espers are a second major exception to the racial rules. While among humans Espers are rare, making up less than 1% of the total human population, they are also very difficult to distinguish from nonpsionic humans and can easily interbreed with them. Espers still like the company of their own, however, and they are often discriminated against by 'normals' and particularly Reptilians when they are identified as Espers. Some Espers are willing to live with the discrimination and integrate into the larger human population, while others loathe their bigoted neighbors and keep out of the public eye. Still others move to colonies or systems where psionics are the norm rather than the exception. In all cases Espers tend to protect their own and unless extreme pressure is brought to bear, Espers will not typically harm other Espers of any race. While some Espers do psionic work for hire, those individuals are often ostracized by other Espers unless they follow a rigid code of ethics respected by other Espers, and even then they are very reluctant to accuse or pursue other Espers.

Psionics in the M317 Cluster

Most races in the cluster are not generally psionic, but there are many races where some individuals have psionic abilities and a few races where nearly all of the individuals are psionic. Attitudes towards psionics vary from world to world mostly based on what races live there. Worlds where anti-psionics live, particularly Reptilians, tend to be most strongly opposed to psionics. As reptilians are a major race and one of the most common, this is not insignificant. Conversely, worlds with races that are mostly psionic tend to be more favorably disposed to psionics in general. When anti-psionics and psionics share a system, however, there is always an underlying tension and a common flash point for violence. When psionics are rare on a world, the general population tends to fear what they do not have or understand. This encourages various subtle forms of bigotry and discrimination against Espers and other psionics that may not be legally allowed but are tolerated anyway. Worlds in this middle category tend to switch between periods of more supportive or more suppressive toward psionics depending upon recent events in the system.

System World Status

Some worlds are more dangerous than others. Either the environment itself is deadly, or the people living there may be hazardous to a visitor's health. In many cases, particularly frontier worlds, the Confederation doesn't care. (A pocket empire, though, might blow your vessel out of they sky for violating one of their worlds.) Other systems may pose a more general hazard.

Amber systems are those which have a particular safety concern that does not exclude contact but which has the potential to cause grievous harm to visitors (or locals). Law enforcement, political unrest, or extreme social customs are typical reasons for amber status. These can be relatively temporary and are often reviewed during censuses. Uninhabited systems generally have amber status- nobody is living there and even essential services are not available. Whether the danger is natural or artificial, it may not be safe for visitors. Even Woteth, the capitol of the entire Confederation, is Amber restricted. Rules are very tight to protect the delegates from external manipulation, and the CNS headquarters is also located there for security reasons. Entering this system without authorization and or real need is not appreciated.

Restricted, or red, systems, are those which should not be visited if they can be avoided. Red status generally means serious danger. Extremely strict laws along with low technology or a captive government generally means visitors will have trouble there. Most worlds with this status will be unforgiving to those who do not follow the cultural and social expectations of their society. Restricted systems should only be visited by qualified (and perhaps foolhardy) experts.

Dangerous Governments

The Pansophantic Confederation typically protects planets and races against blatant exploitation by other races and/or technologically more advanced systems. There are cases, however, where wars between systems break out and one side is beaten by the other without destroying them. Sometimes a world has

Patriotism is when love of your own people comes first; nationalism, when hate for people other than your own comes first. *Charles de Gaulle*

been a longstanding colony of another world and the original world does not wish to give up control.

Other worlds refused to pay tithe and were forcefully reintegrated into stellar society resulting in imposed rule (often at the end of a laser rifle). These and related cases are collectively referred to as captive governments (government code 6) and are an inherently dangerous situation. These worlds are immediately characterized as travel code Amber and if additional risk factors are present (such as tight regulations to protect occupying troops) may easily be coded Red.

In other situations, large percentages of sophonts within a system are violently opposed to one another for some reason. Sometimes political, sometimes racial, sometimes planetary, these groups are openly hostile within their own system and because both groups make up a significant percentage of the total population the conflict is difficult to settle. Sometimes there are several independent governments that might be fighting one another, each claiming to rule the entire system. These balkanized factions present a particular challenge to the Pansophantic Confederation because each side typically will have their supporters and hostilities may be encouraged by or spread to other systems. Balkanized worlds also receive a minimal Amber travel warning that can easily be upgraded to Red. In cases where violence is regular, many an independent ship has been caught in the crossfire or misidentified, and even Cluster Naval Force vessels have been destroyed 'accidentally'.

Factions in System Governments

No government is a monolithic machine that commands the loyalty of every sophont in their jurisdiction. Particularly in larger societies there will always be those who have different goals or beliefs than the majority of the population. In the M317 Cluster, factions are found in all but the smallest political entities and are distinguished by the amount of influence they have and the number of followers they bring. Factions with minimal strength are recognized as unusual in the system and have few adherents. Unfortunately they are also the most committed members. If extremist factions have more than just a transient existence in the system they will usually fall into this category and will be organized into active cells where nobody knows everyone involved. These can be the most disruptive factions for any government. **Weak** factions have enough people to be taken seriously but cannot push through laws on their own. They tend to be rabblerousers and activists but not necessarily violent. Notable factions typically command localized power bases and have enough supporters to drive rules in some areas of the system. These factions are real players in the power structure of the system. Significant factions are those that command broad support and are well known positions within society. They generally differ from the current government in several policy areas but are an accepted part of society. This would include things such as an opposition party in a Republic, for example. Powerful factions are those that command as much respect and resources as the government itself. Balkanized governments will have at least one other powerful faction that is fighting for control of the system. Not all powerful factions are looking to violently overthrow the government; they will, however, be able to make demands on a government which must be taken seriously due to the strength and breadth of their support.

Factions provide a context for attitudes and influential ideas common to particular worlds. They give convenient points of reference for organizations that might aid or hinder players in their various activities and goals. By providing more insight into societal forces in a particular system, characters may use that information to develop their own strategies and plans to take advantage of the situation. For more political campaigns, factions provide a way of supporting some particular policy

change where influencing the leaders of a particular faction can sway the broader populace toward some new rule or outcome. Factions may also provide an opposition force to fight characters who are pushing a plan which will interfere with the goals and issues they care about.

Every organization/planet/empire/faction has certain traits that motivate their actions. Sometimes they are philosophical, whereas other times they are religious or commercial, but they exist and inform the mental states and assumptions of large numbers of people. Most worlds have a general consensus of what is 'right'; there are always those who disagree with that consensus as well. The general trends, however, provide a baseline for what can be expected in any particular world. Note that there are various sorts of limits that could be placed on the traits below. Racists may hate only 1 group rather than everyone not them, for example. The degree of feeling represents how far away from the galactic average (8) the feelings trend. Note again that these are typical attitudes accepted by the group and individuals may be more or less aligned with the group's ethos. In addition, two groups may align in one or more ways but differ completely in others. Randomness abounds, but trends amid the chaos are usually informative of the culture and stereotyping of a large segment of the population makes for interesting game play.

Factions that are weak may be more extreme in their beliefs than stronger factions. They have little support and therefore they can afford to be focused on the few strong supporters they do have. Unless it is a balkanized system, many attitudes should be similar between larger factions. If the group diverges too far from expected norms, they must lose popularity. Balkanized worlds are usually more different between factions- this is a major source of the tension which divides those systems.

Pocket empires that are truly independent of each other may have rather different beliefs at their cores. Border worlds between two empires often show transitional tendencies, perhaps with factions that support one or the other competing pocket empires. Worlds that are influenced by traits from several empires will generally have a tendency toward the primary empire but other worlds nearby cannot be ignored. Small pocket empires will naturally be more influenced by the attitudes of their neighbors than larger empires, but very very few worlds exist in a total (political and social) vacuum.

Isolated worlds that have little to no contact with any star faring societies may have hugely divergent attitudes compared to stellar norms. Any world with pre-spaceflight technology and no real starport (types X or E) will have little official contact with their pocket empire. More populous low tech worlds with a D or sometimes E class starport will usually be paying support to ships or corporations from the pocket empire. Note that an exploitative arrangement may well turn planets against their overseers, whereas if a dominant world is more benign the connection may be more positive if less lucrative.

Organizational Traits

There are 14 traits that are listed below which play a role in explaining a society's attitudes toward anything from military service to stellar trade to cultural exchanges. Some traits influence each other. Some traits depend on parts of the UWP such as tech level or government type, while still others are influence by what races are present on a world and their characteristics. Player actions may also directly influence world attitudes, particularly for a low population system where a large percentage of the sophonts are directly impacted by the actions of the players.

Cybernetics is the mechanical augmentation of a living organism to improve various functions. These include everything from replacement of a destroyed limb with a prosthetic to a true cyborg, an organism with a living organic brain connected to a mechanical body of whatever sort. Originally developed around TL8, advanced technology can truly improve upon the natural organism. Cybernetics typically increases with increased acceptance of robotics and is inversely related to gengineering. Sophonts are usually willing to allow some mechanism to repair permanent injuries so if one method is wrong the other becomes more acceptable. Cybernetics is also inversely related to psionics in that the mechanical augments do not function well with mental abilities.

0: I'd rather do without a leg than have that thing. F: Can't you fit in just one more cybermod?

Enthusiasm is the amount of energy put toward achieving one's goals. Cultures that thrive on actively creating, or working toward a particular goal have high levels here. Other cultures or individuals are more low key, and are sometimes easier to get along with because they are less opinionated. Whether something is good or not is in the eye of the beholder, but the energy level with which the goal is approached is important.

0: OK, I guess that would be good. F: Come on, let's go out and change the galaxy!

Generosity is how well a system or people help those less fortunate than themselves. It covers both members of one's own society as well as non-members. Duties or requirements are one thing, but generosity covers going beyond one's duty to help and aid others.

0: every last penny is mine. F: Here, take this shirt off my back.

Gengineering is the alteration of living organisms to give them 'improved' functions. Using existing models as a baseline, gengineering (a contraction of genetic engineering) designs changes to enhance function in particular biological areas (sometimes requiring a trade off in other areas) to better fit an environment or to surpass a racial limitation. Some cultures consider biological manipulation of any sort a threat against natural beings, putting them at a disadvantage. Gengineering of pathogenic microbes have also been known to cause planetary scale disasters which further poisons the cultural atmosphere against such manipulation. Note that no known xenogeneering (other species genetic engineering) or gengineering technique has been able to produce psionic ability even at the top level of TL15 technology.

0: genetic engineering is evil! F: where can I get my liver enhanced?

Honesty is a trait associated with how truthful and trusting a society is. Certainly law level and government have a role here, but particular races also dramatically influence the cultural response to lying. Suspicious or distrustful races will encourage a societal lack of honesty, while trustworthy or naturally honest races will increase the integrity of the society.

0: Hey, wanna buy the Brooklyn bridge? F: Why say anything if all I do is lie?

Isolationism is a trait dealing with how much people wish to be cut off from the outside world. Captive governments ruled from distant systems will pretty much always increase the desire for isolation- after all, who wants to be ruled from outside? Further, poor starports will tend to increase isolationism while high quality starports will decrease isolationism. Lower technology levels will also

increase isolationism as there simply isn't as much of the universe accessible on a world denied space travel. Several racial traits may also increase or decrease isolationism if those races are present in the system, and may be even more pronounced for a race's homeworld where the majority of the population is one race. Openmindedness may be inversely correlated with isolationism as new ideas can easily come from outside, but people can also enjoy new ideas as long as they come from within. 0: We are all part of the greater galaxy F: If you're not from my town, you're vermin.

Materialism deals with a culture's desire for physical goods. More materialistic cultures place a higher priority on obtaining and holding greater amounts of property and real goods. Worlds controlled by corporations or races that make particularly good brokers tend to have higher levels of materialism. Better starports also support materialistic ends, while lower technology tends to promote survival over material wealth and poorer starports reduce the access (and therefore perceived need) for physical goods. Higher levels of materialism are also correlated with higher acceptance of order and law levels to protect the material goods.

0: Eh? I don't really need that. F: I just can't live without this self cleaning comb!

Openmindedness is a trait dealing with willingness to accept new or different ideas. It is associated most often with a welcoming and interactive society. Closed-minded groups, on the other hand, want things they way they had always been. New technologies, religions, or races (new anything, really) is suspect and not to be trusted. Worlds without good starports, unelected governments, or intolerant races tend to decrease open-mindedness, while high end starports or a well traveled population tend to increase open-mindedness. Racism and isolationism decrease openmindedness.

0: My grandparents did it so it's good enough for me. F: Cool! I never tried that before!

Optimism is a mindset more than anything else, where the culture thinks things are likely to get better. Better, of course, depends on one's goals and is a value judgment, but a positive feeling or vibe towards the future is a key component of optimism. Pessimism, or low optimism, suggests that things are getting worse and that is the nature of the universe. Individual joys are real, but transient; it is the deterioration that is constant. Devourists have a very low optimism rating- entropy will win. 0: The world is going to hell in a handbasket. F: (hum) The sun will come out tomorrow...

Pacifism is the willingness to use force to achieve one's ends. Balkanized worlds or worlds at war with another system tend to have very low pacifism scores. Expansionist governments, species with natural weapons or armor, naturally aggressive races, all of these things tend to lower pacifism scores. Empathic communication, fragile species, or morally demanding cultures tend to increase pacifism. The more military threats a system faces typically reduces the cultural pacifism score.
0: Kill'em if they bother you.

Piety is a trait associated with how important god or gods are in society. During medieval times, the church was vastly more important on a day to day basis than it is in most western societies today. A religious faction, however, might be substantially more pious than the current government. Several

Prayer is not asking. It is a longing of the soul. It is daily admission of one's weakness. It is better in prayer to have a heart without words than words without a heart. *Mahatma Gandhi* different religions imported from Earth or endemic to the Cluster are presented along with some inherent biases and conflicts. Note that even if laws permit freedom of religion, a society may be predominantly pious but not be offended by different attitudes. Pious does not mean obnoxious. 0: God? Pah, I believe in what I can measure. F: all life is God's. We're here on sufferance.

Psionics is the cultural acceptance of psionic abilities for general use. Naturally the more psionic races present will increase this value, while anti-psions or psionically resistant species drive this cultural acceptance down. Note that this does not alter the presence of psions, only their relative accessibility and public function. Hidden psionic cults that manipulate the thoughts and desires of people are a common perceived threat (real or not) in cultures with low psionic acceptance. 0: kill the mindreaders! F: Oh, I hope my child is psionic!

Racism is the cultural measure of the superiority of the world's dominant race over other races. Some cultures stress race more actively than others. When pocket empires are race based, racism is almost universally higher as those other pocket empires are often the enemy. Planets that have more races present generally have a smaller degree of racism, as do races with the xenoempathy characteristic. Races with racial defenses, historical racial weapons, racial enemy, etc all increase the cultural acceptance of racism as a normal part of life. Larger starports and a more open culture also decrease racism by expanding contacts with other races.

0: all are equal legally and valued F: Humans are the best! Down with the rest!

Robots are a technological intelligence which upsets many people. Some cultures that particularly like technology offer more support for artificial sentients. Robots that fullfill specialized tasks such as robotic pilots, autodocs, or janitorial robots typically are more acceptable than robots which are difficult to distinguish from organic beings. Low technology cultures may have feelings regarding artificial life forms even if they do not have the capacity to develop such machinery directly. Speculative fiction in low tech worlds often tries to predict technologies of the future.

0: Keep that thing away from me! F: Wow, you're the most empathic machine I've ever met!

License

THE WORK (AS DEFINED BELOW) IS PROVIDED UNDER THE TERMS OF THIS CREATIVE COMMONS PUBLIC LICENSE ("CCPL" OR "LICENSE"). THE WORK IS PROTECTED BY COPYRIGHT AND/OR OTHER APPLICABLE LAW. ANY USE OF THE WORK OTHER THAN AS AUTHORIZED UNDER THIS LICENSE OR COPYRIGHT LAW IS PROHIBITED.

BY EXERCISING ANY RIGHTS TO THE WORK PROVIDED HERE, YOU ACCEPT AND AGREE TO BE BOUND BY THE TERMS OF THIS LICENSE. TO THE EXTENT THIS LICENSE MAY BE CONSIDERED TO BE A CONTRACT, THE LICENSOR GRANTS YOU THE RIGHTS CONTAINED HERE IN CONSIDERATION OF YOUR ACCEPTANCE OF SUCH TERMS AND CONDITIONS.

1. Definitions

- a. "Adaptation" means a work based upon the Work, or upon the Work and other pre-existing works, such as a translation, adaptation, derivative work, arrangement of music or other alterations of a literary or artistic work, or phonogram or performance and includes cinematographic adaptations or any other form in which the Work may be recast, transformed, or adapted including in any form recognizably derived from the original, except that a work that constitutes a Collection will not be considered an Adaptation for the purpose of this License. For the avoidance of doubt, where the Work is a musical work, performance or phonogram, the synchronization of the Work in timed-relation with a moving image ("synching") will be considered an Adaptation for the purpose of this License.
- b. "Collection" means a collection of literary or artistic works, such as encyclopedias and anthologies, or performances, phonograms or broadcasts, or other works or subject matter other than works listed in Section 1(f) below, which, by reason of the selection and arrangement of their contents, constitute intellectual creations, in which the Work is included in its entirety in unmodified form along with one or more other contributions, each constituting separate and independent works in themselves, which together are assembled into a collective whole. A work that constitutes a Collection will not be considered an Adaptation (as defined above) for the purposes of this License.
- c. **"Distribute"** means to make available to the public the original and copies of the Work or Adaptation, as appropriate, through sale or other transfer of ownership.
- d. "Licensor" means the individual, individuals, entity or entities that offer(s) the Work under the terms of this License.
- e. **"Original Author"** means, in the case of a literary or artistic work, the individual, individuals, entity or entities who created the Work or if no individual or entity can be identified, the publisher; and in addition (i) in the case of a performance the actors, singers, musicians, dancers, and other persons who act, sing, deliver, declaim, play in, interpret or otherwise

perform literary or artistic works or expressions of folklore; (ii) in the case of a phonogram the producer being the person or legal entity who first fixes the sounds of a performance or other sounds; and, (iii) in the case of broadcasts, the organization that transmits the broadcast.

- f. "Work" means the literary and/or artistic work offered under the terms of this License including without limitation any production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression including digital form, such as a book, pamphlet and other writing; a lecture, address, sermon or other work of the same nature; a dramatic or dramatico-musical work; a choreographic work or entertainment in dumb show; a musical composition with or without words; a cinematographic work to which are assimilated works expressed by a process analogous to cinematography; a work of drawing, painting, architecture, sculpture, engraving or lithography; a photographic work to which are assimilated works expressed by a process analogous to photography; a work of applied art; an illustration, map, plan, sketch or three-dimensional work relative to geography, topography, architecture or science; a performance; a broadcast; a phonogram; a compilation of data to the extent it is protected as a copyrightable work; or a work performed by a variety or circus performer to the extent it is not otherwise considered a literary or artistic work.
- g. **"You"** means an individual or entity exercising rights under this License who has not previously violated the terms of this License with respect to the Work, or who has received express permission from the Licensor to exercise rights under this License despite a previous violation.
- h. "Publicly Perform" means to perform public recitations of the Work and to communicate to the public those public recitations, by any means or process, including by wire or wireless means or public digital performances; to make available to the public Works in such a way that members of the public may access these Works from a place and at a place individually chosen by them; to perform the Work to the public by any means or process and the communication to the public of the performances of the Work, including by public digital performance; to broadcast and rebroadcast the Work by any means including signs, sounds or images.
- i. **"Reproduce"** means to make copies of the Work by any means including without limitation by sound or visual recordings and the right of fixation and reproducing fixations of the Work, including storage of a protected performance or phonogram in digital form or other electronic medium.

2. Fair Dealing Rights. Nothing in this License is intended to reduce, limit, or restrict any uses free from copyright or rights arising from limitations or exceptions that are provided for in connection with the copyright protection under copyright law or other applicable laws.

3. License Grant. Subject to the terms and conditions of this License, Licensor hereby grants You a worldwide, royalty-free, non-exclusive, perpetual (for the duration of the applicable copyright) license to exercise the rights in the Work as stated below:

- a. to Reproduce the Work, to incorporate the Work into one or more Collections, and to Reproduce the Work as incorporated in the Collections;
- b. to create and Reproduce Adaptations provided that any such Adaptation, including any translation in any medium, takes reasonable steps to clearly label, demarcate or otherwise identify that changes were made to the original Work. For example, a translation could be marked "The original work was translated from English to Spanish," or a modification could indicate "The original work has been modified.";
- c. to Distribute and Publicly Perform the Work including as incorporated in Collections; and,
- d. to Distribute and Publicly Perform Adaptations.

The above rights may be exercised in all media and formats whether now known or hereafter devised. The above rights include the right to make such modifications as are technically necessary to exercise the rights in other media and formats. Subject to Section 8(f), all rights not expressly granted by Licensor are hereby reserved, including but not limited to the rights set forth in Section 4(d).

4. Restrictions. The license granted in Section 3 above is expressly made subject to and limited by the following restrictions:

- a. You may Distribute or Publicly Perform the Work only under the terms of this License. You must include a copy of, or the Uniform Resource Identifier (URI) for, this License with every copy of the Work You Distribute or Publicly Perform. You may not offer or impose any terms on the Work that restrict the terms of this License or the ability of the recipient of the Work to exercise the rights granted to that recipient under the terms of the License. You may not sublicense the Work. You must keep intact all notices that refer to this License and to the disclaimer of warranties with every copy of the Work You Distribute or Publicly Perform. When You Distribute or Publicly Perform the Work, You may not impose any effective technological measures on the Work that restrict the ability of a recipient of the Work from You to exercise the rights granted to that recipient under the terms of the License. This Section 4(a) applies to the Work as incorporated in a Collection, but this does not require the Collection apart from the Work itself to be made subject to the terms of this License. If You create a Collection, upon notice from any Licensor You must, to the extent practicable, remove from the Collection any credit as required by Section 4(c), as requested. If You create an Adaptation, upon notice from any Licensor You must, to the extent practicable, remove from the Adaptation any credit as required by Section 4(c), as requested.
- b. You may not exercise any of the rights granted to You in Section 3 above in any manner that is primarily intended for or directed toward commercial advantage or private monetary compensation. The exchange of the Work for other copyrighted works by means of digital filesharing or otherwise shall not be considered to be intended for or directed toward commercial

advantage or private monetary compensation, provided there is no payment of any monetary compensation in connection with the exchange of copyrighted works.

- c. If You Distribute, or Publicly Perform the Work or any Adaptations or Collections, You must, unless a request has been made pursuant to Section 4(a), keep intact all copyright notices for the Work and provide, reasonable to the medium or means You are utilizing: (i) the name of the Original Author (or pseudonym, if applicable) if supplied, and/or if the Original Author and/or Licensor designate another party or parties (e.g., a sponsor institute, publishing entity, journal) for attribution ("Attribution Parties") in Licensor's copyright notice, terms of service or by other reasonable means, the name of such party or parties; (ii) the title of the Work if supplied; (iii) to the extent reasonably practicable, the URI, if any, that Licensor specifies to be associated with the Work, unless such URI does not refer to the copyright notice or licensing information for the Work; and, (iv) consistent with Section 3(b), in the case of an Adaptation, a credit identifying the use of the Work in the Adaptation (e.g., "French translation of the Work by Original Author," or "Screenplay based on original Work by Original Author"). The credit required by this Section 4(c) may be implemented in any reasonable manner; provided, however, that in the case of a Adaptation or Collection, at a minimum such credit will appear, if a credit for all contributing authors of the Adaptation or Collection appears, then as part of these credits and in a manner at least as prominent as the credits for the other contributing authors. For the avoidance of doubt, You may only use the credit required by this Section for the purpose of attribution in the manner set out above and, by exercising Your rights under this License, You may not implicitly or explicitly assert or imply any connection with, sponsorship or endorsement by the Original Author, Licensor and/or Attribution Parties, as appropriate, of You or Your use of the Work, without the separate, express prior written permission of the Original Author, Licensor and/or Attribution Parties.
- d. For the avoidance of doubt:
 - i. Non-waivable Compulsory License Schemes. In those jurisdictions in which the right to collect royalties through any statutory or compulsory licensing scheme cannot be waived, the Licensor reserves the exclusive right to collect such royalties for any exercise by You of the rights granted under this License;
 - ii. Waivable Compulsory License Schemes. In those jurisdictions in which the right to collect royalties through any statutory or compulsory licensing scheme can be waived, the Licensor reserves the exclusive right to collect such royalties for any exercise by You of the rights granted under this License if Your exercise of such rights is for a purpose or use which is otherwise than noncommercial as permitted under Section 4(b) and otherwise waives the right to collect royalties through any statutory or compulsory licensing scheme; and,

- iii. Voluntary License Schemes. The Licensor reserves the right to collect royalties, whether individually or, in the event that the Licensor is a member of a collecting society that administers voluntary licensing schemes, via that society, from any exercise by You of the rights granted under this License that is for a purpose or use which is otherwise than noncommercial as permitted under Section 4(c).
- e. Except as otherwise agreed in writing by the Licensor or as may be otherwise permitted by applicable law, if You Reproduce, Distribute or Publicly Perform the Work either by itself or as part of any Adaptations or Collections, You must not distort, mutilate, modify or take other derogatory action in relation to the Work which would be prejudicial to the Original Author's honor or reputation. Licensor agrees that in those jurisdictions (e.g. Japan), in which any exercise of the right granted in Section 3(b) of this License (the right to make Adaptations) would be deemed to be a distortion, mutilation, modification or other derogatory action prejudicial to the Original Author's honor and reputation, the Licensor will waive or not assert, as appropriate, this Section, to the fullest extent permitted by the applicable national law, to enable You to reasonably exercise Your right under Section 3(b) of this License (right to make Adaptations) but not otherwise.

5. Representations, Warranties and Disclaimer

UNLESS OTHERWISE MUTUALLY AGREED TO BY THE PARTIES IN WRITING, LICENSOR OFFERS THE WORK AS-IS AND MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND CONCERNING THE WORK, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF TITLE, MERCHANTIBILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, OR THE ABSENCE OF LATENT OR OTHER DEFECTS, ACCURACY, OR THE PRESENCE OF ABSENCE OF ERRORS, WHETHER OR NOT DISCOVERABLE. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO SUCH EXCLUSION MAY NOT APPLY TO YOU.

6. Limitation on Liability. EXCEPT TO THE EXTENT REQUIRED BY APPLICABLE LAW, IN NO EVENT WILL LICENSOR BE LIABLE TO YOU ON ANY LEGAL THEORY FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES ARISING OUT OF THIS LICENSE OR THE USE OF THE WORK, EVEN IF LICENSOR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

7. Termination

 a. This License and the rights granted hereunder will terminate automatically upon any breach by You of the terms of this License. Individuals or entities who have received Adaptations or Collections from You under this License, however, will not have their licenses terminated provided such individuals or entities remain in full compliance with those licenses. Sections 1, 2, 5, 6, 7, and 8 will survive any termination of this License. b. Subject to the above terms and conditions, the license granted here is perpetual (for the duration of the applicable copyright in the Work). Notwithstanding the above, Licensor reserves the right to release the Work under different license terms or to stop distributing the Work at any time; provided, however that any such election will not serve to withdraw this License (or any other license that has been, or is required to be, granted under the terms of this License), and this License will continue in full force and effect unless terminated as stated above.

8. Miscellaneous

- a. Each time You Distribute or Publicly Perform the Work or a Collection, the Licensor offers to the recipient a license to the Work on the same terms and conditions as the license granted to You under this License.
- b. Each time You Distribute or Publicly Perform an Adaptation, Licensor offers to the recipient a license to the original Work on the same terms and conditions as the license granted to You under this License.
- c. If any provision of this License is invalid or unenforceable under applicable law, it shall not affect the validity or enforceability of the remainder of the terms of this License, and without further action by the parties to this agreement, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.
- d. No term or provision of this License shall be deemed waived and no breach consented to unless such waiver or consent shall be in writing and signed by the party to be charged with such waiver or consent.
- e. This License constitutes the entire agreement between the parties with respect to the Work licensed here. There are no understandings, agreements or representations with respect to the Work not specified here. Licensor shall not be bound by any additional provisions that may appear in any communication from You. This License may not be modified without the mutual written agreement of the Licensor and You.
- f. The rights granted under, and the subject matter referenced, in this License were drafted utilizing the terminology of the Berne Convention for the Protection of Literary and Artistic Works (as amended on September 28, 1979), the Rome Convention of 1961, the WIPO Copyright Treaty of 1996, the WIPO Performances and Phonograms Treaty of 1996 and the Universal Copyright Convention (as revised on July 24, 1971). These rights and subject matter take effect in the relevant jurisdiction in which the License terms are sought to be enforced according to the corresponding provisions of the implementation of those treaty provisions in the applicable national law. If the standard suite of rights granted under applicable copyright law includes additional rights not granted under this License, such additional rights are

deemed to be included in the License; this License is not intended to restrict the license of any rights under applicable law.

Creative Commons Notice

Creative Commons is not a party to this License, and makes no warranty whatsoever in connection with the Work. Creative Commons will not be liable to You or any party on any legal theory for any damages whatsoever, including without limitation any general, special, incidental or consequential damages arising in connection to this license. Notwithstanding the foregoing two (2) sentences, if Creative Commons has expressly identified itself as the Licensor hereunder, it shall have all rights and obligations of Licensor.

Except for the limited purpose of indicating to the public that the Work is licensed under the CCPL, Creative Commons does not authorize the use by either party of the trademark "Creative Commons" or any related trademark or logo of Creative Commons without the prior written consent of Creative Commons. Any permitted use will be in compliance with Creative Commons' then-current trademark usage guidelines, as may be published on its website or otherwise made available upon request from time to time. For the avoidance of doubt, this trademark restriction does not form part of the License.

Creative Commons may be contacted at https://creativecommons.org/.