An Ultimate's Guide to Combat

What comes to your mind when you think "Ultimate"? Most of you readers probably conjure up images of some mercenary, fighting on some blasted rock on the outer system. Some of you will come up with an image that is much less pleasant. Ultimate ideals are much, much different than that. We are more than simply an order of militants.

Ultimates have been associated with mercenaries since the movement's inception, simply because most of us do it at one point or another to make money. I've signed contracts with Ultimate Security, Direct Action, Gorgon, and a half-dozen smaller outfits over the course of the last twelve years. I died on New Mumbai (but you should see the other guy), and in two or three places I'm not legally allowed to talk about since then.

The whole sum of the Ultimate philosophy is self-improvement, however. Death is a temporary setback on the road to perfection. A lot of people fear us because of the fact that we have a perceived penchant for violence, but that overlooks our culture and philosophy.

While this book may not do much to dissuade people from their perceptions of the Ultimates, at least it can be considered a sort of love letter to the rest of transhumanity. By sharing our wisdom, hopefully more people will be able to survive the next Fall.

— Exemplar Harmony "Harm" Cho

The world of Eclipse Phase is wrought with danger and intrigue. The purpose of *An Ultimate's Guide to Combat* is to provide players with more tactical options, and it provides additional opportunities for combat, adding in new systems to give a combat-heavy campaign more variety.

Another of the focuses of this supplement is to provide players with a resource for a more responsive combat system, complete with new and expanded rules for weapon qualities, melee combat, and explosives. *An Ultimate's Guide to Combat* includes some theoretical battlefield tech, as well as additional general use military theory and tactics to improve battlefield simulation in the Eclipse Phase system.

An Ultimate's Guide to Combat differs from the core Eclipse Phase material by creating much more complex and rules-heavy environments for combat and other destruction to take place in, though it occasionally includes other rules that are deemed to be useful or necessary. As a result, long-time Eclipse Phase players may decide to utilize only some of the rules available in the book; this is encouraged and recommended, as *An Ultimate's Guide to Combat* is designed to be a collection of personal house rules and interpretations compiled into a larger codex of rules; some rules may contradict or overlap with rules in the core book, and *An Ultimate's Guide to Combat* includes many rules that can greatly slow down play.

Remember that the events, techniques, and items portrayed in this book are fantasy; don't try to recreate these things at home!

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An Ultimate's Apologia

If you need a shoe, where do you get it? A shoemaker. If you need a gun, where do you get it? A gunsmith. If you need to be led, where do you get it? A leader.

Many have called the ultimates fascist throughout the years. We are no such thing. We support individual freedoms in more ways than the hypercorporations or the genetrash of Jupiter. We reject the hedonism of the anarchists not because we insist on limiting the actions of our members but because we have found a greater purpose. It is said that we bow down to a cult of personality before Manu Bhattacharya, but this is not correct; he was the first of us, and in many ways his example is a model to us, but we do not worship him as your demagogues demand worship. We have found a leader not because he sought to lead us into slavery and bondage, but because he provides a path to a better future.

It is also said that we are brutal and warlike. While it is true that many among us are experts in warfare, and we train hard to survive. The events of the Fall showed us our purpose, and transhumanity has had to deal with the same issues we had. There are many allegations that members of our movement acted in ways that were unbecoming during the Fall. We assure everyone that there is no malice in our creed or ideals, and while our individual members may have gone astray and actions meant to serve the greater good have come across as brutal, those who look at our actions objectively must admit that without us hundreds of thousands of souls would have been lost to the ravages of war and atrocity. What others call crimes committed by us are nothing more than the desperate responses to a world gone mad; responses that resulted in the best possible outcome.

The people who foster some of the worst allegations against us are the very people we saved. They register a loss of morph or a loss of dignity as a malicious attack because, in a sane world, that is what they would have been. However, in the world of TITANs and exhumans, transhumanity no longer has the liberty of responding to the world as a non-threatening entity. Our own actions both before and during the Fall, as a whole species, pushed us closer and closer to the brink of extinction. It is only through the valor and discipline of those who were willing to forge themselves into protectors of others that any of us survived the Fall, and while it is regrettable that those who could not save themselves often lost much, it is just as regrettable that they would turn the blame for damages of the Fall on those who were working to protect them from greater horrors.

I would encourage everyone to dig deeper into our philosophy, our creed, and our society. Even if one does not wish to join us on Xiphos or Aspis, we would encourage everyone to leave behind their follies and weakness. It is for this reason that we have made available our remade morphs, perfections of the human form, and published guides to philosophy and war. The best way to prevent another Fall is to pursue our own perfection and merit, rather than looking for it elsewhere. We encourage everyone to grow in their own dignity and their own independence, either as a part of our group or where they are in the mass of transhumanity.

With this, I leave you our defense. While many have decried us as monsters, leaving behind tradition and virtue in favor of destructive pursuits, something which rings painfully true in light of our often-checkered past, we have moved on. The ultimates are not enemies of transhumanity; we are its greatest allies, and our intent is to protect, serve, and rebuild that which has been lost. While the ultimates and the larger whole of transhumanity have often been separated by ideological and philosophical rifts, we are not brinkers who leave transhumanity out of disgust, but rather bold minds working to help everyone see a brighter future.

—Preface to *The Ultimate's Apologia*, by Ductus Prokopy Webster-Clay

Found this floating around the mesh, and figured you might be interested in it. Looks like a mix of Ultimate training pamphlet and general military technology and tactics overview. I've taken the liberty of adding in some annotations. Most of the equipment is beyond the reach of sentinels, but the tactical information could be pretty useful for both erasure teams and sentinels in the field, especially if you operate in a wartorn region. If you like it, don't hesitate to toss me some i-rep, and maybe I'll dig some more stuff up. This is published under the Ultimates banner, but most of its contributors are from surprisingly diverse backgrounds. Not sure what the motives are for publishing it (I don't buy the whole "Ultimates just want to help everyone!" thing) one of its contributors almost certainly has Overwatch or Ozma ties.

Better yet, I intercepted an annotated copy of an arms catalogue attached to the same message, with some comments from each of the authors of the guide discussing the feasibility of various pieces of gear.

— Firststrike

Surviving Post-Fall Combat

This guide is the offspring of Ultimate Security training manuals from before the Fall, coupled with experience that has been added to our expertise both during and after the Fall. Built for a large audience in mind, there are some simplifications and generalizations; this book may still save your life if you are caught in a combat situation, but it is intended to be an introduction, not a complete guide, to combat techniques and tactics.

We have attempted, where possible, to provide as much context and detail as can be afforded to the complexities and vagaries of combat in our after-Fall world. We include sections on traditional, improvised, and unconventional warfare. Naturally, we discuss weapons and tactics that are forbidden by convention and treaties, but we do so only to enable battlefield commanders to make educated decisions to shield against their use.

Another consideration we have made is with regards to the changing nature of war. As a result, we have avoided referring to specific military hardware by name; on Earth there were typically no more than a dozen pieces of hardware to fulfill any particular role, usually limited to a handful of American and first-world designs, their Chinese and second-world equivalents, and some third-party variants. With the advent of nanofabrication and divergent arms design principles, military hardware increasingly defies conventions.

For the sake of credibility, we have included a brief biography of each of our main contributors and editors.

Exemplar Harmony "Harm" Cho was a mercenary with Ultimate Security before the Fall, serving at New Mumbai during combat with TITAN forces there. Her knowledge of TITAN tactics and equipment is considered to be among the best. Prior to joining Ultimate Security, she was a member of the Republic of China Military Police Special Services Company, and trained with the US Army Rangers.

— What they don't point out here is that she was removed from her position in the ROCMP because she killed three of her fellow soldiers in a training "accident" when she pulled a pin on one of their grenades and kicked him back toward the others. Of course, she's an Ultimate, so you probably expected that.

Rear Admiral (Ret.) Arvid Johannsen formerly served in the Titanian Commonwealth Fleet. In the Fall, he was pivotal in directing space fleet actions against the TITANs. Now residing on Locus, he was part of a fleet deployed to Locus following Planetary Consortium aggression.

— This guy was involved with Jörmungandr during the Fall, but he never joined up with Firewall. He died and was restored from backup, and wound up in the TCF. He'd always leaned more hard anarchist than the Titanians, and left. Rumor has it he's friends with Teilhard Liu, but I can't confirm that.

Rackham Clark served as a commander in the 8th European Union cavalry during the Fall. He currently runs New Terra Security on Mars, which provides counter-terrorism and security services and has contracts with the Tharsis League and Martian Rangers.

— Note how unspecific they are about his service during the Fall? He burned an entire team just because they brushed up against a Firewall sentinel at a dinner. My fifty cents says he's actually Overwatch or maybe even Ozma, since he operates a security firm near the TQZ with way too much materiel to be just sitting on the borders picking off smugglers. Why they'd let him be an editor on something like this is beyond me.

Understanding Your Gear

In the past three decades, combat gear has changed more than it had in the past three centuries. Despite this, many of the fundamental concepts of firearms and energy weapons have been well known for quite some time.

Being familiar with your gear will save your life if you have to call upon it in stressful situations; intelligence is knowing that you can shoot off a lock, but wisdom is knowing that the AP round you fire at an angle at a block of hardened metal will ricochet back through your leg.

Firearms and Railguns

Kinetic weapons are still the mainstay of transhumanity's arsenal; they are well-pedigreed and have a variety and familiarity that energy weapons just can't match, require relatively little training to use effectively, and generally lack complicated electronics. Plus, unlike seekers, someone who messes up only hurts one teammate, rather than three.

Kinetic weapons function by putting a projectile into or through a target. Contrary to popular opinion, the presence of a bullet in the body doesn't do much damage at all: it's how that bullet gets there that matters.

Faster rounds do more damage, period. Special armor on vehicle scale morphs, robots, or vehicles may negate some of this factor, but both biomorph tissue and synthmorph structure are sensitive to impacts at speed. Higher speed rounds project much more energy, and in both metal and flesh produces additional impact effects that even a larger but slower projectile is unlikely to produce. Railguns rely on this effect more than traditional firearms.

Using kinetic weapons comes intuitively to most soldiers, as they are not uncommon and many common XP's and media programs, as well as countless augmented/virtual reality simulations and games include kinetic weapons, but novice shooters often make mistakes based on inaccurate depictions of weapons and poor weapon handling. Although modern firearms are very robust, there are still limitations to the amount of abuse that they can take, and they need to be cleaned properly every few hundred rounds to maintain optimal accuracy and reliability. Railguns require less maintenance, though they may need realignment for optimal accuracy.

Ammunition storage is a major concern; the average soldier can carry four or five magazines before they begin to be encumbered by the additional ammunition that they are carrying. Likewise, novices often reload their firearms very frequently, even in situations where there may be immediate contact. This leaves them with many partially depleted magazines and provides openings for hostiles to exploit. It is often impractical to use long extended bursts of fire for ammunition management purposes, even though modern firearms have mitigated most concerns about recoil.

A final note about kinetic weapons is that firing them in microgravity pushes the user away from the direction of the projectile, even in weapons with very good recoil control. Users of these weapons should be aware that rapid full-automatic fire can cause significant shifts in momentum, which can strand an unsuspecting shooter or send them flying away from cover.

Seekers and Grenades

Seekers and grenades are large projectiles, but unlike kinetic weapons seekers and grenades have a focus on containing a special payload, usually an explosive, rather than just delivering a hard impact at high velocity.

Seekers are typically available only in soft-launch configurations, meaning that they can be fired without any fear of backblast. Any back-blast weapons that are issued to soldiers in the After-Fall period are either relics or very large weapons. Both thrown and launched grenades tend to lack any appreciable back-blast.

Seekers, as a general rule, should not be used to fire into groups of combatants that include allies for obvious reasons. Even if allied soldiers are sufficiently hardened to survive the blast, being intentionally targeted by friendly weapon fire is bad for morale.

If encountering enemies with seekers, be aware of their potential for indirect fire, as well as their incredible range. Because seekers can redirect in flight in ways that are superior to smart ammunition, they are able to function at very high effective ranges; even a micromissile can, when fired by a skilled combatant, hit targets over a kilometer away.

In microgravity, seekers are good weapons because they tend to have relatively little kick, as they have internal propellant that ignites after leaving the launcher, while

launched grenades have similar recoil to a kinetic weapon. Thrown grenades have the same impulses as pushing off of something very light, so combatants can usually use them from behind cover.

Beam Weapons

Beam weapons have their own advantages and disadvantages. The foremost upside of beam weapons is their ability to be fielded in microgravity with negligible impulses. Otherwise, beam weapons are so radically different in function that they are almost impossible to categorize as a single group.

Less Lethal Beam Weapons

You will almost never see a microwave agonizer or stunner on the battlefield, but you should be prepared for them nonetheless. Be aware that EMP weapons can double as microwave agonizers in some situations. Most of these are highly effective at penetrating armor.

EMP weapons are also worth noting; their ability to disrupt battlefield communications makes them common secondary weapons or vehicle mounts, and as they double as effective counter-nanowarfare devices, they are prolific in post-Fall armories. They do little direct harm to soldiers on the battlefield, but the chaos they cause can tip the battle in their users' favor. EMP weapons have long ranges compared to most beam weapons.

Laser pulsers also have a flashbang mode, though it typically is less than effective on hardened soldiers.

Conventional Beam Weapons

Traditional beam weapons are known to be somewhat ineffective at long ranges. The furthest beam weapons can engage at is 300 meters, making a good kinetic rifle a solid answer to widespread beam weapon deployment. Beam weapons can be deployed to devastating effect in terms of accuracy, but typically lack full-automatic fire.

Beam weapons are known to have somewhat limited armor piercing capabilities; only the plasma rifle has particularly effective armor piercing capabilities; plasma rifles can double as a light anti-armor weapon. Particle beam bolters can be a replacement for a standard rifle in some arsenals, but generally are disfavored due to their limited range.

Enhanced Radiation Weapons

Enhanced radiation weapons are generally highly lethal and effective. While proper protection will prevent direct burns, being attacked with ER weapons means almost certain loss of morph.

ER weapons cause little direct damage, but have respectable range, hit through cover, and cause radiation poisoning in biomorphs and radiation-responsive malfunctions in drones and synthmorphs. Medichines are ineffective at repairing radiation-related damage due to the fact that they will sustain significant loss of functionality as a result. Healing vats and pods may be able to reduce the effects of acute radiation sickness in biomorphs; typically biomorphs suffering severe ARS die of infection, even with basic biomods. Damage to synthmorphs is less likely to result in death, but should still be repaired in a timely fashion.

One side effect of ER weapons is potential damage to the ego sleeved in a morph. Since radiation has particularly devastating effects on cyberbrains and biomorphs' central nervous system, backups retrieved from cortical stacks may be corrupted and the ego of anyone sleeved into the target of an ER attack may require psychosurgery to restore full functionality.

ER weapons are very effective against nanoswarms, but are generally not considered legal for deployment onto a battlefield against transhumans.

— Illegality hasn't always stopped the Ultimates. They pioneered this technology on Struggle, before it was as fully understood as it is today, and brought it back to Earth. It wound up being used in the Fall, adding just a little more horror to the mixture, though most of the reports about it are buried deep.

Spray Weapons

Spray weapons are limited in range and effectiveness, but they have their own place on the battlefield. Shard pistols are not uncommon as sidearms, due to their high armor penetration, though shredders are rarer due to their bulk and weight.

Buzzers are often deployed by combat engineers, as deployable nanoswarms are useful for construction and demolitions purposes, though weaponized nanoswarms, while

deployed infrequently, are frowned upon. Freezers are used occasionally to construct barricades or bridges.

Torches and flamethrowers, the former being a more advanced variant of the latter, are also commonly used as combat weapons due to their ability to inflict devastating heat-related damage on both soldiers and materiel, as well as their abilities to clear foliage. Setting foes on fire is an additional benefit.

Although most codified warfare proscribes it, spray weapons are not infrequently used with chemical and biological agents; everything from BTX^2 to Twitch gets loaded up and used when the kiddie gloves come off. Nutcracker is not particularly lethal, but has devastating morale effects. Sprayers can be loaded with even more exotic compounds.

Entering the Battlefield

While civilians and security contractors may not have a lot of say on their gear, any mercenary or soldier worth their salt will carry three things into battle with them: a primary weapon, a sidearm, and a utility weapon.

Primary weapons typically have an effective engagement range of at least a hundred meters, with accurate fire possible to three hundred meters, though in clustered habitats or urban environments a shorter-range weapon like a submachine gun may be more practical for its ability to be deployed in cramped quarters. Kinetic weapons and beam weapons are the most popular primary weapons, with kinetic weapons leading by far in terms of widespread adoption.

Sidearms are backup weapons first and foremost, but they sometimes include utility weapons. Shotguns with frangible rounds, for instance, can function as a sidearm, though by and far the most popular sidearm option is a pistol. Sidearm selection is heavily dependent on the preferences of individuals and institutions; most mercenary outfits prefer heavy pistols, while civilians, police, and security prefer lighter pistols with more ammunition capacity.

Finally, people tend to bring a utility weapon with them. SWAT teams may have flashbangs, military units may bring along seekers or rocket launchers, and commandos may have satchel charges or other special gear. Grenades are the most common "utility weapon"; HEAP, thermobaric, and plasmaburst grenades are devastating against both hard and soft targets, and are standard issue for combat deployments.

Transhuman Military Units

The majority of the audience for our research consists of amateur tacticians and small mercenar

Effective Infantry Units

The best predictor of battlefield success is unit cohesion. Gear is interchangeable, but operators are not. Transhuman combat is different from warfare in the 20^{th} century because it is not uncommon for the same combatants fight the majority of any given war, resleeving to rejoin comrades after they have perished, or simply being well-equipped enough to be such a dominant force as to be nigh-untouchable on the battlefield.

Units work best if they have close interpersonal relationships throughout. Respect is earned through authentic relationships, and many people grasp this concept and strangle it to death by trying to enforce unit cohesion by forced fraternization. Officers should have charisma, and as much as possible soldiers should have bonding opportunities outside combat. Unlike a faulty rifle, you cannot simply swap in a new soldier.

The one rule of battle is that you never want to have a single soldier alone in combat. Occasionally snipers or commandos may undertake a solo mission, but this only happens when they do not expect to encounter heavy combined arms resistance, or when no better option presents itself. A lack of unit cohesion may mean that soldiers abandon each other on the battlefield, or, worse, under the heat of pressure, especially when opponents like the TITANs, whose ability to perform sophisticated biological and infosec attacks is well known, are able to cause psychological tensions between troops.

The Fireteam

In any mercenary group or military worth its salt, units will be divided into fireteams. In small organizations or more decentralized organizations, like anarchist strike squads, you see more independent selection of weapons, but the fireteam unit is tried and true, and ensures that any group of soldiers in the field has the firepower they need to survive most engagements. Fireteams are created for the open battlefield, not counterterrorism or security uses, and have a focus on sustainability and flexibility, though you may find similar groupings among police and security forces that are built around shorter engagements and close quarters combat.

Fireteam Configurations

Fireteams tend to be between four to six members in size. It is generally accepted practice to designate a fireteam leader who has a mix of forward observer and tactical decision making roles. Members of the fireteam typically fall into one of the following categories:

Fireteam Leader: A forward observer and small-scale tactical decision maker, fireteam leaders are frequently equipped with a rifle and underbarrel seeker/grenade launcher. A fireteam leader also carries more advanced communication and infosec gear than the standard rifleman, though they rarely are expected to take any active role in digital security.

Fireteam leaders are typically considered to be among the most important soldiers on the battlefield, and tend to be veterans or officers, rather than rookie soldiers.

Rifleman: Every soldier is trained to be a rifleman, because it serves as a good baseline skill set. Riflemen are typically not issued any special weaponry, with an automatic rifle, heavy pistol, and two or three grenades being standard issue. The rifleman's job is usually to protect the team leader, and should the squad split up they will remain together.

Automatic Rifleman: Entrusted with a machine gun, automatic riflemen take on support roles, placing suppressive fire. They are typically more senior than riflemen, knowing optimal positioning and having the skilled ability to use bursts of effective fire.

Assistant Automatic Rifleman: The AAR takes on a support role, carrying additional ammunition for the automatic rifleman in addition to his own rifle.

Grenadier: Equipped with an underbarrel seeker launcher (or occasionally an underbarrel grenade launcher), the grenadier carries a typical rifleman's kit plus spare seekers or grenades, for taking down grouped infantry, soft-body vehicles, or light combat drones.

Light Anti-Tank Rifleman: LAT support is often used as an alternative "junior" role in a fireteam. Typically, fireteams do not have dedicated anti-tank capabilities, but if they are likely to encounter armor there will typically be at least one rifleman with an anti-tank weapon (typically a disposable missile launcher or plasma rifle) to back the team up if they encounter light armor.

Fireteams tend to be composed of a fireteam leader, one automatic rifleman, one AAR, and then either riflemen or LAT riflemen.

The Squad

Squads are coordinated groups of fireteams. The number of fireteams per squad varies, but a squad typically comes to between ten to sixteen soldiers, with at least two members of a command group. This command group almost always contains at least a squad leader, who takes on a tactical decision making role and coordinates communications with higher command, and a squad medic/robotics repair specialist, who tries to keep everyone alive or patched up through the fight.

Squad Leader: Equipped like the standard fireteam leader, but typically with a larger selection of communication and infosec gear, the squad leader's role is to keep multiple fireteams coordinated and position the command element in a position to allow the best observation with minimal risk.

Squad Medic: The squad medic performs simple combat life saver tasks, but also tends to be better trained with regards to the standard medical tasks required in battlefield medicine, managing triage and shuttling injured troops off the battlefield through dedicated systems.

Squad Repair Specialist: The squad repair specialist is the equivalent of a medic for synthmorphs and drones. Priorities are given to egos sleeved in synthmorphs, and like medics they tend to triage heavily damaged or functioning units and repair them after the fighting ceases, while treating lightly damaged but disabled units takes high priority.

Squad Drone Manager: Rather than jamming drones, most squad-based drone managers run simple infosec and send tasks for drones to autonomously complete, doubling as a bodyguard and potential replacement for the squad leader. This position may also fall to the squad repair specialist, in a pinch.

Squad Support

You will occasionally see some elements be deployed outside of the normal squad hierarchy. Depending on the organization fielding them, they will either be formally attached to a squad, or be coordinating efforts alongside squads with direction coming directly from higher ups.

Sniper Teams: Sniper teams can be devastating. A lone sniper can suppress a squad better than an armored vehicle with an HMG in some situations, because the fear of getting shot is important. For anyone with a cortical stack, a sniper is a minor inconvenience, but being knocked out of combat is still a major concern, and snipers are able to disable commanders, specialists, and other valuable elements with relatively little fear of reprisal and wreak havoc on an opposing force's morale.

Sniper teams tend to either operate with a single sniper (common for stealthier sniper roles), or a sniper/spotter pair. With modern electronics, spotters tend to take on a more traditional rifleman overwatch role, protecting the sniper while they do their work and keeping a second eye out for dangers, though there are times when they cooperate, especially among forces that are not equipped with high-end smartlinked weapons with cutting edge optics. Snipers may be deployed with anti-materiel rifles, either to fight increasingly hardened morphs (such as combat synths) or automated drones, or to allow limited anti-vehicle roles.

Designated Marksman: Not a sniper, the designated marksman is typically equipped with an automatic rifle, but one with better optics (or electronics) so that it is prepared to make medium to long range shots outside normal combat engagement ranges. These tend to be selected from riflemen who are good shots, and they maneuver freely to select vantages that provide good overviews of the battle, functioning as scouts as well as removing threats before they reach the other squad members.

Forward Operations Coordinators: These guys communicate with artillery and CAS elements to call in support on target and help leverage the superior firepower available to their faction. They are, understandably, somewhat rare among some of the less-well equipped mercenary and military forces, though they can be a lifesaver in a pinch.

Anti-Tank Teams: While fireteams may deploy light anti-tank capabilities, anti-tank teams take the fight to tanks, rather than vice versa. An anti-tank team includes at least one anti-tank gunner, typically with a very heavy anti-tank weapon like a multi-launch rocket launcher or an assault cannon, and at least one assistant anti-tank gunner who watches for threats to the team and carries additional missiles or rounds for the gunner.

Anti-Air Teams: Almost always utilizing seekers like the multi-launch man-portable missile systems that found favor in the years leading up to the Fall, AA teams are designed to handle air threats. Like an anti-tank team, they have at least one gunner and one assistant, and they are typically fielded with seekers, rather than assault cannons, as air units may need to be engaged at greater ranges than assault cannons permit.

HMG Team: The HMG is a weapon that provides excellent area denial against infantry and light armored vehicles. Typically, the HMG is a two-man team consisting of a machine gunner and an assistant who helps carry part of a tripod setup and ammunition for the weapon.

Engineers: Engineers play a crucial combat role by handling detonation or disarming of unexploded munitions, battlefield construction projects like bridges and makeshift fortifications, and otherwise making logistical and tactical shifts to favor their allies.

Infosec Specialists: Although most battlefield equipment is hardened against digital interference, combat in areas with functional mesh inrastructure or where wireless equipment is deployed is crucial, and infosec specialists are a part of many military forces, handling jamming, information suppression, and communications for their forces.

Remote Operators: These soldiers often fight remotely, but handle drone operations. It's not uncommon to have someone jamming into a light aerial vehicle or ground-based drone to supply supporting fire or drop supplies off to troops, though larger vehicles tend to be piloted locally to eliminate the risk of digital intrusion.

Battlesuits: Soldiers in battlesuits and other other combat exoskeletons are capable of fielding heavier weapons and moving more quickly than their counterparts. Although not a substitute for armor, battlesuits have often replaced dedicated anti-tank or anti-air units on battlefields both before and after the Fall.

Drones and Pods

Both autonomous and jammed drones and pods are valuable tools on the battlefield; they require less training than soldiers, are not susceptible to morale, and allow commanders to keep their best operators out of harm's way while still

providing for defensive and offensive operations' manpower needs.

Drones and pods are less common than they were pre-Fall; the resources used for them are more frequently moved to habitat or morph construction. AI combatants, however, are capable of carrying out suicide missions and other risky endeavors than transhumans are. If you are deploying soldiers in pods, it is important to remember to provide them with the appropriate backup and support you would give to any soldier, but AI-controlled or jammed pods are great expendable units.

One upside of drones and pods is the relatively cheap nature of these units; a drone costs a fraction of what a synthmorph costs, and a pod costs a fraction of what a biomorph costs. When combined, they can be fielded in great numbers and diverse designs to achieve almost any battlefield objective. They also provide a strength-in-numbers morale boost when used to reinforce transhuman elements.

Remember, however, that drones and pods are susceptible to subversion, especially by technologically advanced foes like the TITANs. As such, they are less common among specialized anti-TITAN or covert operations forces than they are among mixed force units.

Special Forces

Infiltration forces, scouts not attached to squads, and the like fall under the auspices of special forces. Special forces operators are expected to be able to function both as forward operations coordinators and complete covert mission tasks. Lacking heavy weapons, they use silenced weapons with subsonic ammunition and flash suppressors as a standard kit, and gather intelligence or complete sensitive missions. They tend to be among the elite soldiers of any given force, and have great operational flexibility, but their primary objective lies in completing their mission, not neutralizing enemy forces.

One common use for special forces is sabotage. In these cases special forces operators are typically equipped with disassembler or saboteur nanoswarms, given high-yield explosives, or in some cases even antimatter grenades for use against targets: nanoswarms are favored for their ability to cause destruction silently with less risk of detection, but both conventional and high-tech explosives deliver very fast and very potent destructive yields.

Special forces are also used as forward operations coordinators. In this role they find vantage points to confirm that artillery, killsat, or air support is coming in on target and having the desired effect, as well as designate targets using a smartlink, laser designator, or similar piece of gear.

Special forces are deployed with some of the most elite infosec teams available in any military. The advent of automated defenses and surveillance means that almost any special forces operator is at risk for detection by any number of automated alarm systems, drones, or augmented hostile combatants. Special forces operators deploy some of the best camouflage and signals jamming techniques, including using cutting-edge technology to shield themselves from broad electromagnetic frequency detection. Invisibility cloaks or equivalent augmentations are effectively standard issue for special forces teams.

Mechanized Infantry

While infantry remain the backbone of militaries even after the Fall, there is still a need to deploy them into potentially hostile environments and transport them quickly. Most infantry units are actually mechanized infantry, who use infantry fighting vehicles (IFVs), armored personnel carriers (APCs), or other light armored vehicles to provide cover and additional firepower as well as insert soldiers onto the battlefield. Battlesuits are somewhat less common among mechanized infantry than they are among cavalry divisions, but they are not particularly rare in mechanized infantry units.

Armored Personnel Carriers

Armored personnel carriers tend to be used to carry troops in to and out of battle. Most have treads or wheels, though APCs with walker or hover locomotion have become more popular in recent years.

APCs are distinguished from IFVs by carrying only light weapons; they will typically have anti-infantry capabilities, but only the lightest of anti-armor capabilities are mounted on APCs, if even.

As with most materiel, APCs are built to be pressurized and amphibious, and can have a broad range of armor. APCs tend to be well-enough armored to shrug off any weapons less powerful than an assault cannon or plasma rifle.

Infantry Mobility Vehicles

Infantry mobility vehicles (IMVs) are lighter and faster variants of APCs. Typically built for mine resistance, they are usually wheeled (though hover variants may exist), are lightly armed if armed at all—some variants have firing ports—and focus on having greater speed and scouting capabilities. These vehicles are also used on patrols, especially variants equipped with better sensor packages, and are unlikely to see active battlefield use except in transport roles where they will not be placed in engagements with enemy forces. Almost all IMVs are capable of resisting small arms fire and light explosives; they are particularly good at shielding transported troops from explosions.

Infantry Fighting Vehicles

Infantry fighting vehicles are used to supplement troops. Almost always heavily armored, often to near the same levels as main battle tanks, treads, wheels, and walkers are the dominant locomotion systems for these massive machines. An IFV is defined as any vehicle equipped with anti-armor capabilities designed to assist and transport infantry on the battlefield, and unlike an APC or IMV, they typically remain with the troops that they deploy at all times. Expect any IFV to have an autocannon for engaging air or ground targets, and perhaps also a machine gun turret and/or missile launcher package.

One advantage of the IFV in some environments is its ability to provide cover to infantry, especially where there is a known source of enemy fire. This rolling cover can protect not only the IFV's passengers, but also friendly infantry outside the IFV, from enemy fire. When sweeping urban areas, it is not uncommon for infantry to circle an IFV in box or circle formations, allowing them to maintain the autonomy of individual soldiers but also be covered from attacks originating on the other side of the IFV.

IFVs also function in similar roles to APCs, and are used to deploy troops quickly onto the battlefield or pull them out of areas where artillery or air support have made positions indefensible.

Cavalry

Cavalry differ from mechanized infantry in that they are units made up primarily of armored units; these often include light armored vehicles equivalent to IMVs but can include heavier armor and VTOL air capacities.

The role of cavalry units is to be a rapid strike force; while infantry make up the backbone of an army, the cavalry are its arms, moving quickly to assault positions and accomplish strategic goals. These include redirecting enemy assaults, pursuing feeling enemy units, and still incorporate infantry, though to a lesser degree than infantry and mechanized infantry units, as infantry serve as support for armor, rather than the other way around. Cavalry units frequently utilize battlesuits and exoskeleton-equipped infantry. They are not a match for armored divisions, however.

Air Cavalry

Air cavalry units are designed for very rapid response. Due to the limited durability of aircraft, they tend to harass rather than directly engage enemy forces, though they can inflict devastating damage with strikes against unprepared enemies or when attacking targets that lack strong dedicated anti-air weapons. Air cavalry typically include VTOLs backed up by anti-tank infantry, with a focus on the use of VTOLs rather than infantry for direct engagements.

Armored Cavalry

Although the need for speed inherent in cavalry units distinguishes them from armor divisions, armored cavalry field impressive firepower, often including combined arms forces of tanks and infantry. More powerful than air cavalry, and able to engage in sustained combat in a way that the limited payloads and durability of aircraft preclude, armored cavalry still usually include VTOL elements, albeit in a diminished capacity.

Armor

Tanks rarely are deployed individually, instead being deployed most frequently in armor divisions with at least three and no more than eight tanks (multiple armor divisions may be coordinated in large offensives). Armor divisions rarely include synthmorphs; even the mighty Fenrir falls short of the payload carrying capability demanded of tanks and their ilk.

Tanks are noisy, easily detected, and relatively slow compared to most battlefield units, and are vulnerable to air attacks, so most tank divisions include dedicated SAM support, usually in the form of dedicated self-propelled anti-aircraft vehicles.

Tanks are vulnerable to mobility kills, despite being heavily armored. Most tanks are treaded, due to their immense weight, though hover-equipped tanks may be used in low gravity environments. Damage to treads or lift skirts can result in a mobility kill, which leaves the tank stationary and vulnerable to artillery and heavy weapons. If used in defensive fighting, tanks are often deployed in entrenched positions, allowing them to bring large guns to bear. Tanks are used for direct fire roles, though some have additional weapons and indirect fire capacity: most tanks include secondary guns like machine guns and, increasingly, seeker launchers.

Another weakness of tanks is their slow speed. Fusion-powered tanks are able to be armored fairly heavily, but air intakes or exhausts and troop hatches mean that a lucky shot with even a light incendiary weapon can cause harm to the crew or to the tank itself, making them vulnerable if left alone in circumstances where infantry can launch sustained assaults. Tanks are rarely brought into large urban cities with tall structures; while they can help greatly with clearing structures due to their massive cannons, they are also vulnerable to harassment from above.

Armored forces usually include IFVs and self propelled artillery to reinforce the relatively slow tanks; these units can attack enemies outside tanks' direct fire ranges, but are not typically capable of engaging directly with enemies. Tankettes and super-heavy tanks have seen a resurgence in the years around the Fall, due to their unique combat capabilities, and may also be deployed in armored units.

Adapting to Space

Many traditional battlefield roles are obsolete in microgravity and when a habitat's pressurized air is the only available source of oxygen for the nearest thousand miles. Units operating in space have to deal with tighter quarters and the potential damage of hull breaches, as well as the difficulty of transporting materiel between locations.

Conflicts centered around stations tend to look more like skirmishes than battles even at their most heated; armored vehicles are not capable of functioning usefully in most of these confines, even if there is gravity; although some modern armored vehicles operate just fine in microgravity the majority of battlefield armor is still designed with terrestrial combat in mind.

Infantry deployed in microgravity tend to utilize different weapons than soldiers on a traditional battlefield. Short-range weapons or seekers dominate the battlefield; rifles are usually replaced by carbines and sub-machine guns with decreased weight and more flexible firing positions, and sidearms are used in an offensive role instead of being weapons of last resort. Seekers, when used, are typically restricted to weapon types that minimize habitat damage, such as plasmaburst rounds.

One potential hazard for soldiers floating in microgravity is the potential for kinetic weapons to produce a spin during discharge. This can be counteracted with careful positioning, which ensures that the force dissipates into the center of mass, minimizing inaccuracy.

Most infantry fighting in habitats have access to environmentally sealed gear, both due to the high efficacy of chemical weapons in confined spaces and due to the risk of hull breach. While explosive decompression can incapacitate soldiers or strand them outside of the combat area, soldiers equipped with magnetic boots and backup oxygen supplies can continue fighting regardless of the habitat's current condition.

Small and human-sized drones are favored for station defense, as they can be hardened well beyond standard morphs and deployed against enemy infantry with few concerns about habitat navigation. Some of these drones, like reapers, have become popular combat synthmorphs.

Battlefield Support

Most of the military victories on battlefields in the past two centuries have come down not only to ground forces superiority but also the presence of strong battlefield support elements, such as artillery, air support, and killsats.

Artillery

Artillery can be built around seekers or indirect fire weapons. As a general rule, artillery is not used for direct fire, except in some rare occasions where it is deployed in microgravity.

Artillery is deployed from outside the battlefield; most artillery rounds take between five and thirty seconds to reach their target. Guided artillery can guarantee hits within five meters of the designated target, though more accurate impacts are common.

Kinetic artillery, deployed to indirect firing solutions, delivers a variety of rounds, including armor-penetrating, high explosive, and canister rounds that can contain nanoswarms, gas, corrosives, or submunitions. Used primarily in environments with gravity, kinetic artillery typically employs traditional shells and propellant, though some rail-accelerated artillery pieces exist. Kinetic artillery has limited ability to adjust impact locations, but shells are cheaper than seekers.

Seeker artillery fires missiles or rockets across great distances. Guided seeker artillery can be pin-point accurate, and may even be able to be called in against rapidly moving forces. Seeker artillery can include any standard seeker package, and it is not uncommon for submunitions to be added to seeker rounds, such as having multiple anti-tank missiles deployed against separate targets by a parent round which is directed at another target.

Air Support

Air support comes in multiple forms and is used in a variety of circumstances. We'll be examining both aerial deployment techniques as well as direct and indirect fire from air support forces that may be frequently found on transhuman battlefields.

Air Deployment

In low gravity and with high powered VTOLs and planes, air deployment has become increasingly popular for all sorts of ground forces. Deployment from the air is done in two ways; either airborne forces carried in by parachute or glider, typically launched from a plane or low-altitude spacecraft, or via VTOL insertion. Landing aircraft not equipped for VTOL capabilities is not unheard of, but generally tends to be met with mixed results at best, as fixed-wing aircraft may be incapable of taking off in battlefield conditions.

Airborne force deployment is tricky because it leaves few avenues for escape. Although it can insert troops well behind enemy defensive positions, something which is of nigh indispensable value, and you can deploy troops far from enemies' ability to retaliate, troops tend to be relatively vulnerable during deployment.

However, gliders and parachutes deployed in low gravity environments may be able to bring along armor that was inconceivable with Earth's gravity; of course, the parallel concern is that troops and armor trying to parachute or glide in thin atmospheres may not be able to reach acceptable landing speeds before landing, resulting in damage to materiel and injuries or death of soldiers.

Air assaults carried out with vertical takeoff and landing capable aircraft (VTOLs) are more common in most places. Multiple infantry units can be attended to by a single VTOL, which may be assigned to transport roles for the duration of a battlefield encounter or be retasked to air support roles after deploying infantry and armor.

In low gravity, and with the power of a fusion reactor, VTOLs have become capable vehicles for armored insertions, and it is not uncommon to see armed forces deploy all-in-one VTOLs for anti-air, anti-armor, and transport roles.

Drop pods have been used for some one-time insertions, particularly in reclaimer attempts to recapture Earth and in other such orbital assaults, though they have seen use against habitats in microgravity as well. Often made of radar absorbent material and with invisibility sheaths, drop pods are able to insert troops stealthily and with greater speeds than with parachutes, with the added bonus of deploying fireteams and squads in the same location. However, drop pods do not permit exfiltration.

Air Support

Air support is often used for direct and indirect munitions delivery. Aircraft can move at speeds that make it difficult to effectively retaliate against them, and can carry the same weapons that one would expect to see on an IFV, plus bombs and missiles (large guns tend to be unpopular, though not impossible to find, on aircraft). VTOL and hover capable aircraft can provide sustained fire support, while fast movers such as jets can provide single attack runs. Air support is sometimes relegated to autonomous or jammed drones, which can be highly effective.

Single-strike gun runs are common from aircraft, as they keep the aircraft in motion and provide enough firepower to at the very least deter most forces. Bombing or missile runs, with heavier munitions deployed, are used when IFVs or tanks threaten infantry units, or when the destruction of armor is of immediate strategic importance. VTOLs can provide sustained fire from hover, which has the upside of infantry suppression and high armor kill rates; a good pilot can remain sufficiently mobile to avoid most incoming fire, while still staying stationary enough to provide predictable support for ground forces.

Air support is frequently delivered with the support of a forward operations controller, though on rare occasions pilots may be responsible for selecting and engaging targets of their own accord. This is typically rare, as munitions effectiveness falls dramatically when pilots are responsible for finding and lining up targets without external assistance, especially with single pilot aircraft or aircraft without a dedicated gunner role.

Killsats

Killsat support is exceedingly rare, and has its own downsides. "Killsat" is a popular term that worked its way into military jargon to refer to any direct weapons support from spacecraft or satellites against ground targets.

When dealing with killsat munitions, some things are important to remember. Killsats are expensive, are typically slaved to strategic interests, and are as such somewhat rare. Few killsats are made with the capacity for precision destruction; kinetic killsats can strike with similar yields to nuclear and antimatter weapons, while energy weapon based killsats can saturate a city block with enough energy to melt rock.

Killsats are limited in effectiveness by their distance from the battlefield; you will rarely find a killsat so distant as to have more than a second worth of lag in communications; sometimes battleships with guns to spare may provide battlefield support. If satellites are not in geosynchronous orbit, there may be a limited engagement window in which their weapons can be deployed; multiple killsats on the same orbit naturally increase the number of engagement windows, and it doesn't take that many satellites to achieve constant firing solutions on most bodies in our solar system. Rounds fired from a killsat typically take between five to six minutes to arrive, though particles or beams arrive quickly enough for the delay to be negligible.

Mines and Explosives

Dealing with mines and explosives is a major concern for most forces deployed for ground operations in a given area. Both insurgents and organized military groups have been known to deploy improvised explosive devices, military grade explosives, mines, and smartbombs against hostile forces.

Mines are typically still the same old dumb systems used since long before the fall, though active scanning and detection is a feature on some mines. Antipersonnel mines typically pack the same firepower as a grenade, though more violent versions exist for the purposes of taking out a fireteam or squad. Antitank mines are heavy, equivalent to a missile or larger. Most mines are pressure sensitive, though magnetic mines are used for antitank mines.

Scattered mines are visible; they require removal but a cautious force can avoid or remove them with little risk. Tripwires can also be used to trigger mines, and are less visible than scattered mines. These may also trigger other traps, such as a grenade drop, missile launcher, or mortar. Entrenched mines are stealthier, and can be detected more readily. Many mines can be detonated manually, though they only listen for signals so that they cannot be detected via radio signal interception. Mines can be deployed manually by engineers, or via artillery or bomb delivered mine dispersal systems.

Mines can be used defensively to prevent enemies from flanking a force, or to channel them into ambushes. They can also be used offensively, to harass enemy forces and delay retreats. Disarming mines is a tedious process. Mines can be detected and marked, though the methods for doing so are subject to change: metal detectors rarely work against the composites used in mines, so it is necessary to use other methods to detect and flag mines. It is generally not recommended to move through a flagged minefield, even if there is relative certainty of accuracy, and removal by rollers or explosives remains one of the best ways to remove minefields. Mines deployed underground have proved resilient against nanoswarm disabling techniques.

Improvised explosive devices are used by guerillas and occasionally regular military forces to damage and destroy materiel, kill soldiers, and damage morale. Many of these devices are haphazard, not intended to be disarmed once primed, and require removal by engineers or other specialists. Disassembler nanoswarms are often used for this purpose. The manufacture and style of IEDs varies depending on the user and the intended target, but they are often disguised as rubbish or camouflaged to avoid detection.

Military explosives are usually deployed against strategic targets such as bridges, roads, and other important infrastructure that might fall into enemy hands. While these

are typically not intended primarily to cause damage to enemy forces, instead denying them precious resources or means of transportation, troops and materiel in range of the blast will likely be killed or injured.

Finally, smartbombs provide a new and emergent threat. Built with semi-autonomous AI, they are capable of identifying targets and detonating. Deployed in structures as traps, they can be difficult to detect. Fortunately, their payloads tend to be limited, but large smartbombs can detonate when criteria are met or unmet. Most other types of explosives can be combined with a smartbomb system, creating mines that will only detonate after a certain date or an IED that looks for uniform elements that identify certain ranks. Smartbombs are mesh-enabled, though they are usually hidden from view or running passively unless they are actively requesting programming.

Battlefield Medicine

Casualties are a natural consequence of warfare. Even the most elite units experience attrition or combat related casualties during deployments, and it is necessary for soldiers to understand the proper means of treating injured soldiers on the battlefield. Biomorphs and synthmorphs are both treated with the same battlefield medicine protocols, though synthmorphs are obviously given adjusted treatments due to the different concerns in repairing damage versus treating wounds. Most units do not provide care for AI-driven pods, synthmorphs, and drones, though when resources permit they will be recovered.

Medics and Combat Life Savers

Medics have a clearly defined battlefield role as providers of medical care. Combat life savers, on the other hand, are typically riflemen or other operators whose primary goal is to assist their squad or fireteam. CLS have medical training, however, and are capable of assisting medics or functioning as a replacement where necessary.

In some units, the roles of medics and combat life savers fall to AI-driven drones or pods; typically there will be at least one or two human medics in a unit in case the AI are compromised. In addition, muses or skillsofts may be used to replace medical training, though this is frowned upon by many commanders as being less effective than conventionally trained soldiers.

Care Under Fire

Care under fire is the most dangerous sort of battlefield medicine, but is also the most important for saving the lives of casualties. Care under fire typically consists of checking for and preventing bleeding using traditional bandages or nanobandages, tourniquets, and the like. Synthmorphs typically do not require care under fire, as their treatment can wait for later.

When under fire, there are a few concerns that should be taken into account. The medic should remember that they are in the crossfire (if not explicitly targeted) while providing care under fire; resuscitation should wait for tactical field care, rather than being performed in the line of fire. Smoke, AR disruption, tactical shields, and suppressive fire are important.

If casualties are still mobile, they should be instructed to return to cover and receive treatment there. Casualties that are incapacitated and immobilized, either by being knocked unconscious or by wounds that prevent movement, should be removed. Biomorph casualties with neck or spine injuries, or suspected neck or spine injuries, should not be moved unless they are likely to be killed where they are.

Once hostile engagement ceases, proceed to tactical field care or medical evacuation.

Tactical Field Care

Field care is the next step of combat medicine. Once the fire in an area has died down, you want to make sure that casualties will survive their wounds. Check for breathing, providing CPR and other assistance as possible and necessary. CPR should only be performed in sealed environment tents when fighting takes place in vacuum or near-vacuum. Seriously injured casualties who have ceased to breathe should be low priority; they will typically require more medical care than is feasible in a battlefield environment.

Any soldier should be checked for consciousness, bleeding, breathing, fractures, burns, and administered a cocktail of painkillers and antibiotics at this point. Anti-nanite and anti-viral measures may also be prudent, as are anti-histamines and steroids in exoplanet environments with anaphylactic agents. At this point medical evacuation begins.

Pods and synthmorphs have lower priority during tactical field care than biomorphs. Pods' cybernetic components mean that their operators tend to be less likely to

suffer death from bleeding out, while synthmorphs are immune to the damage of prolonged bleeding wounds and rarely need urgent care, even if rendered inoperable by battlefield damage.

Although modern biomorphs do not enter shock states, flats and some early-model biomorphs may go into shock, which requires special medical care. Hypovolemic shock can still occur when biomorphs experience heavy bleeding, which can be treated by providing intravenous fluids.

Medical Evacuations

Medical evacuation of soldiers happens in two forms: live evacuation and stack evacuation. Live evacuation involves retreating living biomorphs and pods to dedicated surgical centers or healing vats, and returning synthmorphs to repair centers. Casualty evacuation varies depending on available equipment and personnel. Where medics are available to ride along en route, or where nanobandages or other nanotechnology is available to stabilize critically injured soldiers, field medics often stay with their unit. Otherwise, field medics or combat life savers may follow along with medical evacuation transports, then return to the field.

Medical evacuation may also be performed as stack evacuation. This can be misleading; nanocoffins and other drones can carry heads or stacks, and a soldier's recovered head in a healing vat can be used to rebuild a morph cheaply from feedstock without the trauma of resleeving, though any augmentations must be replaced.

Stack evacuation is somewhat traumatic for rookie soldiers to participate in or experience, and has a tendency to be stressful for all soldiers when repeated over a long period of time. Some units are more likely than others to participate in stack evacuations. Ultimates, in particular, are known for stack evacuations, even using them on civilian populations during the Fall (with some controversy), and many of the less bioconservative hypercorp and mercenary units favor it as a cost effective way to minimize the hassles of casualty logistics.

Field Resleeving

Military morphs are purchased in bulk and soldiers are resleeved into identical morphs when possible to minimize resleeving difficulties, but it is still recommended that soldiers receive a week's sabbatical between deaths. While it is possible for many soldiers to be deployed much quicker—the reseleeving process itself typically takes no longer than two hours with a proper battlefield logistics setup—psychological difficulties may result. Voluntary psychosurgery can mitigate some of these consequences, when it is available.

Improvised Warfare

While mercenaries and soldiers have access to central organization structures most of the time, several mercenary units operating during and after the Fall have inspired the creation of an organized guide to improvised warfare. This is distinct from guerilla warfare, as it focuses on the use of available resources in a habitat to respond in kind to armed aggression. Several of our editors have seen combat against exhuman or TITAN forces in which local assets have been critical to accomplish standard battlefield objectives, particularly delaying actions.

With that in mind, we will of course mention and discuss insurgent tactics, as much mercenary combat takes place between massively disproportionate forces.

Maintaining Unit Cohesion

Just because you lack the resources and backing of larger combatant forces, it is important to remember that unit cohesion is still a key factor in military success.

Where possible, improvised fighters use uniforms. This adds legitimacy and places them closer to the label of legitimate soldiers than as insurgents—it is easier to achieve public backing if you fight a conventional war than it is if you are viewed as terrorists. In addition, having uniforms provides a symbol for morale purposes, and makes it easier to determine who you should and should not take shots at when it's dark and hard to see.

It is also important to remember that improvised warfare uniforms tend to be more minimalist; they may consist of borrowed equipment with new insignia, or even armbands or color coding—the latter can hurt camouflage, but is good at preventing friendly fire incidents, which happen more frequently with volunteers and rookie mercenaries than they do with battle-hardened soldiers. While many military units use AR identification, civilian hardware is more easily compromised and should not be used for this purpose except as a last result.

The final step is to set up a command and control post; even if you're a card-carrying Autonomist Alliance member with a distaste for hierarchy, you still need to select someone to figure out what's going on and communicate that to other people.

Getting Gear

Welcome to the hard part of fighting war with improvised materials. Most fabbers are built with arms restrictions; even more common civilian weapons cannot be built without an override, which means that you probably need some infosec capacity (not to mention blueprints), or you need to seek out arms in other ways.

The easiest way to get weapons during a conflict is to take them from someone. Typically, during the course of improvised warfare you won't have too many options to trade with outsiders, though you might be able to convince an aligned faction or pay someone to drop a crate from a safe distance, which doesn't necessarily mean you even get the goods. This means that weapons come from pre-existing armories, either ones that are indigenous to where you are fighting (for instance, old hypercorp stashes or a civil defense bunker's storage), or taken from fallen enemy combatants or captured enemy supply depots.

Using field-salvaged weapons has its own concerns. First, you need to make sure that any electronics packages are not phoning home and giving away your position. EMP works well for this, but having someone hack into the gun and change its settings works best. Any weapon manufactured for decades before the Fall probably has some sort of remote tracker included, and any modern weapon not printed out by an anarchist or criminal will have trackers, even if they're not normally connected to anything.

Second, you need to manage ammunition and maintenance logistics. Magazine feeds and even the rounds that go into guns are often not interchangeable, and while it is possible to use nanosystems to repair and clean most firearms the availability of high tech solutions should not be assumed on. You will need tools and supplies to clean and maintain weapons (many weapons include these in an internal compartment, especially military-grade weapons), plus ammunition and magazines that fit. Energy weapons are less picky, but have their own limitations (range, usually) and are even more of a pain to maintain than kinetic weapons.

Finally, you need to make sure that you are familiar with the weapons you have taken. Troops using gear they don't know how to use perform much more poorly, so expect to have to train troops. If you have an AR or VR training program, that's great, but you might have to resort to the old school firing range method, which means running through ammunition, and finding a place to train that you won't get caught as well as finding enough ammunition to have training as well as battle supplies.

Improvised Armor

As a general rule, vehicles and morphs should be armored as much as is possible without significantly slowing them down or limiting their functions. Against modern weaponry, some armoring efforts may be futile, but improvised vehicle armor is a good idea at the very least.

Exact fabrication techniques vary, but remember that any soft skin vehicle brought into combat is likely vulnerable to fire from any rifle on the battlefield, and even a pistol can penetrate standard glass windows. Spacecraft or space capable aircraft are usually armored about as well as is possible without access to military fabricators, but groundcraft can be reinforced with scrap metal and fullerenes with relatively little trouble. Mining equipment is often armored well enough to serve as improvised armor, and fabricating mining armor packages is possible on many fabbers that would forbid the manufacture of weapons.

Another concern is the safety of passengers in a cabin. Since vehicles were first introduced to the battlefield users have been putting sandbags into the floors of vehicles to protect passengers against mines. That technique remains effective to this day; anything that will go through a few inches of sandbag and cause serious harm would probably have taken you out pretty handily anyway, and things that can kill a vehicle won't necessarily penetrate sandbags. It's a cheap and effective technique that saves lives.

Technicals

Technicals are modified soft-body vehicles that have guns mounted to them. Typically, this is either a machine gun or a heavy machine gun, but assault cannons and larger weapons can be fielded in this manner. Technicals fill a different role than traditional armor, being used for harassment and hit-and-run tactics. The main rule of using technicals is to be sure that you have a battlefield that is

conducive to them staying out of harm's way; aircraft or true armor can pick them off like flies, even if you have improvised armor attached.

Back on Earth, technicals served as a status symbol for warlords, and while they're not particularly popular after the Fall due to the lack of environments in which they can be effectively fielded they have been reported to be in use by some Barsoomian militant groups, and they serve as both transportation and fire support for some of the poorer mercenary units and criminal syndicates.

Flying Technicals

We finally have our flying cars, and with them we have flight-capable technicals. They're more expensive, and have the downside of turning themselves into broad targets, but rocket buggies have been adapted into flying technicals and used in conflicts on Mars and elsewhere.

Field tests by Barsoomian-aligned raiders seem to indicate that soft skinned flying vehicles intended for civilian use have too many safeguards to be used in combat situations, where hostile infosec can cripple their computers and activate emergency braking systems, leaving them vulnerable. Later variants, which were operated with communications blackouts and hardened security systems were still highly vulnerable to seekers.

Overall consensus from battlefield strategists is that these vehicles are not fit for use in these roles, and numerous reports have surfaced of these vehicles being taken down by unsupported fireteams with nothing more than a single plasma rifle shot or a lucky seeker hit. Lacking the full capacities of a combat VTOL or fast mover, it is strongly recommended that flying technicals not be employed for battlefield use, though weaponized personal jets have seen limited success with strafing runs.

Last-Ditch Defense

When you are defending against a superior force, the best goal is typically to lay out clear objectives that can be accomplished to maximize your victories without direct confrontation with enemy elements. This typically comes in two forms: delaying until reinforcements arrive, and denying resources to opposition forces.

One crucial element of any defense against a superior force is to limit the enemy's access to nanofabrication facilities. Where a fabber cannot be retreated or disabled, it should be destroyed. Fabber stock should be destroyed, rather than abandoned, as should raw chemical components for life support systems, unless doing so compromises allied forces as well. At the same time, care should be given to ensure that allied forces carry all necessary supplies, including NBCN gear, with them.

Terrestrial Defense

Terrestrial defense focuses on delaying actions and other techniques to restrict access to transportation and reinforcement, cutting off enemy supply lines, and denying resources.

The first step in terrestrial defense against a greater force is to achieve mitigation of enemy force multipliers. Destroying bridges in a moderately high-gravity environment like Earth, Mars, or Mercury can be effective as a means of preventing enemy forces from moving freely across rough terrain. Likewise, rail infrastructure should be targeted for destruction to prevent enemy troop movements from leveraging these resources. Generally, airborne units are more common after the Fall than in any other point in human history, so this has limited effectiveness.

However, retreating to secured and fortified spaces is still a good solution. Many terrestrial habitats are built into mountains or into the ground, which provides great defense against enemy artillery and small arms. Forcing enemy units into choke-points limits some of the benefits of having a numerically superior force, and forces enemies to assault a static position. This should be combined with electronic warfare to prevent enemy seekers from striking friendly positions.

One focus of defensive operations should be to ensure that valuable stores and personnel are kept away from enemies and in common, easily defended places. Fabber stock, medical supplies, and civilians should be kept in safe places away from the front lines.

Finally, it is important to make sure that your communications can reach allies abroad. EMP jamming is a potential hazard, so it is a good idea to stock any large units with a neutrino or quantum communications rig, since these are difficult if not impossible to jam, and allow distress signals to be sent reliably to remote forces. Not all distress calls will be

heard by someone willing to come to your aid, but a slight chance of rescue is better than no chance of rescue.

Microgravity Habitat Defense

Fighting in microgravity usually ends in victory for whoever is willing to destroy more of the habitat to get what they want. If your assailant wants to destroy the habitat, only a good point defense system or some brave egos making a preemptive assault on them will stop them.

If your opponents are unwilling to destroy the habitat, you can control their movements by jettisoning or depressurizing parts of the habitat. While this can be hazardous, jettisoned sections of a habitat can be restored fairly easily and deny enemy access to convenient traveling spaces, forcing them to move between airlocks.

If possible denying access to ship systems, such as airlocks and life support will slow enemy assaults. Enemy forces without the support of an attached ship will be forced to rely on internal reserves of oxygen and water, which can force them to make unprepared assaults. Being prepared with vacuum sealed armor or synthetic forces can allow an immediate response against a disoriented or unprepared enemy, and habitats do not necessarily need to be damaged to allow partial or complete depressurization of individual modules.

Alternatively, it may be just as easy to entirely forestall assaults in microgravity by exploiting the nature of most habitats. Having a portion of the habitat be jettisoned from the main body with enemy forces on-board or simply flying away in a separate vessel may be the best strategy to minimize allied losses and deny enemy objectives. Enemy vessels docked at a habitat are fair game for a counterassault, and capturing an enemy spacecraft can provide a valuable bargaining chip for coercing a force into surrender.

Effective Combat Strategies

Engaging a superior force is only reasonable if there is some advantage on your part. Hit and run attacks are generally regarded as being the best, but there are times you need more sustained assaults on enemies, especially if they have a vital strategic position or you are defending life support systems or critical infrastructure.

Urban Combat and Entrenchment

In urban environments, you will have decent fighting positions in the form of structures and other cover, but in uninhabited locations you may not have this advantage. Even though an improvised force cannot hope to go toe to toe with a formal military entity, entrenchment and urban warfare can delay defeat long enough for allies to arrive, or at the very least mitigate enemy numerical and technical advantages.

Finding cover in buildings or behind edifices is tricky; many terrestrial structures are not built to withstand gunshots, and this is true for internal habitat construction as well. Habitat exterior walls and bulkheads will likely provide meaningful cover, as will structures built to withstand intense environmental stresses or military action.

The main purpose of fighting from a building is to achieve a height and stealth advantage. Heavy weapons deployed from above have a greater chance of destroying armored vehicles with a decreased chance for retaliation; assault cannons, plasma rifles, and soft-launch seekers are very effective. Light weapons can also be deployed against infantry from structures.

The challenges in fighting from buildings come from the difficulties in evading pursuit and maintaining cover. In populated urban environments, enemy combatants may have rules of engagement that prohibit bombardment or damage to structures that are inhabited, meaning that any response has to be done with small arms and directed toward known enemy positions. Enemies with known hostile presence will be breached and searched. Maintaining and using egress pints such as fire escapes can allow you to attack a foe, leave on the other side of the building, and disengage. In low gravity environments, or where it is possible to install ziplines or other such devices, it may be possible to move troops between buildings, allowing for continued harassment and rapid movement and escape.

Fighting in buildings also allows for more effective crossfire ambushes; it may be possible to hit an enemy from two or three directions simultaneously without the risk of stray rounds hitting your own forces. This tends to be incredibly disorienting, and may be sufficient to deter mercenaries or green soldiers, delaying or preventing assaults.

Entrenchments provide meaningful cover. Either taking the form of fortified buildings, actual trenches, or other man-made cover, entrenchment is obvious but still difficult. The easiest way to clear entrenchments is with indirect fire, so foes with artillery, air support, or a willingness to deploy grenades and seekers are particularly threatening to entrenched units. If done properly, entrenchments must be searched similarly to buildings.

Whenever an enemy force is moving through terrain that you control, stealth can work to your advantage. Ambushing isolated units or setting up choke-points to fire on hostile infantry is always effective, as it increases the hazard inherent in breaching and clearing structures.

Explosives may also be used to deter enemies from searching buildings; used as traps they may be capable of taking out an enemy fireteam or squad, but obvious bombs are a powerful psychological warfare tool. Be aware that if hostile forces are able to remotely detonate your bombs, they may be used as tools against you. It is also a war crime to deploy such techniques where civilian lives are at stake.

Countering Drones

Drones are an occupation or assault force's greatest advantage when it comes to defended positions. EMP or infosec efforts can prevent drones from communicating, which prevents them from relaying your position back to allies. Drones tend to be more durable than one would expect; even light drones can withstand significant small arms fire. Railguns or seekers are recommended for engaging drones. If seekers are available, but in limited stock, they should be saved for use against drones and synthmorphs.

The most dangerous drones for disadvantaged forces to encounter are flying drones; it may be better to pursue a mobility kill on these drones, effectively shooting them out of the air, than to try to destroy them outright. In microgravity, many flying drones will be able to recover from potential mobility kills (for instance, shooting out one of two thrust vector units), making it more practical to attempt for complete destruction of the drone rather than immobilization.

Ground-based drones are susceptible to more threats than aerial drones, as they can fall victim to mines and other explosives.

One of the major threats posed by drones is sensory capabilities beyond those of a standard human. It is possible to spoof or blind these senses. In terrestrial environments, there are few scanners capable of penetrating more than a meter of earth or concrete, making subterranean bunkers with thick walls a good last resort; these can be made from earth with entrenchment tools or constructor nanites in a fairly short timeframe, and require manual clearing with drones. Building temporary underground shelters that can be dropped on command allows defenders to bury hostile drones, though this works better against small flying scout drones than against larger drones.

Drones can also be compromised by a hacker, allowing them to be suborned. This is typically difficult, but not impossible. If hostile drones are interfaced with the local mesh, changing AR and other digital pathfinding can delay drones or confuse them.

Finally, dedicated EMP weapons can be effective against jammed drones. While drones on AI operation will suffer only a loss of communication when hit with an EMP attack, remote controlled drones may crash or lose targets before they are able to switch back to their AI, giving a short window in which the drone can be directly assaulted.

CBRNN Defense

The Fall provided grim evidence of the need for armed forces to be provided with appropriate CBRNN (Chemical, biological, radiological, nuclear, and nanowar) gear and training. These defense techniques boil down to avoidance, protection, and decontamination.

CBRN warfare and countermeasures originated on Earth in the 20th century and evolved to include nanowar systems such as nanoswarms and appropriate countermeasures for them.

When CBRNN hazards are detected, it is appropriate to mark them redundantly. Physical markers should be placed (adhesive versions are available for microgravity environments, where appropriate), on the outskirts of areas where hazardous environments are detected. AR tags may be used to supplement these physical markers.

Chemical

Chemical warfare is somewhat less common now than it was on Earth. Gas-dispersal weapons are effective in enclosed habitats, but thin atmospheres tend to limit the effectiveness of these weapons, and the prominence of personal vacuum-sealed suits in microgravity habitats means that only agents capable of corroding through suits or affecting synthmorphs quickly are effective.

It is occasionally common to encounter liquid chemical hazards, both as a consequence of fighting in habitats or as a dedicated weapon. Most gas-based chemical hazards can be avoided with proper use of a mask and hood or full environmental seal. Direct morph exposure to liquid or dry chemicals like thermite, scrapper gel, strong bases or acids, and other reactive materials such as white phosphorous requires decontamination.

Nerve agents are common chemical warfare weapons, and can be countered with atropine if treated in time. Other chemical agents can still be dangerous, especially if soldiers are not wearing protective gear at time of exposure. General purpose decontamination lotions and powders are used to limit the effects of chemical weapons and other toxic agents, though decontamination is a difficult process if soldiers have suffered exposure to their face and remain in an environment with airborne toxins. Most effective decontamination requires water, which can be at a premium in many habitats.

Environmentally sealed heavy armor and vacsuits provide a good line of defense against most battlefield chemical weapons, and synthmorphs are inherently immune to blister, nerve, and other chemical agents. Exposure to highly corrosive chemical weapons that can damage synthmorphs, armor, or vehicles requires withdrawal from the field.

Exposure to psychoactive agents requires special care and evaluation. Most of these agents are not effective on the battlefield, though Flight has been used extensively in battlefield circumstances. Although generally nonlethal, these can sometimes be difficult to distinguish from TITAN nanowar agents, and may cause egos to require psychosurgical repair when compounded with battlefield stressors. Fortunately, these agents are not effective against synthmorphs, drones, and some types of AI-driven pods, though egos sleeved in a pod are usually vulnerable.

Biological

Biological warfare is slower but in many ways more dangerous than chemical warfare. Biological weapons can destroy biomorphs and pods, and highly contagious biowar weapons can be used to incapacitate or kill large forces. Most pathogens have been categorized and rated by biosafety level.

Pathogens of biosafety level 1 are not known to cause disease and infection in flats or splicers. Biosafety level 2 pathogens are capable of infecting flats (but not usually splicers and other biomorphs), but do not pose a reasonable fear of death with medical treatment. Protective gear and decontamination procedures should be followed for biosafety hazards of level 2 and greater.

Biosafety level 3 pathogens are easily transmitted and require containment. They have symptoms that can range from incapacitating to fatal without treatment. Many of these can infect splicers and biomorphs not tailored explicitly to resist disease.

Biosafety level 4 pathogens are capable of causing death or serious damage to almost all biomorphs, and should be avoided. Biosafety level 4 pathogens cannot be treated effectively by human technology, and include TITAN biological weapons.

TITAN biowar agents are highly complex, and need to be treated with much more caution than any other agent. They are considered to be biosafety level 4 hazards, though some scientists have contemplated reclassifying them as BSL-5 agents.

The two major transhuman-created bioweapons are trigger and degen. Degen is not immediately fatal, but causes cortical stack corruption, which means that frequent backups should be utilized where soldiers may come into contact with degen. Trigger causes massive allergic reactions, which can be treated but are often fatal, even with medichines.

Xenobiowar agents are also available, though they are rarely used. Exoplanets with native or implanted life should have the environment itself be considered a biological weapon. The primary hazard in these environments comes in the form of toxins or allergic reactions.

Bio-defense units are available to protect soldiers against both alien and terrestrial bioweapons (though harmful

terrestrial microorganisms are often spared), though these should not be considered effective against TITAN biowarfare.

With the advent of synthmorphs and drones, biological weapons have become less common, especially since a synthmorph can care for an afflicted biomorph without fear of contagion, though decontamination processes must be followed.

One major issue for forces that encounter biological warfare with a significant number of biomorphs is the question of handling the infected. With the advent of TITAN bioweapons, it has become clear that many biological attacks will no longer resemble traditional illness, instead causing sophisticated and cultured effects in their targets, including potential alterations to a soldier's psychology.

Radiation

Radiation can come from two sources; remote ionizing radiation sources (such as cosmic radiation coming from the sun, an enhanced radiation weapon, or nuclear weapons), or from fallout and radioactive materials.

Ionizing Radiation

Ionizing radiation can be avoided by finding appropriate cover. Any external habitat wall, including interior walls on modular habitats that may potentially be exposed directly to vacuum, will provide moderate protection from external radiation. Most surfaces provide adequate protection from alpha radiation, but gamma radiation and x-rays penetrate through most materials. In terrestrial environments, subterranean bunkers are typically well protected, as about a meter of dirt or concrete halves exposure to radiation.

Advanced compounds and lead can shield against radiation in man-portable systems, such as CBRNN suits, and can be added as modifications to most armor. Standard vacuum suits do not provide meaningful protection from potentially hazardous doses of directed ionizing radiation.

Acute exposure to radiation results in radiation sickness in biomorphs. Bananas furiosas, as well as synthetic drugs, can reduce the effects of radiation sickness, and augmentations can provide increased tolerance to radiation. Basic biomods or treatment in a healing vat will prevent most of the long-term negative impacts of radiation, however. Synthmorphs can have critical components damaged by prolonged or acute exposure to radiation. Both biomorphs and synthmorphs may suffer corruption to cortical stacks as a result of radiation exposure.

Radioactive Materials

Typically, fusion and fission reactors as well as antimatter containment vessels and reactors become highly radioactive throughout their course of operation. Nuclear weapons or dirty bombs can also result in exposure to radioactive materials.

Radioactive material emits ionizing radiation as a result of nuclear decay, an atomic process that varies from material to material. Irradiation in this form is less likely to result in acute radiation sickness, but can cause major damage to both biomorphs and synthmorphs with sufficient exposure.

The primary ways to prevent radioactive materials contamination involve decontamination and ensuring that particles do not enter airways, cavities, or other places on a morph that may be difficult to decontaminate. Gear used in a contaminated environment is typically abandoned as part of the decontamination process, but it may be possible to remove radioactive particles and return objects once contaminated with radioactive material to regular service.

Defending against radioactive material is relatively simple, as radioactive particles with long half-lives and high radioactivity tend to be large, and can be effectively filtered with a simple face mask. It is still necessary to decontaminate affected personnel and equipment, however, and spending long times in contaminated regions is particularly hazardous.

Nuclear

Nuclear weapons pose a major threat to military operations. Dirty bombs tend to behave as simple radioactive hazards, but both traditional nuclear weapons and antimatter weapons require special protective care.

Gear to protect from nearby nuclear blasts is beyond transhuman manufacture, but CBRNN protection includes safety features that help in the immediate aftermath of nuclear weapons strikes. Typically, CBRNN gear has better protection than needed against the radioactive material generated by nuclear weapons and reactor detonations, but also includes some radiation dampening and flash compensation and reflective or ablative protection, which can prove effective at reducing the effective kill radius of a nuclear/antimatter

weapon in vacuum or low-pressure environments where the pressure wave from a nuclear blast is less likely to cause significant harm.

Nanowar

Nanowar is relatively new; it was considered to be too costly to be effective in most pre-Fall military engagements, but the TITANs pioneered self-replicating nanoswarms in a way that was far from effective.

Early nanowar systems were created as an alternative to aging chemical weapons stores; offering similar effects to chemical agents on biomorphs and soft targets, but with better armor negation and a designated life cycle.

CBRNN gear quickly evolved to handle the threat with the introduction of guardian nanoswarms as well as EMP systems that proved marginally effective against nanoswarms. Transhuman technology after the Fall is still lacking in effective countermeasures to nanowar weapons, especially when confronted with TITAN-crafted nanomachines. The common solution is simply to flood areas with guardian nanomachine hives and hope for the best, while providing each individual soldier with a personal guardian hive in case hostile nanites survive the assault. Nanodetectors are standard issue in most armies, even in Jovian units that would normally distrust such nanotechnology.

An important distinction for nanowar is the difference between free nanoswarms and nanotoxins. Nanotoxins have highly selective methods of working, although they are just as active as nanoswarms, and may have limited areas of effect. Although nanotoxins exist that can be effective against both synthmorphs and biomorphs, they tend to be highly specialized. Free nanoswarms are either linked to a hive (and can replenish), or deplete over time, but provide area denial effects or complete programmed tasks, which may not be related to damaging or reporting targets within their area of effect. Some nanoswarms self-replicate, but these tend to be the realm of TITANs and last-ditch assaults, as the hazards of these technologies are widely accepted.

As with biological weapons, many nanowar weapons are capable of suborning their targets, but they are able to afflict drones, biomorphs, synthmorphs, and virtually any fighting machine. Although most nanowar agents are pretty mundane, the TITANs have been known to deploy highly exotic nanoweapons which require special concerns. Infected personnel may require restoration from backup, as nanotoxins and nanoswarms

The After-Fall Armory

The Fall taught transhumanity a number of things. First, you can't count on massive decentralized AI tactical networks in place of boots on the ground. Second, sufficiently nasty things can suborn your gear. Third, most battlefields are pretty unsurvivable for even well-prepared transhumans.

I'd say that about half of the things that I encountered during the Fall were things that could only be dealt with using specialized gear or external support. At New Mumbai we had to deploy nukes to stop the TITANs' advance, and we didn't have enough time to get everyone out (civilians and soldiers both).

So, with that in mind, here are a few things that anyone going into combat in this day and age should expect. I'm going to take a moment to remind everyone that the best force multiplier in existence is the transhuman mind, unless the Factors do something particularly shocking, so do enough reading to set yourself apart from the genetrash.

- Well, we know who this is marketed at. -*Rackham*
- People who like to pretend that they're as good as Ultimates? -*Harm*

Handling Expensive+ Costs

Eclipse Phase uses simplified costs to reflect the fact that it is unlikely that one will find items at the same price in habitats on opposite sides of the solar system. *An Ultimate's Guide to Combat*, however, looks at military and government issue equipment that would cost a fortune on the private market, and for which blueprints may simply be unavailable or extremely highly restricted. *AUGC* uses Expensive+, Expensive++, and so forth to denote objects that not only are expensive, but are orders of magnitude more expensive than standard; Expensive+ is equivalent to 100,000 credits as an average cost, Expensive++ is equivalent to 1,000,000 credits as an average cost, and so forth. These are not considered categories for the purposes of increasing categories (something which is expensive follows the rules on p. 296, *EP*); increasing categories from Expensive+ increases the cost by 100,000 credits, and something which is increasing from Expensive++ would increase the cost by a million credits.

Weapon Qualities

A lot of people overlook the vagaries of various weapons. Each weapon has its own unique upsides and downsides, and you should be making an intelligent and informed decision about each of your tools as you prepare for battle.

Some weapons are renowned for their ability to consistently put out damage against a variety of targets. These reliable weapons are a mainstay in many peoples' arsenals.

Positive Weapon Qualities

Reliable *weapons roll each damage die twice, taking the higher result as the final outcome for the die. Reliable applies not only to the weapon's base damage, but any damage added by automatic fire. Alternatively, 2 damage may be added for each d10 in the weapon's DV instead of rerolling dice.*

A handful of weapons are capable of causing damage to a large area; these blast-causing weapons can hit multiple targets at once.

Area *weapons are not content merely to damage a single target, but also cause damage to additional morphs. Targets standing within a number of meters equal to the Blast rating of the weapon fall victim to the same effects as the original target of the weapon.*

There are some weapons capable of functioning radically differently, to the point where different skills are used with various modes of the weapon.

Multi-Mode *weapons are capable of being used in multiple different configurations. The skills used will vary from weapon to weapon.*

It is not uncommon to find weapons that cause damage across a whole cone of fire. These weapons are devastating to unsuspecting combatants or those who cannot take cover.

Saturation *weapons use special rules detailed in the Saturation Attacks section.*

Some rare weapons do damage directly through radioactivity (x-rays, gamma rays, neutrons, or other energetic particles). These are highly illegal, and go by a number of names; they are generally lumped together as

enhanced radiation weapons. Some nuclear weapons, typically referred to as enhanced radiation weapons, yield primarily radiation instead of blast and heat, and have this quality as well.

Radioactive *weapons ignore a target's armor, though special radiation hardening applies. They also expose targets to a number of grays equal to their rating. Nanoswarms hit with radioactive weapons suffer double the weapon's Radioactive rating is in direct damage in addition to whatever damage the weapon would normally do to them.*

Flame weapons have the added upside of potentially lighting targets on fire.

Flame *weapons ignite the target on an Excellent (30+) success, similar to the torch spray weapon* (p. 341, *EP*), *doing damage equal to the Flame rating each turn.*

Intrepid weapons manufacturers have derived a number of ways to create weapons that permanently damage armor, rather than merely piercing through it.

Defab *weapons cause damage to the target's armor; each piece of armor that an attack from the weapon hits has its rating lowered by the attack's Defab rating until it is repaired. Self-healing armor is still affected, but repairs damage from Defab at a rate of one point per hour (repair spray can be applied normally).*

It is also possible to send intense electrical pulses through weapons. In some cases, these not only cause an incapacitating shock but also deal additional damage to both synthmorphs and biomorphs through electrical heating.

Shock *weapons cause a shock attack (p. 204, EP), and may also do additional damage separately from their original attack. This damage is halved against synthmorphs and biomorphs equipped with protection from electrical shock. This damage is separate, and decreased by the energy armor of the target.*

A handful of weapons are intentionally or unintentionally designed in such a manner that they are absolutely devastating to nanomachines, inflicting their full weapon damage instead of a partial amount.

Nanowar *weapons do full damage to nanoswarms, unless a particular rating is explicitly stated, such as Nanowar (10), which would indicate that the weapon does ten damage against a nanoswarm.*

Negative Weapon Qualities

Some weapons are just plain unwieldy. These weapons are difficult to use and carry effectively, making it difficult to move effectively while carrying them.

Unwieldy *weapons confer a -10 penalty to all Flight, Fray, Freerunning, and Freefall tests made by the user while the weapon is being carried or used. Characters with multiple unwieldy weapons suffer the first -10 penalty and then take an additional -5 penalty for each additional weapon. Large morphs reduce the penalty for unwieldy weapons by 5, and very large morphs reduce the penalty by 10. Small morphs, on the other hand, increase the penalty by 5.*

Older weapons, and some post-Fall weapons made in a pinch to use fewer resources, suffer from recoil. I like to keep an old anti-materiel rifle from Earth that I've had since I left for New Mumbai in a locker. It packs a real kick, but it's as hard-hitting as any gun you'll see today.

Firing a weapon with the ***Recoil*** *quality imposes a -10 penalty to future attacks with that weapon during the remainder of the combat turn, unless the weapon has been deployed or the character uses a complex action to recover from the recoil. A weapon with the Recoil quality firing a burst provides a -5 penalty to the user's weapon skill, and full automatic fire of any sort provides a -10 penalty to the user's accuracy.*

One thing you don't hear about firearms that often is how many of them are total lemons. Especially if you're buying from scum tinkerers or the Jovians, you can expect a lot of low-end cheaper firearms to be unreliable at best.

When firing a weapon with the ***Lemon*** *quality, the weapon jams (kinetic, seeker, or spray weapons) or overheats (energy weapons) if the attacker rolls a 1 on any of the damage dice rolled on account of the weapon's DV. Melee weapons with the Lemon quality break entirely; they lose any other qualities and do 1d10+SOM÷10 damage. A jammed projectile weapon requires a Complex Action to unjam, while an overheated energy weapon cannot be to attack again until the end of the next turn. Broken melee weapons may be repaired; the Game Master decides what processes this entails.*

Lemon counts only the final damage dice rolled; a Reliable weapon with the Lemon quality only has the Lemon effect apply if any of the final dice are a 1, not if any of the rolled dice are a 1.

Variable Rating Weapon Qualities

Sometimes weapon qualities may have a range or list of values; this means that the user can decide the level at which the quality functions. Occasionally you will also see variable rating qualities with the value determined by things like distance from a target.

Example: Kinetic Gauntlets have an Area (0-10) rating, which means that they can be used to effect a single target only, or all targets within ten meters.

Example 2: Rad seekers have a Radioactive (40|20|10) rating, which means that the effect is different when different conditions are met—in this case range from targets.

Weapon Qualities and Automatic Fire

Weapon qualities that apply to attacks may be doubled by automatic fire; this only applies to qualities like Radioactive, Flame, or Defab that have direct numerical effect.

Example: An HMG firing Defab rounds (which confer a Defab rating of 2) hits an enemy APC. Since the Defab rating is doubled, the APC loses 4/4 from its armor rating.

Damage Bonus

An Ultimate's Guide to Combat introduces a variety of new weapons, many of which use different statistic calculations. It is suggested that Damage Bonus be calculated using the rules in *Transhuman* (p. 96), which state that either SOM + DUR ÷ 20 be used to calculate Damage Bonus or that small morphs should decrease Damage Bonus by 1 and large morphs should increase Damage Bonus by 2. For sake of consistency with the other books, this book uses SOM ÷ 10 to represent the standard damage bonus, and adds in weapons that use SOM ÷ 5, for weapons that use double the normal damage bonus.

Alternate Caliber

Firearms in AF 10 can be found in alternate calibers that make them more suitable for specific types of combat; a rifle with a smaller round may not do as much damage as its full sized counterpart, but it will allow for more ammunition to be loaded into a magazine; a standard automatic rifle with a 30 round capacity modified to fire rounds in a smaller caliber can hold 42 rounds in a standard magazine, or 63 in an extended magazine, while the same rifle modified to use larger caliber rounds could hold 24 rounds in its magazine, or 36 in an extended magazine. When calculating the number of rounds that a firearm using an alternate caliber can use, always round down; though capacities of extended magazines are calculated prior to rounding, however. There is no (effective) cost difference between rounds of different calibers.

Alternatively, firearms can be purchased with the Caliber Adaptation modification applied; this does not change their cost, though they cannot use normal caliber rounds.

All normal firearms require the Caliber Adaptation modification to function with alternate caliber rounds; railguns can use small caliber rounds by default, but must be upgraded with a large caliber adaptation.

Alternate Propellant Loads

It is possible to manufacture traditional firearm (but not railgun) projectiles with different propellant and projectile materials and proportions to make very effective bullets with special qualities. The two most common types of load changes are hypervelocity and subsonic rounds. There is no (effective) cost difference between these rounds and other rounds.

Hypervelocity rounds use a projectile of normal weight and a more energetic propellant. They can only use ammunition types that are compatible with railguns. If fired in a firearm without the hypervelocity adaptation, they add the recoil effect, as they are substantially more energetic than standard rounds. Low-quality firearms may explode on a critical failure with hypervelocity rounds, though most after-Fall weapons can handle the additional pressure. Firearms with the Lemon quality will explode if hypervelocity rounds are used in them. Hypervelocity rounds get a slight range bonus.

Subsonic rounds, on the other hand, are designed so that their projectile never breaks the sound barrier. Typically, projectile weight is increased while propellant loads are decreased or kept similar to standard rounds. Subsonic rounds are harder to hear than normal rounds (-10 to perception tests to hear, which stacks with silencers and other effects), but they have shorter range and poorer penetration and damage performance on account of the slower speed.

Railguns cannot change propellant loads, as they do not use traditional propellants.

Smartgun Systems

The smartgun system is marketed as a weapon for someone who doesn't want to worry about self defense. Used similarly to a normal gun, smartguns typically have a barrel that can aim fifteen to thirty degrees off of where the user is aiming, and fires after using a smartlink system to verify targets with the user. Smartguns use an integrated AI with its own weapon skill, and are typically hardened against assault by using a variant of skinlink; with only an hour's training users can send commands by neural reflex. Haptic feedback encourages the user to hold the weapon in such a way that it can engage its targets. The feed from the weapon to the user is sent wirelessly to mesh inserts, however, and may be intercepted or jammed. The transmitter sending targeting feedback ot the user has an effective distance of five meters, and has an EMP threshold of 12.

Smartgun systems comprise two separate parts: the AI and computer components and the mobility platform that accompany it. The AI has a skill rating of 25 or 40 based on the electronics suite it runs on and the software loaded. These packages have a Moderate or High cost, respectively. Most smartgun AI packages can be applied to any weapon, though exotic weapons may not have sufficient data available for use. Smartguns can be used without mechanisms, but suffer a -10 penalty. By paying one cost category more for the mobility platform, the smartgun can gain a +20 bonus.

The mobility components of a smartgun must be purchased separately. The modifications necessary to make a one-handed weapon a smartgun are available at Moderate cost, while two-handed smartgun adapters typically have a High cost. Unwieldy weapons cannot be made into smartguns.

Should a smartgun system be purchased for a weapon without a smartlink, they double as a smartlink.

- Anyone who needs a smartgun doesn't deserve the hand they're holding it with. -*Harm*

Kinetic Weapons

New Kinetic Weapon Mods

Caliber Adaptation: Firearms may be rechambered and have barrels and other mechanisms replaced to use small caliber or high caliber rounds, changing their effectiveness and ammunition capacity. A firearm can have a small or large caliber adaptation (or a normal caliber adaptation, if they come with a pre-existing caliber modification applied), while railguns typically only have large caliber modifications. Unlike firearms, railguns can fire rounds smaller than their caliber adaptation, though neither firearms nor railguns can fire high caliber rounds without the appropriate adaptation.

Mechanically, small caliber rounds suffer a -2 DV penalty, but gain a 40 percent magazine capacity increase and an additional -1 AP. Large caliber rounds gain +2 DV, but only have 80 percent of the normal magazine capacity. If used with extended magazines, small caliber rounds have 210 percent of the weapon's original capacity without extended magazines, while large caliber rounds have 120 percent of the normal ammunition capacity without extended magazines. [**Free** if purchased with weapon, otherwise **Low**]

- Don't write off small caliber rounds. Having the ability to shove incredible amounts of ammunition into a firearm is sometimes better than having to reload every fifteen seconds, even if you need a few more bullets to get a kill. -*Arvid*

Hypervelocity Adaptation: Firearms with the hypervelocity adaptation mod do not have the recoil quality added when firing hypervelocity ammunition. [**High**]

- Troops don't understand recoil like they used to in the good old days. This is a must if you're using hypervelocity rounds; I've seen too many soldiers hold the trigger until it clicks and put a measly four rounds on target because they don't know how to shoot guns right. -*Rackham*

Smartgun Computer: Smartgun computers house an AI with basic target detection, trajectory calculation, and projectile tracking software built-in. They also include sensors and a modified skinlink pad that allows them to autonomously pick targets to be vetted by the user. They are available at levels that replicate a skill level of 25, or a skill level of 40, for their respective weapons. Without a smartgun adapter, a smartgun can still fire, but suffers a -10 penalty. [**Moderate** for 25, **High** for 40]

Smartgun Mobility Platform: Smartgun mobility platforms allow for a weapon to be used with a smartgun

computer, allowing for a user to simply point the weapon in the right direction and tell the computer to let loose. [**Moderate** for one-handed weapons, **High** for two-handed weapons. Increase cost category by one level to gain a +20 bonus to the smartgun's weapon rolls]

Shortened Barrel: A shortened barrel (and electromagnetic rails in a railgun) reduces the range of a weapon by 20 percent, but provides a +5 bonus to the user's accuracy in close combat that partially negates the penalty for fighting at targets who are attacking the user. Pistols and other one-handed weapons do not gain this benefit. [**Moderate**]

Barrel Extension: By adding length to the barrel of a firearm, or adding longer electromagnetic rails to a railgun, it is possible to increase the accurate range of a kinetic weapon by twenty percent. However, the weapon gains a -10 penalty to firing in point blank range, negating the usual bonus. This penalty is also applied when a weapon is used to fire back at a melee attacker. If applied to an anti-material rifle or sniper rifle, the weapon becomes Unwieldy. This modification cannot practically be applied to weapons which are Unwieldy. [**Moderate**]

Automatic Fire Control: Most modern firearms have an automatic weapon, and most of those can be configured to fire at increasingly rapid rates. Automatic fire control systems allow weapons not originally designed for automatic or burst fire to gain the full-auto and burst fire firing modes, so long as they are capable of semiautomatic or burst fire (i.e. they are not single shot weapons). These systems are not available for revolvers. [**Moderate**]

Semiautomatic Fire Control: The alternative to an automatic fire control group, semiautomatic fire control groups add semiautomatic fire modes to weapons not normally capable of firing single shots, like machine guns, but only if those weapons are not single-shot weapons. [**Moderate**]

New Kinetic Weapons

Revolver: A blast from the past, revolvers fire higher caliber rounds than heavy pistols and are better adapted for engagements at longer ranges. Unlike traditional revolvers, there is no chamber gap, as the chamber is slide-mounted and seals to the body of the firearm when in firing position, allowing for the use of a silencer. More hefty than a pistol, they cannot be as easily concealed, but otherwise are a one-handed weapon that functions similarly to a pistol. Speed loaders are used rather than detachable magazines to allow for rapid reloading. [**Low**]

- These have come a long way since the 19th century. With all the features of a modern firearm, you'll forget you're firing a revolver until you go to reload. -*Arvid*

- I've actually come to like these because you can put different rounds in each cylinder; it's like having a smart ammunition system, but you get bigger bullets instead of just trading down ammo capacity. -*Harm*

Designated Marksman Rifle: Firing a larger round than traditional automatic rifles, DMRs are intended for use by skilled marksmen against distant targets. A cross between the sniper rifle and automatic rifle, it provides better range and firepower, with a focus on armor penetration. [**High**]

Breakdown Survival Pistol/Rifle: Built to be manufactured from parts available to almost anyone, the breakdown survival rifle is a modular weapon built to be able to be deconstructed into smaller pieces. The components can be built on almost any fabber, and may be disguised as everyday goods to avoid arms restrictions and be carried into secure areas. Both the pistol and rifle share the same caliber and central mechanics; the main adjustments are barrel length and the addition of a foregrip and stock. The rifle is loaded via stripper clip, rather than a removable magazine.

It takes thirty seconds to assemble the components into a pistol, and sixty to assemble a rifle. Silencers and smartlinks are available for breakdown guns, but are not capable of being disguised as other objects. They can also be built with caliber modifications, but not any other weapon mods. [**Low**]

- You can't find railgun variants of breakdown guns. The materials needed are too complex, and most of the breakdown guns are intended for use by dissidents, not superspies. -*Harm*

Pipe Rifle: Made out of everyday materials, pipe rifles are improvised firearms that can be made by any amateur gunsmith with a copy of the Autonomist's Guide to Anarchy. They require a Hardware: Armorer test to make (more to find the parts, rather than assemble them), and lack many basic firearm features, such as magazines, barrel rifling, or the ability to mount weapon modifications. Due to their nature,

they are only safe at certain calibers, if such a weapon can be considered "safe" at all.

Pipe rifles that have the Lemon effect come into play have a misfire, requiring the weapon to be manually unloaded and reloaded, requiring two complex actions.

Nobody has made effective railgun variants of pipe rifles; the simplicity of a pipe rifle is difficult to emulate with the requisite electronics systems, and all attempts to build them out of household components has resulted in weapons that shoot slow, ineffective projectiles. [**Trivial**]

Sleeve Gun: These weapons are built to be attached to the user's forearm. Rather than early variants of the weapon, which were intended for covert use, sleeve guns post-Fall focus on providing a reliable sidearm for infantry in sustained combat. Fired using a mechanism embedded in the user's wrist, they can be fired via smartlink or a physical mechanism without requiring the users' hands to be free. Somewhat difficult to conceal, sleeve guns are favored by soldiers as backup weapons that can be integrated into armor or worn without requiring another hand free, though glitterati wearing extravagant finery have been known to conceal a sleeve gun under flowing clothing.

While sleeve guns do not need to be held in the user's hand, they must still be aimed and fired. Users cannot usually hold something and move their hand out of the line of fire, so they must either drop what they are holding or move it to their other hand. Sleeve guns are particularly difficult to modify, and cannot mount a silencer or flash suppressor. Silenced models are available, but suffer a -2 penalty to DV and AP on account of the smaller rounds that are used to make silencing the weapon easier. [**High**]

- The railgun variants of these are pretty much categorically superior. They hold more ammunition, putting them on par with an SMG. Firearm variants use a flash guard to keep them from burning the user's arm (though some models for use by synthmorphs or armored personnel lack these), which means that they have less room for ammunition. -*Arvid*

Heavy Machine Gun: For when a normal machine gun isn't heavy enough, the heavy machine gun offers higher calibers and larger mechanisms to guarantee that targets go down. Typically only capable of full-automatic fire (though some variants also include semi-automatic fire), they fire devastatingly large rounds at frightening speeds. Heavy machine guns are two-handed weapons, and have the Unwieldy quality. Heavy machine guns require an entire Action Turn to reload, per the Reloading Heavy Weapons rules. [**Expensive**]

Anti-Materiel Rifle: Capable of taking down light armored vehicles and drones (but not most tanks), anti-materiel rifles fire rounds that are evolved from 12.7 or 20 millimeter anti-aircraft guns of the early 20th century. [**Expensive**]

Assault Cannon: Assault cannons fire rounds adapted from heavy vehicle autocannons. Only technically an infantry weapon, they require deployment to avoid recoil and are unwieldy. Assault cannons cannot have caliber mods applied, and subsonic and hypervelocity rounds are not available for assault cannons. Assault cannons require an entire Action Turn to reload, per the Reloading Heavy Weapons rules. [**Expensive+**]

More Railguns

Railgun variants of practically every conventional firearm exist (shotguns being the only notable exception). As such there are a few things noted.

Railgun variants of Expensive firearms are treated as being Expensive+, while Railgun variants of Expensive+ weapons are still Expensive+ (but have a minimum cost of 200,000).

Railgun heavy machine guns and anti-materiel rifles burn through batteries at twice the rate of other railguns (100 shots per standard battery), and railgun assuault cannons burn through batteries at four times the rate (50 shots per standard battery).

New Kinetic Ammunition

Listed costs are per 100 rounds of ammunition.

Defab: Defab rounds include a core of densely packed nanites and chemical compound capsules that target specifically armor compounds: fullerenes, organoweaves, spider silk, elastic polymers, and ceramic, metal, and smart compounds used in most armors. Rather than explicitly destroy items made of these materials, defab rounds simply weaken these materials until they no longer provide protective

value. Defab rounds even affect implanted bioweave armor and robotic armor enhancements. [**Moderate**]

- Defab's new, and I don't think it'll stick around forever. It's got its uses, but it isn't as effective as just loading up with armor piercing ammunition. -*Rackham*

Shotguns

Shotguns are not as effective as battlefield weapons as their depiction in the media would indicate. Mercenaries and soldiers will not typically be outfitted with shotguns, but there are times when the weapons are useful for one of two purposes: light, unarmored targets (such as biomorphs or cases), or when fighting threatens to breach a habitat.

Shotguns tend to have a lower muzzle velocity than other kinetic weapons. For the past two decades, the same advances that mitigated recoil in other firearms have been applied to shotguns, so you don't have to worry about the kick of a 12-gauge taking out your shoulder.

Likewise, smart materials allow for the choke (which changes the pattern of shot impact) of a shotgun to be configured for appropriate distances on the fly; a user with a smartlink can do this automatically, while old-school users can use a quick action to change the range of a shotgun's choke.

Most shotguns are kinetic weapons, but there is a railgun variant. Popularly called flak cannons, these weapons fire a cluster of magnetic projectiles, and can have their spread adjusted similarly to a traditional shotgun. They can fire slugs, but the normal railgun ammunition type restrictions apply. As an added feature, a flak cannon can fire grenades (with range increments equivalent to a conventional SMG). Flak cannons are only available in a two-handed configuration, and tend to pose a much higher risk of hull breach than their chemical propellant utilizing brethren.

Shotguns cannot be use hypervelocity rounds.

Shotguns lose 1d10 damage for firing at long range and 2d10 damage for firing at extreme range. Shotguns firing flechette or shot suffer reduced accuracy penalties for firing at long ranges (no penalty at medium range, -10 at long, and -20 at extreme).

Although many weapons are simply integrated into each other after the Fall, underbarrel shotguns and flak cannons remain in use due to their utility and their ability to be attached to other weapons without requiring attention from a professional armorer.

- I thought this was a **military** arms catalog. -*Rackham*
- What? Too high and mighty for the shotgun? It's had a long history, and flak cannons are pretty nice. -*Harm*

Underbarrel Shotgun: The underbarrel shotgun has been a staple of counterterrorism and military forces for many years, and its utility combined with its quick stopping power makes it ideal. As a complex action, an underbarrel shotgun can be attached to any two-handed weapon. It can also be used as a standalone weapon, but requires two hands to use in this manner due to the awkward design of the firearm. [**Moderate**]

Shotgun Pistol: The variety of sawn-off shotguns and other highly portable shotguns manufactured by transhumanity is exceptional, but the one common trend that shotgun pistols have is being neat single-handed weapons that fire normal shotgun rounds. [**Moderate**]

Hunting Shotgun: Hunting shotguns fire larger cartridges than most of the other shotguns that are available, and are favored by those who need to do a lot of damage and make a statement. With a pump-action or semiautomatic firing method, they are capable of shooting quickly and accurately in a wide variety of conditions. The hunting shotgun is a two-handed weapon. [**Moderate**]

Assault Shotgun: The typical drum-fed assault shotgun is a mean looking weapon that can clear a room in seconds. Capable of being used in a variety of roles and purposes, the assault shotgun has a reputation as a terrifying weapon. The assault shotgun is a two-handed weapon. [**High**]

Underbarrel Flak Cannon: The underbarrel flak cannon provides incredible power and range compared to its traditional brethren, and maintains its larger counterpart's grenade launcher functionality, though its range is pitiful compared to bigger variants. They are commonly favored as grenade launchers, as they function almost identically to their larger parent weapon when launching grenades. As with an underbarrel shotgun, it can attach to any two-handed weapon, but requires two hands to use effectively if it is detached. [**High**]

Flak Cannon: The flak cannon has a reputation as a truly fearsome weapon. Capable of doing massive damage, the

flak cannon has the ability to chamber grenades or minigrenades as well as flechettes and slugs. The flak cannon is a two-handed weapon. [**Expensive**]

Shot, Flechette, and Chokes

Shot and flechette projectiles utilize a shotgun's choke to change the spread pattern of the projectiles. Modern smart materials mean that this can be done on the fly, both manually (quick action) or automatically with a smartlink (no action required). Chokes are rated for distance; starting at 0-10, then continuing up to 10-20, 20-30, and so forth out to the end of Medium Range for the shotgun (shotgun pistols have access to a 20-30 meter choke, full-length hunting shotguns have access to a 140-150 meter choke, and flak cannons can emulate a 240-250 meter choke).

A shotgun attacking a target that is closer than its choke's optimal distance loses the Reliable quality. Targets within the choke's optimal distance take normal damage from the shotgun. Targets beyond the choke setting of the shotgun take 1d10 less damage from the shot, which is cumulative with shotguns' damage loss at long and extreme range. Slugs do not use the shotgun's choke.

Shotgun Ammunition Types

Modern shotguns typically fire caseless ammunition with flechette payloads. Flechettes cannot have modifications applied to them due to their complex shape and small size. Shot and slug projectiles are also available; slugs tend to turn shotguns into short range rifles (slugs decelerate more rapidly than bullets, and shotguns have less rifling), and shot functions like flechettes, but tend to have less armor penetration. Shot is available in plastic, flux, and regular varieties, while slugs are available with the full spectrum of ammunition modifications, including smart ammunition (flak cannon slugs are limited to the types of ammunition appropriate for railgun ammunition). Flechette rounds are not customizable with ammunition types.

Firing a shotgun or flak cannon with slugs increases its AP by 4, adds +2 to its DV, and makes it lose the Reliable quality. Additional ammunition type modifications can be applied on top of this, including smart ammunition if appropriate.

Firing a shotgun or flak cannon with shot reduces its AP by +4. Against unarmored targets, a positive AP value has no effect. Shot is typically considered inferior to flechettes, but is favored for its ability to be used with materials that render it less lethal.

Special Shotgun Ammunition

In addition to the standard ammunition types, shotguns can fire frag rounds (treated as slugs), which are available in regular and zap configurations. Frag rounds add the Area (2) quality to the weapon, and their damage is resisted as energy damage. Otherwise, they function like their parent rounds (either regular slugs or zap slugs). Smartlinks allow frag rounds to airburst, making them effective against swarms. Flak cannons cannot use frag rounds, as they tend to disintegrate at high velocity, discharging early. [**low** per 100 rounds].

Dragon's breath shotgun rounds turn a shotgun into an improvised flamethrower. Dragon's breath attacks gain the Saturation 10/40 quality, lose Reliable, and are blocked with energy armor. On a critical failure on the evasion attempt, any targets caught in the area catch aflame, taking 1d10 damage that follows the usual rules for being on fire (p. 198, *EP*) and is considered a class B fire.

Beam Weapons

Conventional beam weapons are somewhat disfavored on the battlefield. They are either bulky and less powerful than kinetic weapons, or become easily blocked by debris. Of course, they have a number of properties that make them nice; they have little to no recoil, depending on whether they are being fired in an atmosphere or not, and the notorious plasma rifle is one of the most feared battlefield assets available to infantry.

EMP and ER weapons are treated as beam weapons, but unlike lasers they are not impacted by diffusion; their effects are spread in a cone, focused into a roughly human-sized pattern based on rangefinder data fed through the smartlink or manually calibrated by the user.

Conventional Beam Weapons

Laser Rifle: This larger brother of the laser pulser sacrifices the former's nonlethal functions for a more straightforward pulsed laser action akin to a traditional firearm. Capable of doing more damage than the pulser, it is still susceptible to dust, debris, and other things that cause light to diffuse. Laser rifles require two hands to use effectively. [**High**]

Plasma Pistol: A lighter variant of the plasma rifle, the plasma pistol is more portable and still packs a decent punch. This is a small weapon, and only requires one hand to use. [**Expensive**]

Blaster: These weapons have a notorious reputation. A bastard variant of the laser rifle made popular by scum barges, these are closer to shotguns than they are to normal lasers. Firing multiple beams at once, they have an appallingly short range, and they bleed over onto the visual spectrum leading to obvious flashes of light visible to even flats. However, they have a brutality rarely found in beam weapons.

Blasters have a tendency to discharge their batteries entirely when fired. If their Lemon quality comes into play, the weapon burns out the battery, necessitating an immediate reload. Batteries burnt out in this way must be replaced; they no longer hold a charge. Most blasters are two-handed weapons, though there are exceptions. [**High**]

- These are actually fairly effective. I know of at least one scum barge that holds competitions for building these, and there are actually awards for how flashy they get. It's not something you'll usually see on the battlefield, but mercs have been known to use them for something with punch that doesn't have the sensitivity most lasers have to particle clouds. -*Harm*

EMP Weapons

When dealing with nanoswarms, it is useful to bring along specialized EMP weapons that are highly effective against them. In addition, EMP weapons are used as a means to sabotage communications; they cannot disrupt optical electronics' function, but radio communications devices hit with an EMP attack are reduced to 1/10th of their normal operating ranges (p. 341, *EP*). This may be prevented with the EMP hardening upgrade, which specifies a minimum DV for an EMP weapon attack to impact the equipment. Nanoswarms take full damage from EMP weapons.

EMP weapons typically are built with a Marx generator or vircator as their primary source of electromagnetic radiation. This allows them to use radio waves, microwaves or x-rays, though the range on the electromagnetic spectra is secondary to the EMP weapon's function of causing sudden and great levels of electromagnetic radiation very quickly. It is possible to find analogue variants of these weapons, especially in arsenals of people who are concerned about digital subversion threats, especially TITANs. The Jovians have stockpiles of these used both for information suppression and as a safeguard against dreaded nanotechnological attacks.

Since EMP weapons often function without visual cues, many models can be set to create either a flash of light or a low-power laser beam when activated, to let users without enhanced vision see the shots they are firing. Some, though not all, EMP weapons can pull double-duty as microwave agonizers, causing pain, though they lack a "roast" setting.

EMP Pistol: Primarily used to subvert personal communication equipments or as a backup for hostile nanoswarm management, the EMP Pistol is not capable of attacking hardened gear, but works decently against nanites and unhardened radios. [**Moderate**]

EMP Rifle: More powerful, EMP rifles are almost always used for combat against nanoswarms. Capable of dealing significant damage to a swarm, they are also used as a directed alternative to EMP grenades. This is a two-handed weapon. [**High**]

EMP Saturator: EMP saturators look like a device out of twentieth-century science fiction, with an adjustable reflector dish at the end. Capable of firing in a cone, these powerful EMP devices can tear through nanoswarms and disable all but the most hardened devices. They can also be focused into directed beams, for use as a long-range EMP weapon. [**Expensive**]

- Don't underestimate the impact that EMP can have on battlefield communications. -*Arvid*

Enhanced Radiation Weapons

Enhanced radiation weapons are terrifying and dangerous, as well as highly illegal in most places. They set off radiation detectors unless they are incredibly well made, and they tend to be the tools of assassins, rather than soldiers.

Radiation has potentially lethal effects against synthmorphs, biomorphs, and nanites, but leaves most things physically intact. In some cases, enhanced radiation weapons may be favorable due to the fact that they do not cause physical damage (i.e. they won't put a hole in the habitat wall).

That said, they have their purposes; ER weapons can penetrate almost any armor, and only things intentionally

designed for radiation exposure tend to have any sort of resistance against them. They will decimate nanoswarms, so I've heard people argue for them as backup weapons against TITANs.

One of the advantages of ER weapons is their ability to have late-onset effects; hitting someone with a full graser array may not cause meaningful instantaneous harm other than some burns that would be unpleasant though not particularly concerning. Minutes later, the target will be dead. Synthmorphs tend to fall foul of the effects quicker, though they generally have a greater tolerance.

If you plan on entering a battlefield with ER weapons, have backups—they can toast cortical stacks entirely, especially once you factor in radiation.

Types of Radiation

Radiation comes in both particle-based forms and electromagnetic forms. Particle-based radiation includes alpha and beta particles, as well as neutrons and cosmic radiation. These particles can be very dangerous, but only beta and neutron radiation are frequently weaponized. Alpha particles are stopped very easily by even the lightest protection, and cosmic radiation is too costly to justify developing into weapons.

Electromagnetic radiation, on the other hand, technically encompasses the entire visual spectrum. Typically only x-ray and up are utilized as battlefield weapons, though you will occasionally see UV weaponry deployed against biological or nanite hazards. UV weaponry is much less controlled than other radioactive weapons, as it poses less danger to things that people typically sleeve into.

Radiation Penetration

With neutron, x-ray, and gamma radiation based beam weapons you have a chance of causing additional radiation effects past the original point of impact. Typically radiation halves each time it passes through a certain amount of material; depleted uranium or thorium very quickly blocks radiation, but more frequently lead or other composites are used.

Calculating radiation penetration can be done by dividing 30 by the armor rating of a material (see the "Sample Objects and Structures" table, p. 203, *EP*) to get the number of centimeters needed to block half of the radiation. Radiation shielding on armor halves incoming radiation.

UV Laser: These UV lasers produce coherent beams of energy that break down nanoswarms and microorganisms and can cause burns in unprotected tissue. Favored as an alternative to EMP, because they do not interfere with communication equipment or synthmorphs, UV lasers are as commonly found in biotech laboratories as they are on the battlefield. [**Moderate**]

Beta Pistol: Beta pistols use beta particles to deliver a highly radioactive burst of energy to a target, but not overpenetrate and irradiate background targets. The radiation they carry will not be blocked by nanoswarms, however, though nanoswarms will still take damage. Beta pistols are single-handed weapons. Beta pistols cause relatively minor burns compared to most ER weapons. [**Expensive**]

Beta Rifle: Beta rifles are the larger counterparts to beta pistols. They will not be blocked by nanoswarms or microswarms, and do additional damage to nanoswarms like all other radioactive weapons. Beta rifles cause more significant burns, a tell-tale sign of exposure to radiation. [**Expensive**]

PER Pistol: An overall term for weapons that fire either neutrons, X-rays, or gamma radiation that penetrate material well, PER pistols cause minor burns to targets even through armor; their high energy means that they tend to penetrate fairly harmlessly until the effects of ARS set in. [**Expensive+**]

PER Rifle: More powerful than the PER pistol, PER rifles are built to disable vehicle crews or distant targets with debilitating radiation sickness, though they can also cause nasty, though rarely life threatening, burns. [**Expensive+**]

- What you don't know is how incredibly rare these weapons are compared to countermeasures against them. A hardsuit, some battlesuits, or specially adapted armor can reduce the effects of ionizing radiation, and enhanced radiation resistance is popular in many forces, more out of paranoia than necessity. -*Rackham*

Melee Weapons

Clubs

Power Sledge: The Power Sledge is built to smash spacecraft hulls and other hardened surfaces. With adjustable smart materials in its head and a system of weight shifts that multiply the user's swing, the power sledge is often used in boarding actions or to break apart ore samples when a machine to do so is unavailable. Used against morphs, it can do massive damage, but it is so heavy as to encumber its user. [**Moderate**]

Seekers

Grenade launchers and missile launchers are common in transhuman military arsenals; they pack heavy punches and are man-portable systems that are difficult to supply with ammo but provide unparalleled damage potential.

Note that unlike conventional seekers, grenades do not come with smart ammunition functions for free.

MPMLMS: The Man Portable Multiple Launch Missile System fires multiple full-sized missiles. Similar to a disposable missile launcher, it holds four parallel launch tubes with a common electronics package and firing mechanism. With impressive range and damage output, the largest drawback of the MPMLMS is that it is very large; it negates the need to reload after each individual shot, at the cost of being even more unwieldy than a standard missile launcher. MPMLMS take a full Action Turn to reload, per the Reloading Heavy Weapons rule. [**High**]

Reloadable Missile Launcher: Since it is much easier to carry loose projectiles and load them into a large launcher than bring multiple launchers into the field, reloadable missile launchers are the primary form of anti-tank weapons brought into combat. Not capable of the rapid or sustained fire of the MPMLMS, reloadable missile launchers include guidance packages and are capable of accepting a broad range of missiles. Reloadable missile launchers take a full Action Turn to reload, per the Reloading Heavy Weapons rule. [**Moderate**]

Underbarrel Grenade Launcher: The underbarrel grenade launcher can attach to a rifle in a similar fashion to an underbarrel seeker, but fires full-sized grenades rather than micromissiles, trading a slower fire rate and shorter range for superior firepower. [**Moderate**]

Grenade Launcher: Grenade launchers are solid mainstays of many arsenals; capable of deploying grenades over long distances with relative accuracy, they have a similar form factor to rifles, with the addition of a bulky but not gargantuan drum for grenades and propellant. They are able to fire flares, smoke, and weaponized payloads equally effectively. [**Moderate**]

Grenade Machine Gun: Essentially a belt-fed grenade launcher, the GMG is an effective area denial weapon. Less utility-focused than the grenade launcher, GMGs are used almost exclusively with explosive payloads, though smoke or flare rounds are occasionally used. Grenade machine guns take a full Action Turn to reload, per the Reloading Heavy Weapons rule. [**High**]

Seeker Mods

Minigrenade Adaptation: Minigrenade adaptation allows for a Grenade Launcher or GMG to fire minigrenades instead of standard grenades. This does not impact their range or fire rate, but increases their ammunition capacity by 40 percent. [**Moderate**]

New Seeker Types

Listed costs are for ten grenades/missiles.

Probe: Probe seekers and grenades are nothing more than sophisticated panoramic cameras placed into military hardware. When activated (either by being launched or thrown), they send back panoramic feedback for the next fifteen minutes to the user and any allies that they specify. [**Low**]

Flare: Flare rounds are unusual because rather than having an effect on impact, they ignite shortly after leaving the barrel. Flare rounds are typically discharged into the air, though they can be pointed directly at foes to deal a moderate amount of damage, or they can be used to illuminate areas, send signals, or confuse targeting systems.

If a character has fired or thrown a flare seeker or grenade at a prior point during the current Action Turn, smartlinks and homing smart ammunition provide no bonuses for attacks against that character. [**Low**]

Defab: Designed to be used against hardened armor, defab rounds do not affect synthmorphs or biomorphs by causing wounds (though they will damage both bioweave armor and synthmorphs' integrated armor), but consists of a

condensed package of fast acting nanites and chemical capsules that burn out after only a fraction of a second but weaken the chemical and physical bonds that hold armor together, reducing the armor of the target until it is repaired. [**High**]

Rad: Rad seekers dose a whole room with a mix of beta particles and neutrons. A target hit directly with a Rad round suffers 40 grays (20 for minigrenades/micromissiles, 80 for standard missiles) of radiation exposure, while targets within five meters suffer 20 (10/40), and targets within twenty meters suffer 10 (5/20). Rad seekers are incredibly rare, being highly illegal almost everywhere and impossible to manufacture without materials that are not usually available to common citizens. [**Expensive**]

— Until someone tells ol' Firststrike otherwise, I think these are just rumored to exist. Haven't seen a single record of any of them being manufactured or used, and they're not like strategic nuclear weapons where they're top secret.

Seeker Ammunition Mods

Listed costs are to modify a batch of ten grenades/missiles.

Self-Launching Seeker: This seeker does not require a launcher to be used in order to launch. Rather than being launched normally, these seekers interface with the user's PAN for target selection, and are thrown like darts (they still use the Seeker Weapons skill). Their range is decreased to a quarter of the normal ranges (p. 203, *EP*). This modification is only available for minimissiles and micromissiles. [**Moderate**]

- Self-launching seekers may not have the appeal to the grunts that grenades or a MPMLMS, but they can put some serious hurting down when you need them to. We replaced grenades with them during microgravity operations and it worked well. -*Arvid*

Limpet: Limpet seekers and grenades do not detonate on impact, rather they attach themselves to their targets and remain anchored there until they are either forcibly removed by damage, released, or detonated. They can double as a target designator system, negating penalties for indirect fire. [**Moderate**]

Spray Weapons

HEP Weapons

High Energy Projectile weapons are a type of plasma weapon that use superheated matter at low speeds to cause massive damage. With shorter ranges than their beam weapon counterparts, HEP weapons have the advantage of using their projectiles as coolant and having truly terrifying anti-armor effects, though they tend to do less damage than plasma weapons. They are reloaded with ammunition packs that include both a battery and a container of fluid to be converted into plasma.

— I saw videos of these in action. These set things on fire even more violently than a plasma rifle does, and they're almost as deadly. Good news: They have short range.

HEP Pistol: HEP pistols are light and capable of being used in an off hand. Essentially a glorified plasma cutter, they have less range than their larger counterpart, and truly miniscule ammunition packs, but still have decent damage dealing capabilities.

HEP Rifle: HEP rifles make up for HEP pistols' range and ammunition shortfalls, but still do not deliver quite as much damage as a plasma rifle.

- The most annoying thing about HEP weapons is the fact that they use proprietary ammunition; you can refill the ammo packs, but the dispenser looks for tags to make sure you aren't cheating by using off-brand stuff. Trying to do it by hand can lead to feed system malfunctions. -*Harm*

Throwing Weapons

Grappling Hook: When thrown so that one of the three prongs of the attached hook connects with a target, a rope attached to this tool allows the user to climb objects or pull them closer. Most of the modern variants of the grappling hook use smart adhesive, rather than sharpened claws, so they do not do damage and adhere to almost any surface well enough to support even a large synthmorph, but they can be used for a redirect close combat maneuver. [**Low**]

Gorgon Bead: Gorgon beads are of unknown manufacture, and cause massive changes in the physical properties of light. Activated by a sudden impact, these devices have been mounted in bullets and seekers, but they also have the same range as minigrenades when thrown. Within a

twenty meter radius, light simply stops; optical electronics seize and any observer sees the same scene that they saw. Gorgon beads are used for infiltration, as they can eliminate signals from the entire electromagnetic spectrum. Although the original origin of these devices are unknown, they can be duplicated. However, no known test for efficacy exists, and gorgon beads require access to a large particle accelerator to be created. Transhuman copies have only a ten-meter radius, and a 20 percent activation rate, and are only known to be manufactured by Stellar Intelligence and branches of the Ultimates. The effects of both types of bead last for six seconds (two combat rounds). [**Expensive** for originals, **High** for copies]

— These cause seizure-like effects in cyberbrains and seriously disorient drones; anything flying goes down. The Ultimates manufacture them for rajput, since they're effective against TITAN hardware.

Exotic Weapons

Exotic Melee Weapons

Kinetic Gauntlets: An alien or TITAN artifact with unknown relationships to the Casimir force. Shaped like long cylinders with two open ends, they are not quite shaped for human forearms, but can be adapted for wear by adding cushions and straps. The final rig usually extends beyond the user's hands, limiting their ability to manipulate other objects. Objects within the generated field are moved by aligning the paired gauntlets and extending one or the other. Studies of the few known specimens of kinetic gauntlets have revealed nothing about their nature and mechanics. Kinetic gauntlets are similar to fixors, though their ability to exert force on outside elements poses a significantly greater threat.

Users of kinetic gauntlets can make a number of attacks, crushing their target with pure force or flinging them about like a bug in a tin can being shaken by a wrathful fury. More frightening for warriors is the ability of a kinetic gauntlet to affect a ten-by-ten-by-ten meter volume. Use of kinetic gauntlets is particularly effective at smashing swarms, which they seem almost purpose designed to do. The area of effect of a Kinetic Gauntlet attack forms a cube placed directly in front of the user (they cannot inadvertently harm themselves). It respects large, heavy objects with a mass of more than 2700 kilograms, though they will still be crushed if caught in the way. Items on the other side of walls, floors, or ceilings are not affected, though the kinetic gauntlets will affect things visually obscured from the user. [**Expensive (Minimum 50,000)**]

Scour Sword: If you somehow manage to find one of these, send it my way. Some intrepid artifact dealer figured out a way to warp and refract the fields created by a scour ring around the edge of a foot-long blade (really more of a dagger than a sword). The result is a weapon with almost unstoppable cutting power which doesn't care at all about any sort of armor and severs limbs like a hot knife going through butter.

Since it demolishes target matter to component atoms, scour swords largely disregard armor, weapons used to block them, or the morphs that they are inevitably used against. Likewise, they can create hull breaches on spaceships or habitats with less than a foot of matter separating them from vacuum with very little effort. If a habitat knows about scour swords, they are likely banned.

A critical hit with a scour sword causes a wound immediately. [**Expensive (Minimum 30,000)**]

Demolitions

Demolitions can be carried out using custom-made explosives and charges, but many standard-issue explosives, such as smartmines and breaching charges, have been created to provide reliable damage and increased uniformity for combat operations.

Improvised and Military Explosives

The existing demolitions rules (*p. 197, EP*) provide rules for creating improvised explosive devices. These weapons require demolitions skill checks to create and place, and do damage as a result of a dice roll. Military explosives involve carefully measured quantities of explosives and complex electronic systems not available to amateurs. They have three main zones of effect: the kill zone, the maim zone, and the injury zone. These are proportional to the extent at which the blast has lost almost none of its force (typically very small for light bombs), then to the extent at which the blast has lost around half of its force, then to the extent to which a blast has lost most of its force.

Each of a detonation's zones should be considered to be discs (or spheres) expanding out from the same origin. If a blast occurs in an enclosed space with walls durable enough to at least partially contain the blast, then the distance to which the zone extends increases dramatically. If the entirety of a

blast zone cannot find its way into open space (for instance, if a bomb goes off inside a small habitat), then it is considered to fill all available space with a higher zone (so if the injury zone cannot fit into the space, the whole space is considered a maim zone, if the maim zone cannot fit into the space, the whole zone is considered a kill zone). Kill zones cannot be upgraded in this manner, and will only ever cause damage equal to the device's effective yield.

Most explosives used in Eclipse Phase are plastic explosives, which can be molded and separated by hand, allowing for optimal versatility in small bombs without requiring tools to craft the finished bomb. However, explosives can also be procured as liquids, foams, gasses, powders, or blocks. Liquid, powder, and gas explosives may be purchased binary component explosives, which are inert until mixed together, for an added degree of safety.

— While it may not sound important, the form factor of your explosive determines how useful it is, and where you can use it. Foam explosives can be placed almost anywhere without needing additional adhesives, for instance.

Types of Explosive

Improvised explosive devices almost always attack a target's energy armor, but there are several different ways that military explosives can target armor, depending on the expected uses of the weapon. Most bombs are assumed to function as hybrids, as explosive agents tend to

Incendiary/Thermal explosives focus on creating intense heat; they will cause materials to catch fire either by chemical agent or by exposure to massive amounts of electromagnetic radiation. They can be used in both vacuum and in places with environmental pressure. Most incendiary explosives are hot enough to cause serious harm to hardened synthmorphs and vehicles, and are resisted using energy armor.

Blast explosives cause a massive rupturing force. Functioning via shockwaves, they can be very devastating, but do not work in vacuum unless attached directly to the target (they have no effective blast radius unless they can push something). These blasts cause damage to the defender's lowest armor. Although they do not cause fires like incendiary or flash explosives, concussion and shock explosives often cause high temperatures, either as a result of friction between objects or the detonation process itself. These explosives are resisted with the defender's lowest armor rating.

Fragmentary/Penetrator explosives augment a blast by placing projectiles directly into an explosive charge. Fragmentary explosives are available for anti-infantry use, while shaped charges with penetrators can be devastating against hardened targets, such as vehicles. These explosives are resisted with kinetic armor, and are as effective in vacuum as they are in pressurized environments.

Hybrid explosives combine multiple different types of operation; they are able to be used in any environment and are capable of functioning in both vacuum and pressurized environments.

Explosive Grades

The types of explosives being used matter in the creation of a bomb, but the grade of the explosive is also important. Some chemicals used in explosives react more impressively than others, meaning that a smaller volume of explosive is more energetic and can cause more damage. Each grade of explosives is more difficult to fabricate as it becomes more energetic, and ways to subtly manufacture high-grade explosives are limited. Some explosive types also have a maximum yield; bombs cannot do more damage than their maximum yield permits, though their blast radius is calculated regardless of this.

Low grade explosives typically burn rather than explode. Under certain conditions, however, they will explode, allowing their use in a number of demolitions applications. While not safe to work with, they are often used in situations where you do not necessarily want to blow objects to pieces. This includes things like thermite and gunpowder, as well as metal powders, natural gas, and the like. These are often used as fuels or propellants, and may be available without any fabrication controls (particularly large quantities may raise alarms, however).

Common grade explosives include the high-performance firearms propellant used in most firearms, as well as some of the earlier forms of explosive materials, such as nitroglycerin. Easily manufactured, most of these materials are controlled, though many can be made from uncontrolled household materials. Common grade explosives come in any form factor.

Commercial grade explosives are controlled, but used in demolitions or excavation work. These include some plastic explosives, foam explosives, and liquid explosives, many of which contain common explosives with some additional components to add a little more kick. Most missiles and grenades use commercial grade explosives as their payloads.

Military grade explosives are highly controlled or outright illegal. These explosives are massively powerful, with the potential to outright destroy habitats. These substances are highly complex, but have great energy per mass compared to most other explosives, making them ideal for causing minor sabotage and massive damage alike.

Experimental explosives are a step above military grade components. Built by TITANs, cutting-edge researchers, and others with a dubious amount of survival instinct, experimental explosives include antimatter-doped bombs, energetic metamaterials unknown to the general public, and nuclear weapons, which have a very high yield to mass ratio.

Fabricating explosives from raw chemical components is possible. At the time of creation, both the desired grade and type of explosive must be determined (e.g. "low hybrid" or "military fragmentary".

Low and common explosives can be fabricated with almost no specialized machinery or blueprints. Even in places where the manufacture of these compounds are controlled, the process of combining these chemicals requires little more than a hobbyist chemistry set, which can be improvised with almost any heating unit and containers. This takes about 1 hour per 5 points of Yield in the desired bomb (see p. 197, *EP*, for more on explosives), and costs a tenth of the normal cost of purchasing the compounds. A critical failure causes premature detonation of the compound as it is being created. High end makers, and more advanced fabrication devices, can create low and common explosives.

Commercial explosives can be fabricated on high-end nanofabrication hardware and in chemistry laboratories. Some commercial explosives can also be created by genetically modified bacteria. A character fabricating commercial explosives with a fabber or by hand with a chemistry set can produce a batch of 10 points of Yield worth of explosives in an hour, at a Trivial cost for each batch. A critical failure on the production roll results in either immediate detonation, greatly increased potency, or greatly decreased potency, depending on which would tend to be worse. Commercial explosives require a fabber or better to create using nanofabrication, and require a non-improvised chemistry kit to manufacture by hand.

Military grade explosives are difficult to make, with highly controlled blueprints and complex chemical combinations. They can only be printed off of a desktop cornucopia machine or made by skilled chemists in laboratories or industrial production facilities. It takes one hour per ten points of Yield desired to create these compounds, and the raw materials have a Low cost. A critical failure on the fabrication roll causes immediate detonation or greatly underpowered explosives.

Experimental explosives are nigh-impossible to create, and require specialized compounds. Even if these base materials are available, experimental explosives have proprietary manufacturing techniques and can be particularly dangerous if assembled improperly. No automated hardware exists that can create these, and there are few people willing to discuss the proper methods for making them.

Nanofabrication and Explosives

Nanofabricating explosives is a less time consuming task than creating them by hand, and less risky as well. Fabricators have built in diagnosis and analysis tools that ensure the consistency of the final product, and generally function fine without transhuman intervention. Building an explosive for which the blueprint or chemical composition is known does not require any skill test, unless the nanofabrication tools need to be cracked or the hardware has been sabotaged.

A maker builds explosives at half the speed of a fabber, which builds explosives at half the speed of a desktop cornucopia machine. Low or common explosives made on a desktop cornucopia machine can be created at the rate of 20 Yield per hour, for example.

Note that many polities have placed restrictions on the use of nanofabrication hardware for the creation of explosives, and many manufacturers integrate their own safeguards against the creation of explosives. Since the chemical profiles of any explosives being created are likely known to both manufacturers and law enforcement, these restrictions may be impossible to avoid due to hardware

limitations, and will at the least require an incredibly difficult attempt to spoof the protection.

Designing Explosives

Explosives' effects can be measured in three ways: Yield, Effective Area, and Armor Resistance.

Yield is measured in terms of the raw damage output of an explosive. High-yield explosives are either much larger or much more energetic than their counterparts, and can cause major damage to combatants and structures, while low-yield explosives are either smaller or less energetic, and are less likely to cause serious damage. Bombs' Yield is measured in multiples of 5; this is the amount of damage it will do to a morph caught in the device's kill zone.

Yield is lowered to three fifths of a bomb's original value in the maim zone of the blast, and then lowered again to a fifth of the device's original value in the injury zone.

The Effective Area of a bomb is dependent on Yield; the kill zone of a bomb is the square root of the Yield, while the maim zone is equal to the original Yield. The injury zone is equal to the square of the original Yield (a 5 Yield bomb has a kill zone of just over two meters, a maim zone of five meters, and an injury zone of twenty five meters, while a 25 Yield bomb has a kill zone of five meters, a maim zone of twenty-five meters, and an injury zone of 625 meters.

Finally, the Armor Resistance simply determines which type of armor is used: Kinetic (K), Energy (E), or the lowest of the two (L).

In addition to the explosives themselves, devices used for demolitions or combat use require detonators, which are available in wired, wireless (including neutrino), analogue, and QE variants consisting of a detonator-receiver pair. Most detonators can be activated from mesh inserts, though the codes to trigger the detonation is secured using a one-time pad. Increase the cost by 1 stage for detonators capable of triggering Experimental-grade explosives. Inserting the detonator into an explosive device is somewhat dangerous, and requires a Demolitions roll; on a critical failure the device detonates.[**Low** (Wired, radio, infrared, and microwave), **Moderate** (Neutrino), **High** (QE)]

For more information on using specific components to construct a bomb, use the Explosives table.

Managing Blasts

Although shaped charges and smartbombs mitigate some of the danger of explosives, there are still times when the average user finds the full blast of a weapon to be too powerful. When creating a bomb, a separate Demolitions test may be made. If successful, the user can decrease the range of the detonation to an arbitrary amount no less than 10 percent of the normal range; this does not have to be equally applied to all of the blast increments (for instance, a bomb can have a regular kill zone, but diminished maim and injury zones). Smartbombs and shaped charges made from these bombs further decrease the blast radius in undesired directions.

Alternatively, if larger blasts are desired, the price of the explosive may be increased by 10 percent to increase a single blast zone to up to twice its original size. This may be purchased multiple times for different zones, but only once for each zone.

Shaped Charges and Smartbombs

Shaped charges have been in use for well over a century. They function by redirecting part of a blast toward a desired target. Used frequently in seekers, they are also used in some "dumb" explosives.

Shaped charges can be deployed directly to a surface, and function as area denial devices or for demolitions with less collateral damage. They reduce the range of the blast radii along a 90-270 degree arc to a quarter of the normal range. The cost to create a smartbomb is 20 percent greater than the cost for a normal bomb, and a Demolitions skill test is required. On a critical failure, the device appears to be finished properly, but the shaped charge will fail when used and the bomb will have a normal blast. The damage caused by a shaped charge is increased by 10 if the blocked arc is at least 180 degrees in length, and by 15 if the blocked arc is 270 degrees in length, not to exceed the original yield of the weapon. This damage decreases normally over distance (to a third of its value in the maim zone, and to a fifth of its value in the injury zone).

Smartbombs function like shaped charges, but can be deactivated and customized on the fly, relying on magnetic shielding or adjustable baffles to achieve a similar effect. Reconfiguring a smartbomb takes about three seconds (a whole combat round), though sending the command is a free or quick action, depending on the method used. QE

smartbombs can only be adjusted once. Smartbombs cost fifty percent more than a standard bomb. Since there are advanced systems integrated into a smartbomb, there is no chance of failure while setting one up.

Common Explosive Devices

Broadsword Mine: Available in AI and AV configurations for use against both soft and hardened targets, the broadsword mine is a directional smartmine with fragmentation or penetration based explosives. A shaped charge, the Broadsword has only a 2-meter rear arc radius, and can direct its detonation into a 90 degree or 180 degree arc. Broadswords are swivel-mounted smartbombs, and are able to be detonated manually or when certain numbers or types of hostiles are detected. An AI model Broadsword is about the size of an assault rifle magazine, while an AV model weighs about five kilograms. [**High** (AI), **Expensive** (AV)]

Hellrose: Made from a mixture of high explosive and refined organic fuel, hellroses are dangerous mines derived from "bouncing betty" bombs; the mine is actually a two-stage platform, with one detonation launching the primary charge in the air, and the second consuming everything within range in a brief maelstrom of four-thousand degree centigrade flame. [**High**]

Light Mortar: Light mortars are man-portable and fire a variety of shells intended for precision fire or area denial in a variety of desired battlefield roles. They also are occasionally used as explosives, converted into satchel form factor devices for remote detonation and used by special forces or insurgents. They are available in high explosive, high explosive anti-vehicle, fragmentary, and plasma configurations. [**High** for HE, HEAV, or frag; **Expensive** for plasma]

Heavy Mortar: Heavy mortars are fired by vehicle-mounted howitzer and mortar platforms, and are often fired airburst to damage a wide area. They contain large bombs with impact detonators, and are occasionally converted into stationary IED's by insurgents or special forces groups. Like light mortars, heavy mortar shells are available in high explosive, high explosive anti-vehicle, fragmentary, and plasma configurations. [**Expensive** for HE, HEAV, or frag, **Expensive** (minimum 20,000) for plasma.]

Exotic Ranged Weapons

Grappling Gun: This pistol-version of the grappling hook has longer ranges, but due to its unique ballistic properties requires training separate from other kinetic weapons. It supports automatic retract functionality, adding a +10 bonus to any redirect close combat maneuvers attempted and allowing the user to skip using an Athletics check to climb the rope, as well as speeding up the rate at which the weapon can be refired. [**Moderate**]

Archery

Archery is a tried and true martial discipline, often overlooked. The bow and crossbow are simple designs that can be made in a pinch with readily available materials, and with smart materials and clever designs you can nanofabricate a bow that would make Odysseus look like a slouch.

Archery is a little difficult, though. You will want a smartlink on your bows to help you adjust to environmental factors, and the motions are different enough that you need to learn archery as a separate skill. Bows tend to fare poorly against modern armor, and they're not as good at putting holes in things as a firearm. In addition, most bows are pretty large; a compound bow can be more than five feet long, easily matching a sniper rifle in dimensions. Smartbows and advanced bows may have mechanisms to allow them to either retract parts to decrease size or be disassembled. Disassembling a bow takes two complex actions, and unless stated all bows can be disassembled (smartbows "disassemble" themselves once ordered to, requiring no additional effort).

Arrows, however, tend to carry a meaner payload than firearms do. Able to be equipped with everything from full sized nanite hives to minigrenades, archery can be a clever way to deliver payloads without detection. Bows lack the same firing signature that firearms and energy weapons have, making them stealthy without the need for (often illegal and only marginally effective) silencers and flash suppressors. In addition, arrows or bolts dipped in an injection-vector toxin can apply it to their target, so long as the projectile does at least one point of damage when it hits.

It is a quick action to grab an arrow and draw a bow, and a complex action to reload a crossbow with more bolts.

Defenders being attacked with archery weapons use their full Fray score to dodge, as if they were being attacked in melee.

Archery is a new skill for Eclipse Phase; it can be represented using a single "Exotic Ranged Weapons: Archery" skill for all bows and crossbows, though crossbows with a smartlink may use the Kinetic Weapons skill instead.

Bow: Bows are available in a number of different configurations, including smartbows and compound bows that would make turn-of-the-century warriors very jealous. That said, a run of the mill bow is cheap and easy to fabricate, even in habitats with more tough arms restrictions. [**Trivial** (unfinished parts), **low** (assembled bow)]

Compound Bow: Compound bows use advanced composite materials and manufacturing techniques to create a set of pulleys and simple mechanisms to allow a user to leverage their strength and fire arrows with a surprising amount of force behind them. [**Low**]

Smartbow: Smartbows use smart materials to transform from an inconspicuous cylinder into a moderately sized bow; somewhat shorter in length than a normal bow, they have just enough complexity to perform similarly. They are integrated with a smartlink by default, and are subject to more legal controls than other bows. [**Moderate**]

- One of my squads reported someone smuggling one of these into a secure location by disguising it as toothpaste. The arrows gave them away.

Automatic Bow: A cross between a bow and crossbow, the automatic bow is a compound bow with a self-powered mechanism that allows it to emulate the effects of being fired by a stronger morph, even if the user is not particularly strong. The limbs of the bow partially retract when the bow is not in use, giving it the same carrying profile as a carbine. [**Moderate**]

Crossbow: Crossbows have the unique ability to function as kinetic weapons with the aid of a smartlink. Crossbows come in both automatic and manual forms. Manual crossbows leverage a transhuman's strength, and are generally built with adjustable poundage to let anyone use them without too much exertion, while automatic crossbows require either a token effort or will cock themselves without any effort on the user's behalf. Crossbows fire bolts that are functionally similar to arrows (but are not interchangeable), and may be attached to a magazine for rapid shots. [**Low** (manual), **Moderate** (automatic)]

- I've seen these used by insurgents as a stealth weapon. They work well, but they're still pitiful against modern armor. -*Harm*

Arrow and Bolt Types

Costs listed are for 100 arrows or bolts. minigrenade bolts can only be used in conjunction with a minigrenade, which must be purchased separately. Most arrows can be upgraded into any type of smart ammunition, except for the airburst and limpet types.

AP: Built with a smaller head and a better force delivery vessel, AP arrows are built to partially penetrate armored material by reaching a needle thin point. Although they are small, they can still carry a toxin dose like regular arrows. [**Low**]

Barbed: These arrows are generally considered obsolete and primitive, as any body armor can negate much of their effect. They are still manufactured and occasionally used as assassin's tools against targets that are known to be unarmored. [**Trivial**]

Minigrenade: This arrow type supports the attachment of any minigrenade, which is treated as being fired from the bow rather than being thrown and detonates normally after being fired. minigrenade arrows do not support the biter smart ammunition enhancement, though they do support limpet seeker enhancements (these are applied to the minigrenade, not the arrow itself). [**Trivial**]

Reactive: Typically simple incendiaries rather than reactive weapons in the truest sense of the word, these arrows have a specialized tip containing flammable and low explosive materials and an ignition striker. [**Moderate**]

Regular: Regular arrows are common among sportsmen and enthusiast archers. They are rarely used in combat, but are plentifully available and rarely subject to legal control. [**Trivial**]

Smartbarb: The superior cousin of barbed arrows, smartbarb arrows have the normal barbs, but they only expand once the arrow has come to rest in a target. They still suffer some limitations to their armor penetration, but are generally superior to barbed arrows. [**Low**]

Thunderstrike: Officially built to hunt xenofauna, thunderstrike ammunition is capable of delivering a debilitating shock that does 2d10 damage in addition to regular arrow damage and an incapacitating shock attack. [**Moderate**]

Rajput Weapons

The following weapons are built to counter TITAN forces and are part of the arsenal of the elite Ultimates TITAN-hunters, the rajput, or other anti-TITAN forces. Some of these weapons have seen wider adoption, while many remain exclusive to the forces that adopted them.

Doru: The doru is the only projectile spray weapon known to be built in an analogue configuration, and has a number of interesting features. Although it is a spray weapon, it can only fire a handful of projectiles at a time. A one-handed weapon in concept only, the doru includes an arm brace that essentially allows the carbine-sized doru to be used single-handed by those familiar with it.

Theoretically closer akin to a shredder than anything else, the doru sacrifices fire rate for a second feature; its diamond shards have prisms that reflect EMP pulses fired from the weapon, allowing it to be just as effective against nanoswarms as it is against synthetic and biological targets. [**Expensive**]

Sarissa: The sarissa is a high caliber bullpup battle rifle derivative, but is designed for long-term use. Intended for use in intense combat against unyielding foes, it features a massive helical pan magazine, which holds almost eighty bullets. The weapon has internal storage for another hundred twenty rounds, but these must be loaded into a magazine prior to use. Built to fire cased or modified caseless rounds, it is not an ambidextrous weapon; its shell ejection can be redirected, allowing users with inappropriate handedness to use the weapon, or shells can be ejected into the weapon's internal storage if space permits. It is preferred to simply manufacture a version with the intended user in mind. The sarissa also holds a cache of medical supplies, including a nanobandage impregnated with a guardian nanoswarm. The Sarissa's over-barrel mounting rail can be equipped with an adapter to allow both optics and an "underbarrel" weapon to be used at the same time. [**Expensive**]

Amentum: The amentum is a new twist on an old technology. As wireless communications and digital scanners can be spoofed, the amentum is a wire-guided missile with user-operated controls. Any type of missile can be manufactured for use in an amentum platform, though they cannot have smart missile qualities. Missiles fired from an amentum may be treated as if they have the airburst quality, however, as they can be manually detonated mid-flight. The signals sent through an amentum are optical, carried over a fiber optics bundle, but the systems are entirely built on analogue functionality. The amentum platform is built to be a rapidly reloaded soft-launch system, so that it can be used in almost any situation against a variety of targets. [**Expensive**]

New Armor

APEX Nanosuit: APEX nanosuits first saw use during the Fall. Built of a mix of analogue components and nanotechnology, the nanosuit has a quasi-organic appearance of fullerene bundles maintained by a host of nanites. The APEX nanosuit is capable of repairing itself quickly, and is built to withstand nanoswarms by countering them with the user's own guardian nanites. Using a cocktail of nanowarfare systems, they are able to provide a degree of immunity against nanoplague infection; they do a massive 2d10 damage to any nanoswarm that they come into contact with each combat round that they are in contact. This compound nanoswarm has a Durability of 200 (due to being issued from multiple hives), and a range of 20 meters; it actively hunts down nanoswarms and pathogens that it encounters. The APEX nanosuit cannot be used with smart material based armor, which is often attacked by its nanoswarms, though it can be worn under conventional armor.

Despite being moderately effective against exsurgent virus, the APEX nanosuit failed to receive traction; it provides relatively lousy protection and makes it impossible to wear modern combat armor, lacks exemptions for friendly nanoswarms, and provided too little protection from the TITANs' nanoswarms. However, the APEX nanosuit performed well where contact could be minimized. [**Expensive (Minimum 20,000)**]

New Armor Mods

Radiation Shielding: Standard issue for hardsuits, radiation shielding reduces incoming radiation-based attacks' radiation effects and damage by fifty percent, effectively halving the effect of the Radioactive weapon trait. [**High**]

- This is cheaper than the morph that it will protect. I put it on most of my armor when I go into combat. *-Harm*

New Augmentations

Warriors use a vast variety of augmentations, but there's a number of things that I have seen on the battlefield that you need to be aware of. Some high-end augmentations are available exclusively for combat, and you should know about them before you go onto a battlefield where you might tangle with them.

Bioware

Whiplash Tendril: The Whiplash Tendril is a unique transgenic augmentation that lets you reach out and touch someone on the other side of a room. Capable of extending ten meters in less than a quarter of a second, whiplash tendrils are made of a tension tolerant myomer that is highly flexible and durable. Barring the potential applications for Asyncs, Whiplash Tendrils are capable of both making basic unarmed attacks at a distance (including touch only attacks, with the bonus those bring), and redirect close combat maneuvers. It uses its own Exotic Melee Weapon skill. [**Moderate**]

— The practical combat use of this one is kinda low, compared to some of the other things here. If you see one of these deployed, I'd be on the lookout for psi activity, since it sounds like it'd be great for an asynch.

Glow Glands: A cheaper alternative to radiation sense augmentations, glow glands trigger when exposed to enough radiation to cause acute radiation sickness. Glow glands emit green light when exposed to enough radiation for minor radiation sickness, yellow light for major radiation sickness, red light for critical radiation sickness, and purple light for extreme radiation sickness, and are typically implanted in the neck or other region where they are likely to be visible.

Glow glands trigger immediately after exposure to radiation, and they continue glowing for a day to a week after initial exposure. They can be used multiple times.

Despite the Jovians' bioconservative nature, glow glands are common in Jovian space as a second-tier warning system for radiation hazards, though cybernetic versions are favored over the bioware system. Alternatively, glow glands can be worn as a high-tech alternative to film badges. Since most Jovians do not have even basic biomods, the Jovian models are set to half the thresholds for radiation exposure that most biomorphs have, which has become almost the standard setting for glow glands. [**Trivial**]

- This implant serves as a proverbial canary in the coal mine that is a radiation-heavy battlefield. The problem is that the only possible outcome is your troops dropping dead in a few hours. My advice is to get a model that pings central command with a notice of exposure. They're the same price, and you don't have to listen to people blubber after they've gone purple. *-Arvid*

Cyberware

Daedalus Discharger: Daedalus discharger cyberware is designed to provide rapid bursts of power for cybernetic augmentations or robotic enhancements that require a power source, as well as allow users to power energy weapons and railguns without requiring an external source.

Daedalus dischargers have integrated nuclear batteries, capacitors, and traditional batteries that allow them to output about four kilowatts (80 energy weapon shots an hour), and store five times that amount in rapid discharge batteries. This power output allows them to serve as a valuable tool for users of power-hungry gear, especially those operating in environments where recharging facilities are not available. [**Expensive**]

- Basically, it's an industrial equivalent of eelware, sans the shock capability. *-Harm*

Enhanced Cortical Stack: The size of a baseball, enhanced cortical stacks are much more durable than the standard cortical stack, but require more effort to remove. Enhanced cortical stacks take two minutes, rather than one minute, to remove, and the Medicine test to remove them does not gain a bonus. They are also much more difficult to store and transfer due to their size.

In exchange, enhanced cortical stacks have an Armor of 30 and Durability of 40, and are hardened against radiation. They also have a data transfer cutoff, so that once the central nervous system (or digital equivalent) of the host ceases to function the contents of the stack cannot be overwritten. The ego can still be retrieved normally. This process can only be prevented by resleeving using an ego bridge. [**High**]

Mjölnir System: The Mjölnir system is intended to give morphs an advantage in speed and maneuvering. Using a

series of physical reinforcement points the Mjölnir system integrates a number of boosters (typically some sort of jet boosters) with vectored thrust. The end result is to allow the user to "jump" a distance of about fifty meters (any direction) in a 1.0 g environment, or significantly further in microgravity and low-gravity environments. The thrusters in a Mjölnir system are built to safely direct the exhaust, often using magnetic containment and plasma jets. Using a Mjölnir system is a complex action.

Mjölnir systems also have combat functionality: making a melee attack from a distance. Mjölnir systems function as a smartlinked weapon, using a special Exotic Melee Weapon skill. A successful hit causes 3d10 + (SOM ÷ 5) damage. If the user decides not to make an attack in this manner, the Mjölnir system can slow them to safe speeds instead. Attacking an object that can't be knocked back (like a bulkhead) inflicts 2d10 damage on the user, but does an additional 1d10 damage to the target.

The Mjölnir system requires a power source; either connection to a recharging station or a nuclear battery can suffice, and the charging process requires about an hour. Wireless recharging is possible, where such facilities are available, but the process takes eight hours. It is possible to store a nuclear battery indefinitely in the augmentation, allowing for regular usage. [**Expensive**; **High** if a morph already includes Thrust Vector movement]

- These were designed for boarding operations by the Planetary Consortium. They didn't get adopted because of their expense, but they passed all the tests. -*Arvid*
- This is my first time hearing about anything like this, and usually I'd find out about it. With a name like Mjölnir, I'd think it was Titanian. -*Rackham*

Nanoware

Jackglue: A favorite of the paranoid or those who like to be absolutely secure, jackglue is able to be applied to cyberbrain or other digital access ports. More advanced than its name implies, Jackglue creates a diamond-like surface that is nigh-impentrable. The user can have the surface removed so that they can use access jacks, a process that takes about fifteen minutes. They can also have the nanites permanently scour the access ports, which requires them to be repaired prior to use. [**Moderate**]

- Grunts are paranoid. Sometimes it's worth a thousand credits to shut them up. -*Arvid*

Robotic Enhancements

Internal Fusion Plant: Designed for Large or larger morphs, an internal He-3 fusion plant can be used to provide nigh-unlimited power to a morph without the need for nuclear batteries or other fuel sources. However, although fusion creates largely inert byproducts, the reactor core itself becomes highly radioactive during use, requiring a second layer of shielding and making overly miniaturized reactors impractical.

A synthmorph or robot with an internal fusion plant can charge energy weapons, devices, and batteries rapidly. In addition, any augmentations that require power can be operated on the power from the fusion plant, rather than internal batteries. The limitations on this are minimal, limited only to applications beyond the usual limitations of an individual morph. Although fusion reactions shut down harmlessly if the reactor is breached, many habitats find the prospect of transhumans and robots walking around with both the ability to power large energy weapon arsenals and expose bystanders to radioactive material troublesome, meaning that this implant may be restricted in many habitats. [**Expensive (Minimum 40,000)**]

Mesh Insert Disconnect: Used in cyberbrains that are expected to see combat use, mesh insert disconnect systems allow for the cyberbrain to be shut off from mesh inserts in case of suspected hacking or other concerns. Of course, this shuts down their PAN, making it impossible to use things like smartlinks wirelessly; skinlink and other direct wired contacts are rerouted directly to the cyberbrain through a secondary "mesh" insert without wireless capabilities. While mesh inserts can simply be turned off, this allows for compromised mesh inserts to be disabled, rather than leaving them in contact with the cyberbrain. [**Low**]

- These don't really work so well. On paper they're flimsy, and in practice I've never seen anyone activate one of these in the window of time between a mesh insert hack and a cyberbrain hack. If anything, they give a sense of false security, but they're popular with the grunts. -*Rackham*

Military Hardware

Battlefield Observer System: Battlefield observer systems contain a cutting edge AI, powerful encryption and security software, and displays (though they can also route directly to users' entoptic devices) that allow commanders and strategists to monitor the battlefield. Most BOS units fold or disassemble into boxes that are the size of a large suitcase.

When used with helmet cameras, probes, robots, and other means of information gathering and retrieval, they provide commanders with a near-perfect view of the entire battlefield, allowing them to order units coherently.

BOS units integrate their own radio (though other communications sources may be attached), with a hardened EMP resistance rating of 25. They have a range of 250 kilometers (25 in urban areas).

Another advantage the BOS provides is to allow observers to use their own Perception to search for hidden threats on the battlefield, with a +10 bonus for each person observing the same scene. [**High**]

Survival Gear

Maghook: This simple tool allows the user to magnetically connect to a surface; the maghook can be set to calculate desired distance and keep the user from drifting too far from the target, or pull them rapidly toward a selected target. A maghook can be attached to the user's belt, and can use the user's PAN or a dedicated aiming tool to select anchor points.

A maghook can be used to retrieve light magnetic objects, but is usually used for personal mobility in microgravity; it can accelerate a standard human-sized morph (50-100kg) toward the target at ten meters per second, or larger morphs at significantly slower speed. It has about a forty meter effective range, and has safety cutoffs to prevent any objects pulled by the maghook from traveling at speeds greater than twenty meters per second toward the user (or vice versa). Maghooks can operate for about fifteen to thirty minutes of acceleration; if used sparsely during EVA they can function indefinitely with a nuclear battery. [**Moderate**]

CBRNN Suit: These suits are smart alloy, vacuum-sealed, counter-nanite shells capable of being made for a variety of morphs. Although they are made of self-sealing smart-material, they have limited form adjustment capabilies since there are multiple layers of material, not all of which are capable of being radically formed into different shapes. CBRNN suits are environmentally sealed.

CBRNN suits incorporate Fireproofing, an Immunogenic System, Lotus Coating, and Shock Proofing (*p. 313, EP)*, a Guardian Nanoswarm (*p. 329, EP)*, a Stasis Module *(p. 191, Rimward)*, a BDU *(p. 157, Gatecrashing)*, an integrated Faraday suit with its opaque face plate separated from the environmental seal *(p. 158, Gatecrashing)*, a Life Support Pack *(p. 159, Gatecrashing)* and Radiation Shielding. The BDU can be ordered to attack nanoswarms as well as alien life. Otherwise, it resembles a heavier Smart Vacsuit that can restore a seal within seconds after any breach, and with effectively instantaneous resealing after hits that inflict fewer than 20 points of damage. [**Expensive +**]

Robots

Nanocase: The nanocase is a box roughly two by two by four meters in volume, loosely resembling a coffin with vectored flight capabilities. Capable of being called in for battlefield triage, it can be loaded with supplies, but is usually used to retrieve heads of heavily injured biomorphs for transport to a healing vat.

Capable of automatically responding to nanobandages' distress signals, the nanocase is armored and can also be called manually; each nanocase can typically hold at least eight heads, though this depends slightly on the morph being used. Most nanocases have dedicated storage for cortical stacks.

It is considered a war crime (or at least very distasteful) to damage, destroy, or hijack a nanocase. [**High**]

- Note to newbies: Remove helmet, then use the hacksaw. You can put the helmeted head in, but it will reduce the storage capacity. -*Harm*

New Morphs

Biomorphs

Rabbit: Unnatural looking, the rabbit (sometimes called elf) morph is built around the concept of creating a fast, durable, and perceptive scout that can be deployed into almost any environment. Renowned as a light scout biomorph, rabbits have distinctive heads and bodies that differ from the transhuman pattern enough to be easily distinguishable, with

built in camouflage and espionage augmentations. Due to their lagomorphic or abhuman looks, rabbit or elf morphs are favored by some civilians who prefer their exotic forms.

- These are solid morphs. They look newer than they are; I had some scouts sleeved in these during the Fall, and they all came back in one piece. Hell, I died during the Fall, and they made it offworld with no problems. -*Rackham*

Implants: Basic Biomods, Basic Mesh Inserts, Cortical Stack, Enhanced Hearing, Enhanced Smell, Enhanced Vision, Echolocation, Polarized Vision, Eidetic Memory, Chameleon Skin, Clean Metabolism, Grip Pad, Eelware, Medichines, Oracles, Respirocites, Skinlink, High-G Adaptation, Toxin Filter, Temperature Adaption (Improved Cold).
Aptitude Maximum: 30
Durability: 60 (50 + 5 from high-g adaptation + 5 from respirocytes)
Wound Threshold: 12
Advantages: +5 REF, +5 COO, Pain Tolerance I, +10 Freerunning or Free Fall, +10 Infiltration, Climbing, and Swimming
CP Cost: 50
Cost: Expensive (50,000 minimum)

Synthmorphs

New Mechanics

Saturation Attacks

Some weapons attack a broad area, but not like a blast. These "saturation attacks" include traditional flamethrowers, dragon's breath shotgun rounds, and a variety of energy weapons, plus some exotic weapons.

Saturation attacks work differently from normal attacks; weapons with a saturation quality have two ratings: width and distance. A final saturation quality on a weapon might look like: "Saturation: 10/40". Ratings are assumed to be in meters, unless otherwise stated. Attacks made with a saturation weapon do not require a roll.

Instead, a character targeted with a saturation attack makes an REF*SPD test to avoid the harm. This only applies if the character can move out of the effect's area entirely, or if there is some sort of cover available within a couple meters. Characters who anticipate a saturation attack and get out of the way can take cover as a quick action to avoid the attack. Moderate and major will completely negate any incoming fire, while being in minor cover provides a +20 modifier to the REF*SPD roll to avoid the attack.

Radiation

People often come into contact with radiation in space, especially when radioactive materials leak into a sealed habitat or when radioactive weapons such as nuclear bombs or enhanced radiation weapons are deployed to the battlefield. Poor radiation containment in nuclear reactors, including both fission and fusion reactors, can also cause high levels of irradiation to morphs and equipment, as can exposure to stellar bodies and other natural, alien, and transhuman-made phenomena.

Radiation in Biomorphs

Transhuman medicine can reduce or entirely negate most of the health factors of long-term radiation exposure, sometimes automatically as a result of the modifications made to even the most basic splicer to prepare them for space colonization, or sometimes with the assistance of healing vats or other nanotechnology, as well as drugs designed for that purpose. As even basic biomods empower morphs to fight off cancer to an extent that would be a miracle by early twenty-first century standards, the largest threat comes from acute radiation sickness.

Acute radiation sickness tends to come about as a result of exposure to very high amounts of radiation very quickly. Speed of exposure plays a critical role in the development of symptoms. ARS has four levels: Minor, Major, Critical, and Extreme. Morphs with basic biomods suffer ARS at thresholds equal to twice those at which flats suffer it. The radiation resistance augmentation (p. 189, *Rimward*) multiplies these thresholds by a further 30 times their original ratings, making ARS significantly less likely. Medichines can protect against infection and some of the other side-effects of radiation sickness, but do not help with symptoms by themselves, partly because exposure to radiation will damage them as well.

If taken before symptoms set in, bananas furiosas (p. 319, *EP*) reduce the severity of radiation poisoning by one level (entirely mitigating minor radiation sickness). The Coronal Adaptation morph trait (p. 164-165, *Sunward*) provides complete immunity from ARS in biomorphs.

Minor radiation sickness occurs at 4 grays for most biomorphs. One to two hours after exposure, morphs experience nausea and vomiting, and have a small chance of suffering diarrhea, as their gastrointestinal tract is thrown into disorder; this lasts for a day or two. This is followed by headaches beginning 3-8 hours after exposure, which are accompanied by cognitive impairment and fever, which last for a day and cause a -10 penalty to all rolls, including tests involving a morphs durability or mental resistance. At this point, radiation poisoning tends to be fatal after a month or two without care, mostly due to infections and hemorrhage; bruise-like features called purpura and the loss of hair are obvious signs of minor radiation sickness.

Major radiation sickness occurs at 12 grays. Ten to sixty minutes after exposure, morphs suffer nausea and vomiting, likely having diarrhea as well. Headaches, fever, and cognitive impairment follow, which last for multiple days, conferring a -10 penalty to all rolls and decreasing all aptitudes by -5. Death is likely even with care, barring a healing vat or medichines. In addition to hemorrhage and hair loss, major radiation sickness includes dizziness, disorientation, and immune system failure. Death usually occurs after 2-4 weeks.

Critical radiation sickness occurs at 16 grays. Within minutes of exposure, nausea and vomiting begin. Within an hour, diarrhea follows. Within an hour, morphs also suffer severe headaches and incapacitating CNS function loss, preventing them from taking actions and conferring a -10 penalty to all aptitudes. Any rolls they must take suffer an additional -20 penalty. Death is certain without medical care, and permanent damage will likely result even with the assistance of a healing vat. Medichines are insufficient to provide care, if they even survived the exposure to ionizing radiation that impacted the morph.

At exposures to more than 60 grays, extreme radiation poisoning occurs. Patients become nauseous and vomit within minutes of exposure, and suffer diarrhea, headaches, fever, and loss of CNS function within an hour, accompanied by seizures, tremors, and loss of motor control. This totally incapacitates a morph; the ego inside may be conscious (though likely delirious) but may be treated for most intents and purposes as if they are unconscious. Egos shunted to cortical stacks are typically corrupted beyond repair, any implants fail, and attempts to prevent the morph's inevitable death are pointless.

Radiation in Synthmorphs

Although radiation causes devastating effects in biomorphs, it can be even more dangerous to robots and synthmorphs. Although the required amounts of radiation for any noticeable effect to occur in a synthmorph are higher than those for a biomorph, the effects have very rapid onsets. Also, while ARS syndromes only occur after significant exposure in a short period (roughly a day), synthmorph radiation damage accrues over longer periods of time.

The Coronal Adaptation trait (p. 164-165, *Sunward*) or the Radiation Shielding robotic enhancement (p. 167, *Sunward*) completely mitigate radiation effects from weapons, though extremely potent sources of radiation from other sources may still cause damage to the morph.

After exposure to ten grays, cyberbrains and processors begin to display phenomena related to radiation damage. This manifests in a slight action delay, reducing the morph's speed by 1 (to a minimum of 1) and reducing REF by 5.

After exposure to thirty grays, the electrical systems are damaged to the point where ego simulation and AI processes are impaired. In addition to the effects of lesser radiation damage, the AI or ego suffers a further -5 penalty to REF, COO, and COG (resulting in a total penalty to REF of -10).

At sixty grays of radiation, the cyberbrain and processing systems are heavily damaged; a -10 penalty to all attributes is incurred, and the morph is reduced to a speed of 1.

After receiving one hundred and twenty grays of radiation, the cyberbrain and processing systems are damaged beyond functionality, rendering the morph or robot permanently unconscious. Data storage is impaired, and the ego may suffer corruption that can be healed via psychosurgery. Memory loss may result.

Unlike biomorphs, synthmorphs may be repaired from radiation exposure by medichines. This negates the effects of one gray's exposure per day, though if the cyberbrain or processor reach the one hundred and twenty gray threshold the ego must be restored from cortical stack, though it is unlikely to suffer the same corruption that ARS in biomorphs causes through central nervous system damage.

Attacking Thresholds

EMP weapons used against communications, firefighting gear, and certain other weapons attack thresholds. If the target's threshold is exceeded by the attack's damage, then the target is "destroyed" (in the case of communications equipment, antennae are damaged, decreasing their range to a tenth of normal, while most other threshold attacks are instantaneous).

Extinguishing Fire

Extinguishing fire is done with a threshold attack, or by taking special actions to extinguish flame on a morph (akin to the "stop, drop, and roll" popular in habitats with enough gravity to permit such things).

Fighting fires is very different in microgravity; one advantage that many vacuum-surrounded habitats have is the ability to vent portions of a habitat to deprive flames of oxygen; habitats may also use air mixtures that have less propensity to feed flames and have lower environmental pressures to limit the amount of oxygen available to fires.

Water foam and "fog" extinguishers are used in microgravity, at least on class A fires. Microgravity fires have wildly different profiles, and can be frighteningly hard to spot in well-lit environments. Thermal vision and scanners are used to spot fires or chemicals are added to the air supply that provide distinctive smoke when fires are burning to allow for more rapid responses to fire.

Any fire on a station or asteroid with microgravity will almost certainly be dealt with in an automated or wide-scale manner; it is practically impossible to extinguish an individual who has caught flame in vacuum; small fires may be smothered by touch, but attempts to smother larger flames have the undesirable side effect of sending ignited matter scattering. CO_2 based systems are not uncommon among older habitats, while more advanced flame retardants are used on later habitats.

On any habitat with at least half of Earth's gravity (simulated or not), it is possible to "stop, drop, and roll" (special variants exist for non-humanoid morphs as approproiate) to extinguish a flame; this is a complex action that does 1d10 + (REF ÷ 10) damage against the fire. Synthmorphs have an inherent resistance to flame, and gain an additional +5 damage on this test.

Ordinary Combustibles (A)

These fires consist of the majority of fires; your traditional burning trash barrel or wood campfire, for instance, are fires made with ordinary combustibles. They do 1d10 ÷ 2 damage per turn, and can be extinguished normally. Combustible fires can spread in microgravity, but may not cause secondary fires if their temperature is lower than the flashpoint of the things that they come into contact with. These fires have an extinguish threshold of 5.

Flammable Liquid/Gas (B)

These fires have liquid or gaseous fuel, which makes it necessary to fight them using different methods. Applying water, even NotWater, can spread the fuel around, spreading the flames. In order to fight these fires, a dry chemical extinguisher or smothering foam agent must be used. These fires typically cause 1d10 damage per turn. Fires involving cooking oils, fats, or other high-flashpoint liquids can be extinguished using a liquid mist of water or NotWater, though pouring water or NotWater straight on them is not recommended. These fires have an extinguish threshold of 8.

Electrical Fire (C)

Caused by electrical equipment short circuits or sabotage, electrical fires have the additional threat of electrocution. Water, NotWater, and foam should not be used to fight electrical fires, because they may conduct electricity back to the user and cause shocks or electrocution. Shutting off electrical power to the source of the fire will reduce these concerns. Electrical fires typically cause 2d10 damage per turn. Otherwise, electrical fires can be fought using any non-conductive firefighting agent, such as dry chemical extinguishers. These fires have an extinguish threshold of 12, which is reduced to 5 if power is removed; unpowered class C fires can usually be treated as class A fires; otherwise they usually are handled as class B fires.

Metal Fire (D)

Metal fires are caused by flammable metals conducting. Typically, large bodies of metal will conduct heat away from a single point, so metal fires are common where there are shavings, sawdust, or other small metal particles present. Metal fires cause 2d10 damage per turn, and require special dry powder extinguishers (distinct from dry chemical extinguishers). The extinguish threshold of these fires is 12.

Firefighting Gear

Firefighting gear usually belongs to the Spray Weapons category. Each piece of gear is effective against different fires, which is an important consideration for the installation of new habitat modules and their fire suppression systems. Using firefighting gear is a complex Spray Weapons action, and uses up one point of ammunition from the tank.

Each of the following is available as a tank for a sprayer (*p. 341, EP*); each is effective in different volumes and therefore has different ammunition counts. Extinguishing material tanks do not require a sprayer, however, having a built-in nozzle that has a third the range of a normal sprayer.

Dry Chemical: Dry chemical extinguishers attempt to interrupt the chemical reaction that is part of the combustion process. They are effective against class A, B, and C fires, though some old pre-Fall models may not work on class A fires. [**Low**]

Water/Foam: Water and foam extinguishers take away heat and sometimes oxygen from a fire. Although only recommended for use on class A fires, synthmorphs or particularly desperate biomorphs can use them on class C fires, incurring the risk of a Shock attack on a critical success or failure. Sprayers protect against this. [**Trivial**]

Carbon Dioxide: Carbon dioxide extinguishers remove the heat and oxygen from an area, and can cause frostbite to biomorphs. Class B and C fires respond well to carbon dioxide extinguishers; Class A fires can be "extinguished", but often smolder and reignite. [**Low**]

Halogen/Clean Agent: Useful against A, B, and C fires, Halogen or "clean agent" extinguishers interrupt the chemical process of combustion. Their poor capacity is a limitation to their effectiveness. [**Low**]

Dry Powder: Dry powder extinguishers are used on metal fires, removing heat and oxygen from the fuel. Unfortunately, they are entirely ineffective against other fires. [**Moderate**]

Water Mist: Purified deionized water is used in these extinguishers, which prevents the risk of electronic conductivity. Otherwise, they function as a Water/Foam extinguisher. [**Low**]

Maiming Wounds

When a character takes two wounds, they fall unconscious according to the rules on *Eclipse Phase* p. 207; bots and vehicles automatically crash. The maiming wounds rule attempts to replace this with a more detailed mechanic, with unconsciousness being one possible outcome out of many that include serious risk to life and limb.

When a character takes at least two wounds at once, they incur these wounds plus a special "Maiming Wound" effect. Maiming Wounds are handled by rolling on the Maiming Wound table appropriate to the type of damage the weapon is doing. Some Maiming Wounds have different effects for synthmorphs and biomorphs (pods are treated as biomorphs for most Maiming Wounds; exceptions will be noted). All Durability tests to prevent Maiming Wounds use a morph's Durability score minus the damage they have currently sustained.

Typically, characters roll a d10 on the maiming wound table, but the GM may allow players to roll Moxie to reduce this to a d5 (round down as usual).

Selecting Limbs

On occasion, Maiming Wounds use the term "limb". This refers to a character's wings, arms, or legs (the head is not considered a limb to this purpose, and refers to wherever the brain or cyberbrain of a morph is located), or to a synthmorph's locomotive system and weapon actuators. Maiming wounds that target limbs and are rolled against a target that does not have explicit limbs (such as a mimic, Factor, or other shape changing morph without designated limb structures) should be rerolled, though it is possible to hit a weapon actuator on a Sphere or other synthmorph that normally does not have external limbs.

The GM decides which limb is hit with a Maiming Wound; random rolls are encouraged, but not required.

Selecting Augmentations

Some Maiming Wounds target augmentations rather than causing direct damage to the morph. These should be selected by the GM (similarly to how limbs are selected), with some of the following guidelines applied:

- Kinetic weapons can only damage nanoware with special ammunition such as reactive rounds.

- Beam weapons other than the plasma rifle are unlikely to damage morph armor implants, especially synthmorph armor significantly.
- Seekers, on the other hand, are very likely to damage armor. Seekers aimed at the target are also likely to damage large cyberware, such as oxygen reserves.
- Spray weapons are unlikely to damage nanoware.
- Weapons with the Radioactive quality are devastating to nanoware and bioware systems, though they effect most implants.
- Implants that explicitly confer resistance to damage of a weapon's type (e.g. fireproofing against incendiary rounds) are very unlikely to be damaged by attacks from that weapon.
- Cortical stacks are hardened against damage, and will only be affected by attacks from weapons with an Average DV of 20 or higher. They can only be destroyed, not damaged.
- Some augmentations, such as high-g adaptation or basic biomods, reflect changes inherent to the nature of a morph, and cannot ever be damaged.

Augmentation Damage And Repair

Augmentations can be damaged over the course of heavy fighting. This usually happens as a result of Maiming Wounds, though some weapons may specialize in damaging certain types of augmentations (most commonly armor).

Augmentations that are damaged tend to respond in the following ways:

Armor augmentations that are "damaged" when an augmentation is damaged typically lose 3/3 from their armor rating. Light Bioweave Armor, for instance, would provide no armor, while Carapace Armor would provide 8/8 armor.

Augmentations that provide boosts to a character's aptitudes provide half of their usual bonus, except for augmentations that boost Durability, which are typically unaffected. Examples: Adrenal Boosts would provide only a +5 to REF, rather than +10, when active.

Augmentations that provide traits or active effects tend to malfunction, either entirely ceasing to function (but being easier to repair than a more heavily damaged augmentation), or requiring a MOX x10 roll to have functioning when needed. For example, Eelware would require a roll to actually function or to power electronic devices.

Augmentations that boost skills tend to provide -10 less of a bonus; for instance Chameleon Skin would provide a +10 when standing still and hiding (or a +10 to intentionally being detected), and no bonus while moving.

Most other augmentations should have damage handled at the GM's discretion. Some augmentations simply can't be damaged.

Sometimes augmentations are damaged beyond usability and destroyed. Destroyed bioware, cyberware, and robotic enhancements can be repaired by medichines, but otherwise must be entirely replaced.

Repairing Damaged Augmentations

For most augmentations, damage is treated as if the damage to the augmentation was similar to a wound. Bioware will heal over time, so long as its host morph is capable of providing the resources and rest required for it to do so, and cannot heal until after damage has been healed, as if a normal wound had been suffered. Otherwise, damaged augmentations do not count as a wound for the purpose of wound penalties or preventing healing.

For nanoware, cyberware, and robotic enhancements, healing is not automatic, though medichines will repair cyberware or robotic enhancements. In a pinch, protean swarms can be used as a substitute, though this causes 1d10 damage (which cannot be resisted) to the morph.

Repairing damaged augmentations without allowing for healing time is a similar process to replacing them (p. 199, *Transhuman*), requiring the same skills and roughly the same timeframe, though the price of replacement parts is one category lower than the cost of the augmentation itself. Hardware: Robotics can be used to repair robotic augmentations and cybernetic enhancements in synthmorphs, and appropriate Medicine or Hardware skills (GM's discretion) may be used for bioware, cyberware, and nanoware repair in biomorphs and pods.

Replacing Destroyed Augmentations

Destroyed augmentations are much more troublesome than augmentations which are merely damaged.

Destroyed augmentations remain in the user's body, so they can be repaired by healing vats or medichines similarly to how damaged augmentations can be repaired (nanoware cannot be restored by medichines) but they also can have negative side effects at the GM's discretion.

Repairing a destroyed augmentation takes twice as long as it would to heal a wound. Unlike damaged bioware, destroyed bioware is only ever healed after all other wounds and damage have been healed (damaged bioware can be healed before wounds).

Otherwise, the only option to deal with destroyed augmentations is to rip them out and replace them with new ones or with replacements for the original tissue or synthmorph structures. Basic biomods will grow replacements for limbs that are removed in this way after one to three months, and medichines decrease this time from months to weeks. Healing vats greatly expedite this process, allowing a biomorph to restore limbs in a matter of days.

Reloading Heavy Weapons

Reloading many weapons is a task action with a time of one Action Turn (not Action Phase); no skill test is required, but the prohibitively long reload time of these weapons mean that they are best used when the user is able to avoid retaliation during reloading periods or with a sidearm or ally on overwatch at the ready to cover the user while they reload.

Reloading heavy weapons requires two hands, but it does not necessarily prevent the user from taking mental actions.

Automatic Seekers

Typically, seeker weapons do not have automatic or burst fire modes. The grenade machine gun and other seekers added in *An Ultimate's Guide to Combat* may defy this rule. Automatic seekers add double the normal damage bonus for fully automatic fire; rather than increasing damage by 1d10 for burst fire and 3d10 for fully automatic fire, increase damage by 2d10 for burst fire and 6d10 for fully automatic fire. Ammunition consumption and accuracy bonuses for burst and automatic fire are not effected. This rule does not apply to micromissiles or minigrenades.

Expanded Melee Combat

This section looks at attacks beyond the usual damaging attacks, including both unarmed and armed attempts to grapple, move, incapacitate, and otherwise dominate opponents in combat.

Grappling

Grappling an opponent is an effective close combat technique. In microgravity, this often has relatively little effect, as either party can still push off surfaces, albeit more slowly than they usually would, but grappling can still prevent targets from taking complex actions. Grappling always uses the Unarmed Combat skill and characters initiating a grapple must have one free hand and be adjacent to their target.

A grapple attack is considered to be a complex action. It does not gain the accuracy bonus of a touch-only attack (p. 206), but can be used for async powers or other effects, such as applying a slap patch. Grapple attacks may be evaded as if they were a normal unarmed attack using Fray, or with either an Unarmed combat or SOMx2 roll.

If the grapple attack succeeds, both the opponent and the original attacker become grappled. The victor may also take an action as if they had controlled the grapple.

Grappled characters may not take any non-mental complex action other than an opposed Unarmed Combat (or SOMx2) action to break or gain control of a grapple. Alternatively, both characters may voluntarily disengage from the grapple. Characters attempting to control a grapple do so when they normally would.

Grappling characters continue to move normally in microgravity, but cannot move in normal gravity unless the combatant controlling the grapple decides to do so.

Controlling Grapples

Grapples are time consuming ways to incapacitate a foe permanently, but some immediate effects are possible on a successful grapple. Each time a combatant controls the grapple (by succeeding on a complex action as referenced above or by initiating the grapple), they can do one of the following actions:

- Force the opponent to drop something.

- Push away from the opponent; this sends them one meter away in normal gravity, or sends both the attacker and defender floating away on opposite trajectories in microgravity.
- Deal 1d10+(SOM ÷ 10) damage.
- Make an attack with a held weapon, such as a pistol or knife, either against the person they are grappling with or against another target within range.
- Push off a surface in microgravity.
- Force their opponent prone in gravity.
- Force both combatants out of cover.
- Move 4 meters.
- End the grapple.
- Impose a -20 penalty on the opponent's next attempt to control the grapple, but leave the grapple in place.

Grappling With Different Morphs

At the GM's discretion, a number of morph-specific bonuses may be applied to grappling, in addition to the usual benefits from size (-10 penalty for small morphs, +20 bonus for large morphs, per page 96 of *Transhuman*). This is further modified by the fact that synthmorphs have a +10 bonus to grappling, as they do not suffer muscle fatigue and do not have physical vulnerabilities as biomorphs do.

Redirect

A redirect action can be made with Unarmed Combat or an appropriate Exotic Melee Weapon; this attempts to stop a combatant in their tracks. As with most attacks, this is a complex action.

A redirect attack is much like a grappling attack; it can be coupled with the effects of a touch-only attack, and gains a +10 bonus to its accuracy chance.

Redirect attacks prompt an opposed SOMx2 test; in an environment with gravity or where magboots or the like are deployed, the victor pulls the other toward them at their usual movement speed. In microgravity, where characters may be in free-fall, a character anchored to something will pull the other character toward them while not moving themselves; if both characters are anchored then the character with the better success pulls the other from their anchoring point. If both characters fail, then neither character moves.

Combat Maneuvers

Combat maneuvers are special abilities unlocked when a character hits a certain rank with the appropriate weapon skills.

Kinetic Weapons

Combat Maneuvers and Recoil

After Fall weapons provide great benefits to a practical shooter due to their lack of recoil. As a general rule, weapons with the Recoil quality suffer a -10 penalty on all shots that occur after the first in a combat maneuver. The maximum distance that a recoiling weapon can perform combat maneuvers at is equal to the upper end of the weapon's Medium range. Typically, most of these drills are intended to be done with weapons that only require one hand, but recoilless weapons mitigate many of the concerns with using these with larger weapons.

Mozambique Drill

Two shots in the body, one in the head. The Mozambique drill originated with a mercenary fighting in Mozambique. The practice is simple; aim twice for center of mass, and then once against another point on the target that looks particularly squishy (the forehead or neck on most biomorphs, for instance). A Mozambique drill can only be attempted with a weapon with the semiautomatic firing mode, and consumes three rounds of ammunition. The attack is treated as if the weapon had the Reliable quality, and gains a +10 accuracy bonus as if it were a normal burst. All three shots are treated as a single attack.

El Presidente

The "El Presidente" drill was intended for bodyguards on earth to master and use in defense. Consisting of six shots against three targets, the El Presidente drill is typically practiced using two six-round magazines and doing two of the maneuver back-to-back. It requires a one-handed weapon with a semiautomatic firing mode, used with both hands. Each target must be within one meter of the prior target, and all targets must be within short range. Each attack against each target is rolled separately.

The El Presidente maneuver has two variants: one for less-skilled shooters that only allows one attack against three targets, and then one for more-skilled shooters that repeats the attacks and allows the shooter to reload between the two separate barrages. Shooters capable of using the El Presidente II maneuver may use the original El Presidente maneuver as a Simple Action. Reloading is optional, if the user has a full magazine, though choosing not to reload does not confer bonuses.

Dozier Drill

The "Dozier" drill was created as a counter-terrorism training technique; it requires users to take down five targets in the time it takes for a simulated terrorist to ready a sub-machine gun. The Dozier drill requires five rounds, and results in five separate attacks made against five different foes. Each attack against each target is rolled separately.

Appendix

An Ultimate's Guide to Combat is a massive piece of homebrew, and as such it reflects my personal tastes and preferences, as well as how I think things should be. As a result, I keep a nice little appendix of all my justifications and reasonings for things that don't necessarily make sense to other people, including why I include some things in here that may not make sense.

AUGC strays a little from Eclipse Phase's normal design principles; it's not particularly minimalist (though it's not heavily oriented around simulation), it doesn't even touch Firewall, and it focuses on physical stuff more than egos and the like. The reason for this is because AUGC attempts to bring in combat scenarios and plausible battlefields, as well as flesh out some hazards. The main reason for this is to have consistent rules in my personal games, and since I'm already recording them I figured I may as well type them up in a quasi-neat fashion and put them out for publication.

Weapons

One of the core focuses of AUGC is including an obscene number of new weapons and pieces of kit for players. Some of this stuff warps the known AF tech of Eclipse Phase to achieve goals that are perhaps not possible using the setting as written, but certainly make combat much more interesting.

Weapon Qualities

Weapon qualities are really common in other tabletop games, but Eclipse Phase has never had any. As a result, I add a few in here to give some slightly more interesting combat situations without the need for special rules on each individual weapon, and to give a few more interesting traits.

The reliable damage trait exists to let weapons be substantially more dangerous without increasing the maximum amount of damage they do; reliable weapons won't do insane hits for massive damage, but they'll usually put out enough to ignore light armor, for instance.

The unwieldy trait exists to give players opportunities to use weapons that are really too big to just waltz around with, but that also are really a necessity

HMGs, AMRs, & Assault Cannons

Eclipse Phase lacks the big guns. While there are some interesting and highly lethal weapons, there's not much that can actually pose a threat to a morph like a remade or rabbit, much less a reaper, in the same way that modern weapons can to a soldier. AUGC adds things that make battlefields horrifying abattoirs.

EMP Weapons

EMP weapons are anti-nanite in focus, but they also have nonlethal suppression capabilities. Their role to knock out communications in combat is worth noting as well.

ER Weapons

ER weapons are built to be walking little war crimes in a can. If someone's using one of these, they're desperate or crazy, and you can play them as such. Also, they do a very good job at taking out hardened morphs. AUGC is built around shortening lifespans, and ER weapons are a great way to do that. Theoretically, they're also good at taking down nanoswarms, since they typically just ignore walls and the like.

Minigrenades and Microgrenades

EP's core rulebook introduces micro/minigrenades as "microgrenades", and then proceeds to call them "minigrenades". I use the term minigrenades, as it was used more frequently in the core rulebook, though it should be noted that minigrenades have the same effect as micromissiles.

Augmentations

Glow glands exist for the sake of adding to tension and horror. They're the things that go off when stuff's gone really wrong.

Mjölnir systems are designed to give melee combatants a chance to close, and serve as a second chance for people who screw up on an EVA. For the most part, the point of them is to give a high-impact, high-octane tool in the melee combatant's arsenal.

Whiplash tendrils are something that I added (unrelated to the whiplash morph) to give a bit of range to asyncs, who tend to get left out by the massive combat supplement.

Rules Changes

Maiming Wounds

This alternate system is built to address two concerns with the fluff. First, transhumans with even basic biomods are supposed to be incapable of going into shock, meaning that unconsciousness is unlikely except as a result to trauma to the brain, cyberbrain, or perhaps central nervous system. Second, it provides ways to actually have traumatic battlefield injuries that require the use of a healing vat or dedicated repairs, since even medichines can't work that much of a miracle by themselves. On a more practical mechanics side, it adds a degree of visceral carnage to combat, allowing for the sort of gory damage that wouldn't necessarily happen with most of the weapons in the vanilla Eclipse Phase books, but certainly happen often with AUGC weapons.

Morph Construction

These notes show my work for the custom morphs I made according to the rules in Transhuman. These represent some common military morphs that you are likely to see on a battlefield, so I included them here.

Rabbit

The point of the rabbit is to create, effectively, a special forces-friendly morph that is capable of infiltrating in almost any terrestrial environment (space adapted versions exist as well, ergo the choice between freerunning or free fall variants), though because they are intended for military morph use there isn't any choice between bonus attributes. The incredible durability is intended to reflect the fact that the rabbit/elf morphs are built to be nigh-indestructible, and they are made to be able to go basically anywhere on Earth.

Now, of course, the places in Eclipse Phase where rabbits may find practical application are somewhat limited; they probably make decent enough gatecrashing morphs, because of their nature as combat-oriented survival, mobility, and stealth morphs.

Normal Size

DUR 50 (+20 Real CP)

Aptitude Max: 30

Freerunning/Free Fall +10 (+5 Real CP)

Infiltration +10 (+5 Real CP)

Climbing +10 (+5 Real CP)

Swimming +10 (+5 Real CP)

Cortical Stack (1k cred)

Basic Biomods (1k cred)

Enhanced Hearing (.25k cred)

Enhanced Smell (.25k cred)

Echolocation (.25k cred)

Polarization Vision (.25k cred)

Eidetic Memory (.25k cred)

Enhanced Vision (.25k cred)

Basic Mesh Inserts (1k cred)

Chameleon skin (.25k cred)

clean metabolism (1k cred)

grip pad (.25k cred)

eelware (.25k cred)

medichines (.25k cred)

oracles (1k cred)

respirocytes (1k cred)

skinlink (1k cred)

high-g adaptation (1k cred)

toxin filter (1k cred)

temperature tolerance (improved cold) (1k cred)

total cred cost (12.5k — 13 Real CP)

Pain Tolerance I (+10 Adjusted CP)

Neurachem I (+5 Adjusted CP)

REF +5 (+42.5)

COO +5 (+42.5)

Adjusted CP: 49.5

Final CP: 49.5 → 50

Cost: Expensive (50,000 minimum)

Combat Maneuvers

Combat maneuvers are one of the features of AUGC that I pictured would be fairly controversial, as well as pretty much a balance breaker.

Combat maneuvers favor highly trained characters over characters in good morphs with high-end gear; they're why the Jovians can compete with anyone else in terms of military power or the Ultimates are in high demand.

They also basically reflect the fact that semiautomatic weapons effectively fire as quick as you pull the trigger, which is often overlooked. A MAC-10 modified to be civilian legal will likely still have the twelve hundred rounds per minute firing rate of its military equivalent, it just won't use it. A skilled shooter can put that speed to good use.

Tables

Weapon Ranges

Firearms	Short Range	Medium Range (-10)	Long Range (-20)	Extreme Range (-30)
Revolver	0-15	16-50	51-80	81-160
Designated Marksman Rifle	0-180	181-300	301-600	601-1000
Breakdown Survival Pistol	0-10	11-30	31-45	46-60
Breakdown Survival Rifle	0-80	81-200	201-400	401-800
Pipe Rifle	0-20	21-40	41-50	51-60
Sleeve Gun	0-25	26-60	61-90	91-100
Heavy Machine Gun	0-150	151-400	401-1200	1201-2000
Anti-Materiel Rifle	0-300	301-800	801-2000	2001-3500
Assault Cannon	0-200	201-600	601-1200	1201-1800
Underbarrel Shotgun*	0-10	11-30	31-40	41-50
Shotgun Pistol*	0-15	16-30	31-60	61-90
Hunting Shotgun*	0-80	81-150	151-250	251-400
Assault Shotgun*	0-60	61-100	101-200	201-300
Railguns	**Short Range**	**Medium Range (-10)**	**Long Range (-20)**	**Extreme Range (-30)**
Revolver, DMR, HMG, AMR, Sleeve Gun, and Assault Cannon as Firearm equivalents plus 50 percent range				
Underbarrel Flak Cannon*	0-20	20-40	41-50	51-60
Flak Cannon*	0-150	151-250	251-400	401-500
Beam Weapons	**Short Range**	**Medium Range (-10)**	**Long Range (-20)**	**Extreme Range (-30)**
Laser Rifle	0-40	41-120	121-180	181-300
Plasma Pistol	0-15	16-30	31-60	61-100
Blaster	0-15	16-25	26-50	51-80
EMP Pistol	0-30	31-80	81-150	151-300
EMP Rifle	0-50	51-150	151-300	301-450
EMP Saturator	0-80	81-200	201-400	401-600
ER Weapons	**Short Range**	**Medium Range (-10)**	**Long Range (-20)**	**Extreme Range (-30)**
UV Laser	0-50	51-75	75-150	151-250
Beta Pistol	0-75	76-125	126-200	201-300
Beta Rifle	0-100	101-200	200-350	351-500
PER Pistol	0-100	101-150	151-250	251-350
PER Rifle	0-150	151-300	301-600	601-800
Seeker Weapons	**Short Range**	**Medium Range (-10)**	**Long Range (-20)**	**Extreme Range (-30)**
Underbarrel Grenade Launcher	0-75	76-125	126-175	176-225
Grenade Launcher	0-100	101-150	151-200	201-250
Grenade Machine Gun	0-150	151-300	301-400	401-500
Self-Launched Minimissile	5-17	18-45	46-200	201-500
Self-Launched Micromissile	5-37	38-75	76-250	251-750

*Shotguns and flak cannons lose -1d10 damage at long range and -2d10 at extreme range

Weapon Ranges Continued

Spray Weapons	**Short Range**	**Medium Range (-10)**	**Long Range (-20)**	**Extreme Range (-30)**
HEP Pistol	0-5	6-10	11-20	21-30
HEP Rifle	0-10	11-25	26-40	41-50
Bows	**Short Range**	**Medium Range (-10)**	**Long Range (-20)**	**Extreme Range (-30)**
Bow	To SOM	To SOM x3	To SOM x5	To SOM x8
Compound Bow	To SOM x2	To SOM x5	To SOM x8	To SOM x12
Smartbow	To SOM	To SOM x3	To SOM x5	To SOM x8
Automatic Bow	0-30	31-90	91-150	151-240
Crossbows	**Short Range**	**Medium Range (-10)**	**Long Range (-20)**	**Extreme Range (-30)**
Crossbow	To SOM x2	To SOM x6	To SOM x10	To SOM x12
Automatic Crossbow	0-60	61-180	181-300	301-360
Rajput Weapons	**Short Range**	**Medium Range (-10)**	**Long Range (-20)**	**Extreme Range (-30)**
Doru	0-15	16-45	46-70	71-100
Sarissa	0-150	151-250	251-500	501-800
Amentum	5-300	301-600	601-2000	2001-3500
Miscellaneous	**Short Range**	**Medium Range (-10)**	**Long Range (-20)**	**Extreme Range (-30)**
Fire Extinguisher	0-2	3-5	6-10	11-17

Kinetic Weapons

Firearms	DV	AP	Average DV	Firing Modes	Ammo	Qualities
Revolver	2d10+6	-5	17	SA	6	
Designated Marksman Rifle	2d10+8	-10	19	SA/BF	20	
Breakdown Survival Pistol/Rifle	2d10+4	-4	15	SA	5	Recoil
Pipe Rifle	2d10+3	-3	14	SS	1	Lemon
Sleeve Gun	2d10+3	-2	14	SA/BF/FA	10	
Heavy Machine Gun	2d10+9	-8	20	FA	100	Unwieldy
Anti-Materiel Rifle	2d10+14	-14	25	SA	5	
Assault Cannon	3d10+16	-20	32	SS	2	Unwieldy, Recoil
Railguns	**DV**	**AP**	**Average DV**	**Firing Modes**	**Ammo**	**Qualities**
Revolver	2d10+8	-8	19	SA	6	
Designated Marksman Rifle	2d10+10	-13	21	SA/BF	20	
Sleeve Gun	2d10+5	-5	16	SA/BF/FA	20	
Heavy Machine Gun	2d10+11	-11	22	FA	100	Unwieldy
Anti-Materiel Rifle	2d10+16	-17	27	SA	5	
Assault Cannon	3d10+18	-23	34	SS	2	Unwieldy, Recoil

Firefighting Gear

Exotic Ranged Weapons	DV	Effective Classes	Notes	Ammo	Qualities
Dry Chemical	2d10	A, B, C	Archaic models may lack class A	5	
Water/Foam	2d10	A, C*		5	Saturation 5/10
Carbon Dioxide	2d10+2	B, C		3	
Halogen/Clean Agent	2d10+4	A, B, C	- 10 against class A fires	3	
Dry Powder	2d10+4	D		5	
Water Mist	2d10	A, C		5	Saturation 5/10

** Users attempting to use this against a class C fire may be subject to electrocution, treated as a shock attack, at the GM's discretion.*

Ammunition

Chambering	DV Modifier	AP Modifier	Ammunition Capacity	Qualities
Small Caliber	-2	-1	Standard X 1.4	
Large Caliber	+2	—	Standard X 0.8	
Load	**DV**	**AP**	**Range Modifier**	**Qualities**
Subsonic	-2	+3	Standard x 0.8	
Hypervelocity	+2	-2	Standard X 1.2	Recoil*

*Firearms with the hypervelocity adaptation modification negate this effect.

Melee Weapons

Clubs	DV	AP	Average DV	Qualities
Power Sledge	2d10 + 4 + (SOM ÷ 5)	-6	15 + (SOM ÷ 5)	Unwieldy
Exotic Melee Weapons	**DV**	**AP**	**Average DV**	**Qualities**
Kinetic Gauntlets	1d10+5 + (SOM ÷ 5)	-4	10 + (SOM ÷ 5)	Area (0-10)
Scour Sword	2d10+5	All	16	

Scour swords cause an additional wound on a critical hit.

EMP Weapons

Beam Weapons	DV	AP	Average DV	Firing Modes	Ammo	Qualities
EMP Pistol	2d10+4	—	15	SA	50	
EMP Rifle	2d10+6	—	20	SA	20	Reliable
EMP Saturator	3d10+8	—	24	SA	10	Saturation 10/40

EMP weapons only effect nanoswarms and radio communications equipment. Radio communications equipment damaged by EMP has its range reduced to 10 percent of its normal until it is repaired.

Shotguns

Firearms	DV	AP	Average DV	Firing Modes	Ammo	Qualities
Underbarrel Shotgun	2d10	—	14	SA	1	Reliable
Shotgun Pistol	2d10	—	14	SA	2	Reliable
Hunting Shotgun	3d10	—	21	SA	5	Reliable
Assault Shotgun	2d10	—	14	SA/BF/FA	20	Reliable
Railguns	**DV**	**AP**	**Average DV**	**Firing Modes**	**Ammo**	**Qualities**
Underbarrel Flak Cannon	3d10	-2	21	SA	1	Reliable
Flak Cannon	4d10	-4	29	SA	4	Reliable

All ratings given are for flechette ammunition.

Bows

Bows	DV	AP	Average DV	Firing Modes	Ammo	Qualities
Bow	1d10 + (SOM ÷ 10)	-2	5 + (SOM ÷ 10)	SS	1	Reliable
Compound Bow	1d10 + (SOM ÷ 5)	-5	5 + (SOM ÷ 5)	SS	1	Reliable
Smartbow	1d10 + (SOM ÷ 5)	- 3	5 + (SOM ÷ 5)	SS	1	Reliable
Automatic Bow	1D10 + 8	-5	13	SS	1	Reliable
Crossbows	**DV**	**AP**	**Average DV**	**Firing Modes**	**Ammo**	**Qualities**
Crossbow	2d10 + (SOM ÷ 5)	-4	11 + (SOM ÷ 5)	SS	5	Multi-Mode*
Automatic Crossbow	2d10 + 8	-7	19	SA	5	Multi-Mode*

* These weapons can be used as kinetic weapons if the user is meshed to an attached smartlink (purchased separately).

Kinetic Weapon Maneuvers

Technique	Effect	Minimum Skill	Action
Mozambique Drill	Add Reliable, + 10 Accuracy, consume 3 rounds	30	CA
El Presidente	Make single attacks against three targets, consume 6 rounds	35	CA
El Presidente II	Make double attacks against three targets, consume 6 rounds, reload, consume 6 rounds.	45	CA
Dozier Drill	Make single attacks against five targets, consume five rounds.	40	CA

Vehicles: Robots

Robot	Movement Rate	Max Velocity	Armor	Durability	Wound Threshold	Mobility System
Nanocase	8/40	120	16/16	80	16	Thrust Vector

Enhancements: Chameleon Skin, Heavy Combat Armor, Hidden Compartment (not covert), 360° Vision, Enhanced Vision

Seeker Weapons

Seeker Weapons	Projectile	Firing Modes	Ammo	Qualities
MPMLMS	Missile	SA	4	Unwieldy
Reusable Missile Launcher	Missile	SS	1	
Underbarrel Grenade Launcher	Grenade	SS	1	
Grenade Launcher	Grenade	SS	6	
Grenade Machine Gun	Grenade	FA	40	Unwieldy
Self-Launched Seekers*	Micromissile/Minimissile	SS	—	

**Self-launched seekers have one quarter of the seeker's usual range.*

Grenades and Seekers

Grenade/Seeker Type	DV	AP	Average DV	Armor Used to Resist	Qualities
Defab	—	—	—	—	Defab (2d10)*
Flare	2d10+4	-3	15	E	Flame (1d10)
Probe	—	—	—	—	
Rad	—	—	—	—	Radioactive (40|20|10)*

DV doubles for full missiles, and is decreased by 1d10 for micromissiles and minigrenades.
**These qualities are doubled for full missiles, and are halved for micromissiles and minigrenades.*

Kinetic Ammunition

Ammo	AP Modifier	DV Modifier	Qualities
Defab	+2	-3	Defab (2)

Enhanced Radiation Weapons

UV	DV	AP	Average DV	Firing Modes	Ammo	Qualities
UV Laser	2d10+2	+∞		SA/BF/FA	50	
Beta	**DV**	**AP**	**Average DV**	**Firing Modes**	**Ammo**	**Qualities**
Beta Pistol	1d10+8	-15	13	SA	30	Radioactive (4)
Beta Rifle	1d10+10	-15	15	SA	15	Radioactive (10)
Penetrating Enhanced Radiation	**DV**	**AP**	**Average DV**	**Firing Modes**	**Ammo**	**Qualities**
PER Pistol	1d10+2	-all	7	SA	20	Radioactive (4)
PER Rifle	1d10+4	-all	9	SA	10	Radioactive (10)

UV radiation is stopped by most opaque and composite surfaces, beta radiation absorbs into a target, and gamma, x-ray, and neutron radiation will penetrate through targets.

Spray Weapons

Spray Weapons	DV	AP	Average DV	Firing Modes	Ammo	Qualities
HEP Pistol	2d10+6	-14	17	SS	5	Flame (2d10)
HEP Rifle	3d10+8	-14	24	SS	15	Flame (3d10)

Beam Weapons

Conventional Beam Weapons	DV	AP	Average DV	Firing Modes	Ammo	Qualities
Laser Rifle	2d10+4	—	15	SA, BF, FA	50	
Plasma Pistol	3d10+6	-4	22	SA	15	Flame (1d10)
Blaster	2d10	—	14	SA, BF	20	Reliable, Lemon

Arrow and Bolt Types

Arrow/Bolt	AP Modifier	DV Modifier	Qualities
AP	-4	-1	
Barbed	+4	+3	
Minigrenade	—	—	—
Reactive	-1	+3	Flame (2d10)
Regular	—	—	
Smartbarb	+1	+3	
Thunderstrike	—	—	Shock (2d10)

Armor

Armor	Energy	Kinetic
APEX Nanosuit	7	4
CBRNN Suit	13	12

Smartguns

Mobility Platform	Bonus	Computer	Skill Rating
Standard*	0	Standard	25
Advanced*	20	Advanced	40

**A standard mobility platform has a moderate cost for one-handed weapons and a high cost for two-handed weapons. Increasing the cost category by one buys an advanced platform.*

Maiming Wounds (Kinetic)

Result	Outcome
1	Character becomes bruised or suffers cosmetic damage to morph. No effect.
2	DUR x3 test to avoid immediately taking another wound.
3	Limb functionality damaged. Morph suffers a -10 penalty to all tests made with that limb.
4	DUR x3 test or augmentation suffers penalty to effects until repaired.
5	Character falls unconscious, per normal unconsciousness rules (p. 207, *EP*).
6	
7	DUR x2 test or augmentation is destroyed.
8	Limb destroyed or critically damaged by sheer force. Bleeding results in biomorphs. Morph functions dependent on that limb, such as two-handed weapons for arms or flight for wings, are impossible.
9	Character falls unconscious, skipping SOM test to avoid (p. 207, EP).
10	Durability x1 test or instant morph death.

Maiming Wounds (Energy)

Result	Outcome
1	Character becomes burned or suffers cosmetic damage to morph. No effect.
2	DUR x3 test to avoid immediately taking another wound.
3	Limb functionality damaged. Morph suffers a -10 penalty to all tests made with that limb.
4	DUR x3 test or augmentation suffers penalty to effects until repaired.
5	Character falls unconscious, per normal unconsciousness rules (p. 207, *EP*).
6	
7	DUR x2 test or augmentation is destroyed.
8	Limb burned away in explosion or burst of energy. Morph functions dependent on that limb, such as two-handed weapons for arms or flight for wings, are impossible. Emulates effects of a microwave agonizer (p. 339, *EP*).
9	Character falls unconscious, skipping SOM test to avoid (p. 207, EP).
10	DUR x1 test or instant morph death.

Augmentation Damage Reference

Type	Outcome
Armor	Armor loses -3/-3 effectiveness.
Trait/Active Effect	MOX x10 test to function.
Aptitude Boost	Half effects, except for DUR enhancements.
Skill Bonus	-10 to bonus (can remove effects entirely).

Explosives

Explosive Grades

Grade	Maximum Effective Yield**	Weight/Yield	Cost/Yield
Low	20	2 KG/5	Trivial (50)
Common	30	1 KG/5	Low (100)
Commercial	50	.5 KG/5	Low (250)
Military	100	.1 KG/5	Moderate (500)
Experimental	∞	.01 KG/5	High (2500)

Explosive Types

Type	Armor Rating	Range/Yield Multiplier	Cost/Yield Modifier
Incendiary/Thermal	E	.5	0.8
Blast*	L	.8	1.1
Fragmentary	K	1	1
Hybrid	L	1.2	1.5

**Does not function in vacuum, except when placed directly on the object to be damaged. **Larger bombs can have larger blast radii, but will not cause more than this amount of damage.*

Common Explosive Devices

Explosives	Yield	Range (K/M/I)	Type
Broadsword-AI	45	10-25-50*	Fragmentary
Broadsword-AV	120	15-40-80*	Fragmentary
Hellrose	50	10-20-30	Incendiary
Light Mortar (HE)	35	10-15-60	Blast
Light Mortar (HEAV)	45	10-15-40	Blast
Light Mortar (Frag)	30	25-40-80	Fragmentary
Light Mortar (Plasma)	60	20-25-40	Hybrid
Heavy Mortar (HE)	80	20-40-160	Blast
Heavy Mortar (HEAV)	100	10-30-60	Blast
Heavy Mortar (Frag)	75	40-80-300	Fragmentary
Heavy Mortar (Plasma)	120	50-60-80	Hybrid

**2 meter blast outside of directional cone, treat as maim zone.*

Rajput Weapons

Spray Weapons	DV	AP	Average DV	Firing Modes	Ammo	Qualities
Doru	2d10+10	-12	21	SA	50	Nanowar (10)
Kinetic Weapons	**DV**	**AP**	**Average DV**	**Firing Modes**	**Ammo**	**Qualities**
Sarissa	3d10+2	-9	18	SA, BF	76	
Seeker Weapons	**DV**	**AP**	**Average DV**	**Firing Modes**	**Ammo**	**Qualities**
Amentum	Missile	Missile	—	SS	1	