TriPlanetary Advanced by Griatch

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1 Introduction

Triplanetary Advanced (henceforth *TriAv*) is a space-combat game for two or more players. It simulates the physics of space travel in two dimensions along the ecliptica of our solar system.

TriAv expands on the since long out-of-print boardgame *Triplanetary* by GDW[1]. TriAv takes the excellent movement rules from the original and expands it quite considerably when it comes to weapons, hit damage and ship design. This document completely replaces the old Triplanetary manual.

2 Game components

TriAv comes as three separate files which you are encouraged to print copies of. TriAv also requires a normal 6-sided die (often called a *d6*).

- The *TruAv manual* is what you are currently reading. It contains all the rule details but you will likely not have to refer much to it once you've played a game or two.
- *The solar system map* acts as the playing field for the game. TriAv is played by drawing ship vectors on this hexagonal gridded map using normal pencils. Whereas you can laminate a copy of this map and use erasable grease pencils, we find it's easiest to just print out a few paper copies and draw directly on them. The map can easily, and usually cheaply, be printed to A3 size (or bigger with a commercial printer).
- *The game-aid* folds into three parts and contains the ship manifest and all tables needed for play. Each player gets one of these for each ship they control.

TriAv does not use any counters. We find this makes it very portable and easy to play on the move. It is also easy to pause and continue at a later time. If you have problems with the map getting messy (this can happen when there are many ships), consider using coloured pencils to separate tracks. Other inventive suggestions are to experiment with counters like in the original Triplanetary or by placing the map on a whiteboard and use small magnets to mark ships.

3 Sequence of play

Each player performs all the following steps in order before it's the next player's turn. Player order can be jointly agreed upon or decided randomly. In game terms, each turn is assumed to last about a day. Of these phases, only Astrogation and Movement are mandatory.

1. *Astrogation phase*: The player plots the future location of their ships, taking into account the effect of gravity and if they want to burn fuel to change their vector. Also the vectors of previously launched weapons are plotted. Note that no object is actually yet moved in this phase.
2. *Launch phase*: Weapons that require time to reach their target (such as

[1] Triplanetary's copyright currently belongs to Steve Jackson Games. Triplanetary Advanced is purely a unofficial fan expansion.

mines and all types of missiles) are launched and their vectors plotted (but not actually moved yet). They inherit the old vector of their launching ship plus eventual adjustments they are themselves capable of.

3. *Movement phase*: The ship and launched weapons now move along their plotted vectors to their new positions. If launched weapons hit something, damage is decided by die roll.

4. *Gun fire phase*: The ship's mounted weapons (guns, lasers) fire against a target, taking into respect distance and relative velocities. Hits are decided by die roll. Targeted ships with guns of their own may retaliate directly if they are capable.

5. *Resupply phase*: Ships capable to do so may refuel, load/unload cargo and other actions which might be determined by the scenario.

4 Astrogation

4.1 Basic movement

TriAv simulates Newtonian movement in two dimensions. Each ship has an intrinsic velocity represented by a straight-line arrow (this is called a vector). The arrow has its tail at the location of the ship at the beginning of the turn and points to the location it will be at the end of the turn. A vector is always drawn between the *centers* of hexes. The basic rule of movement is:

> *Any ship or other object not accelerated by thrust or gravity will move as it did on the previous turn and in the same direction.*[2]

[2]In another form this is also known as Newton's first law.

By burning a point of fuel, a ship can shift the endpoint of its vector by one hex in any direction. A ship may only burn one unit of fuel per turn. A ship with zero speed is marked with a simple dot on the map.

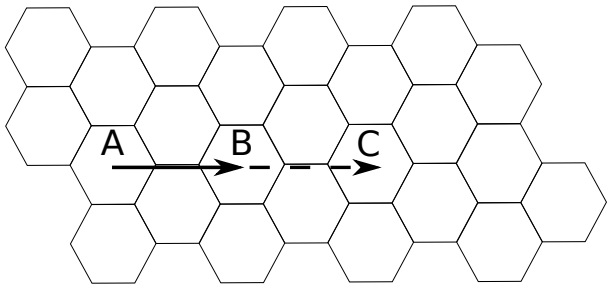

Figure 1: A ship moved from A to B in turn 1 will continue to C in the next turn if it does not accelerate due to gravity or burning fuel.

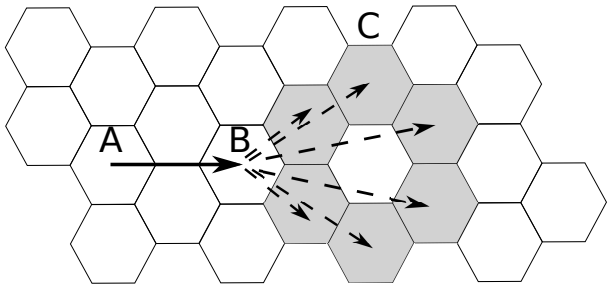

Figure 2: By burning one unit of fuel a ship may change the future tip of the vector by one hex.

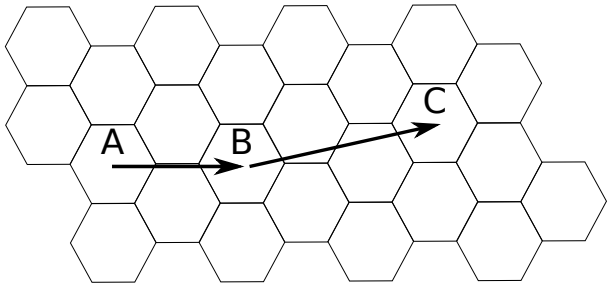

Figure 3: Here is the ship's final vector after having burnt fuel to change the vector to the "northeastern" shaded hex in Figure 2.

4.2 Gravity

Stars and planetary bodies affect their surroundings through gravity. Gravity is

marked on the map as hexes with different types of arrows. On the turn *after* a ship (or missile, mine etc) enters or passes through a gravity hex, its vector is adjusted one hex in the direction of the arrow. Several gravity hexes can affect the vector each turn, the arrows are then just applied in sequence.

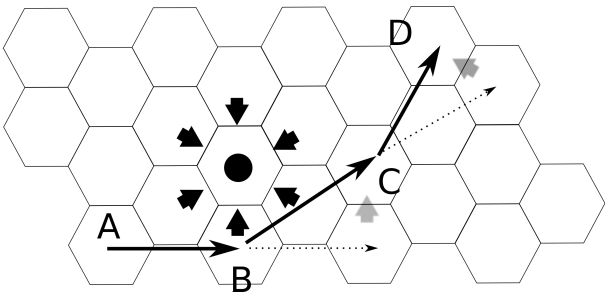

Figure 4: *Effect of gravity.* Ship moves from A to B as normal, entering a gravity hex. On the turn after (B to C), the vector's tip changes one hex in the direction of the gravity hex it passed on the turn before. Note that this new vector now also passes through a gravity hex. On the last turn, from C to D, the hex from previous turn adjusst the vector again. In this example the ship does not burn fuel, but if it did it would apply it after gravity corrections have been made each turn.

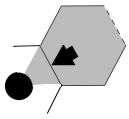

Figure 5: Ships passing between a gravity arrow and the gravitating object are affected by the gravity of the hex above. A ship passing exactly along the edge of a gravity hex is assumed to be affected by it *except* if the edge is opposite to the arrow. If a ship should happen to travel along a valid edge between two gravitational hexes, the arrow *closest* to that edge is used.

Apart from the normal solid black gravity hex described above, there are three more types.

- *Weak gravity* is found around smaller moons and is marked with hollow arrows. If a ship enters a weak gravity hex, the player may *choose* to apply that arrow or not. If not the hex is treated as empty space. However, if two weak gravity hexes are entered consecutively, the second hex's arrow entered *must* be applied, regardless of what was chosen for the first arrow.

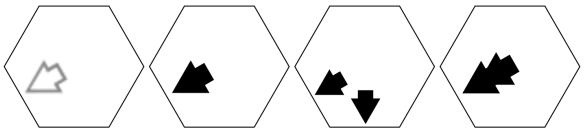

Figure 6: *Gravity types.* From left to right: Weak gravity, normal gravity, two-directed gravity (choose which direction to apply) and double gravity.

- *Two-directed gravity* is only found on the Sun. They are marked with two solid arrows in the same hex. They work like normal gravity, except the player must choose one (and one only) of the two arrows to apply.

- *Double gravity*, marked by two overlying arrows, is found only around the Sun and shifts the tip of the vector two hexes in the direction of the arrow instead of just one.

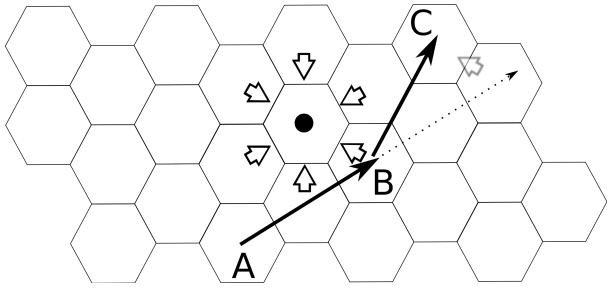

Figure 7: *Weak gravity.* When passing through two weak gravity hexes, the second one to be entered always apply regardless of how the first one is treated (in this example the player chose to ignore the first hex, or point C would also have been shifted one hex upwards).

4.3 Entering Orbit

TriAv allows for entering orbit around planets just using the normal movement rules. This is done by entering orbit with a speed of one, then burn fuel to break. You will then find you are orbiting indefinitely without using any more fuel. The first turn the ship circles without having to burn fuel is considered its first turn "in orbit". When in orbit the ship may dock with orbiting bases to refuel and restock.

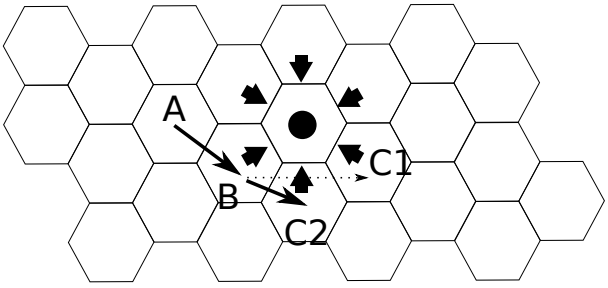

Figure 8: *Entering orbit.* Entering the vicinity of the planet with speed 1 (A to B), the ship will on the next turn feel the effects of the gravity arrow in hex B so as to try to accelerate it to point C1. If the ship now burns fuel to break to C2 instad, it will find itsef in orbit next turn, circling the planet without more use of fuel.

4.4 Planets

A ship starting on a planet uses ground-supplied boosters to reach an gravity hex above the planet's surface. This requires none of the ship's own fuel. Once in orbit, the ship has zero speed and if it does not spend fuel next turn it will crash back down onto the planet.

A ship already in orbit may burn one fuel to land on the hex-side of the planet it was above, assuming the game scenario allows it (like that hex-side having a base or being friendly). When taking off again it will do so from the same hex-side.

If the vector of a ship intercepts the *image* of a planet the ship is assumed to have crashed and is destroyed.

4.5 Asteroids

A ship may only safely pass an asteroid hex with a maximum speed of one. If it passes at a greater speed, the player must roll using the "Asteroid" collumn of the *Other Attacks* table. Asteroid bases are also considered to be asteroid hexes in this regard, but ships accidentally cannot crash into an asteroid base the way they can crash into planets.

4.6 Other ships

Each hex in TriAv represents a very large volume of space, so any number of ships can coexist in a hex without any problems. A ship whose vector passes through the *center* of a hex occupied by an enemy ship may however choose to attempt to *ram* the other ship. The effect is rolled using the "Ram" collumn of the *Other Attacks* table. Damage rolled applies to *both* ships equally.

4.7 Bases

Bases are found on asteroids, on planet surfaces and in orbit around planets. They may be military installations or points of commerse.

When docked with or landed at a base, the player may buy fuel and restock weapons assuming the scenario allows it.

Orbital bases are marked with little dots above planet surfaces. A ship *in orbit* that passes directly above an orbital base may dock. Planetary bases are reached by landing on the correct hex side (this requires burning fuel) whereas asteroid bases are visited by simply coming to a stop in the asteroid base hex. Asteroid bases and Planetary bases provide immunity against all enemy weapons *except* Space-to-ground weapons.

4.8 Leaving the map

Leaving the map usually means the ship is eliminated from play. If players agree be-

forehand one can instead allow for the ship to reappear at the point of exit after an agreed number of penalty turns. It would return with a speed of zero.

5 Combat

With the weight-limitations inherent in any realistic spaceship design it is impossible to add enough armour to match the cheap and terrible destruction capabilities of space weaponry[3].

5.1 Damage

Whenever a launched weapon hits or guns are fired, the attacker rolls a six-sided die, applying any modifications. The resulting number is matched to the correct collumn of one of the two tables found on the printable play-aid (*Gun attacks* or *Other attacks*). Reading the result from the table, this may result in a miss or various types of damage.

The damage types, as found in the attack tables, are:

- Dn - Disable ship n turns. The ship continues on its current vector until it can restore normal operation. Gravity of course works as normal during this time. Ships cannot fire weapons when disabled[4]. This includes retaliation-fire against the attacker that disabled them.

  D-type damage do *not* stack. The new D-type damage replaces the old one if it is larger than the number of disabled turns remaining from the old D-type damage. Otherwise it is ignored.

- Tn - Targeted hit. Roll n times to decide which ship subsystem was hit. For each of these hits, roll d6 again to see how much damage was applied to that subsystem. See Section 6 for more information about the subsystems and about how damage is assigned to them.

- Sn - Structure hit. Roll a six-sided die n times and apply the sum as damage to the *Structure* subsystem directly.

- E - Elimination (critical hit). The ship is immediately destroyed.

5.2 Launched weapons

These types of weapons are launched during the launch phase, before the ship actually moves in the turn. They "inherit" the velcity vector of their launching spaceship and their movements are plotted like a separate entity, taking gravity into effect. It can be a good idea to plot launched weapons with dotted lines to separate them from spaceships. When hitting an ememy, damage is determined using the correct collumn from the *Other attacks* attack table.

A ship may only fire one launched weapon per turn.

Launched weapons lasts a maximum of five turns unless they hit something. At the beginning of the launching player's sixth turn they automatically self-destruct. A launched weapon can also attack another launched weapon. If the attack roll is anything but a blank result, both weapons are destroyed.

Mines are unguided clusters of explosives. Their nature means that the launching ship *must* make a burn maneuver to the side in order to avoid running into the mines it just launched.

Any spaceship being hit directly, or which during a subsequent turn *intersects any part of the Mine's current vector* is considered to

[3] If a tactical nuke detonates at point blank range it doesn't really matter if you are a large battleship or a small frigate – the only difference is how large the scraps will be...

[4] It is however sometimes assumed that large ships, like dreadnoughts, still can fire their guns even when disabled.

have hit the mine field. If the mine enters a hex with several ships, *all* ships (including friendly ones) must roll for possible damage.

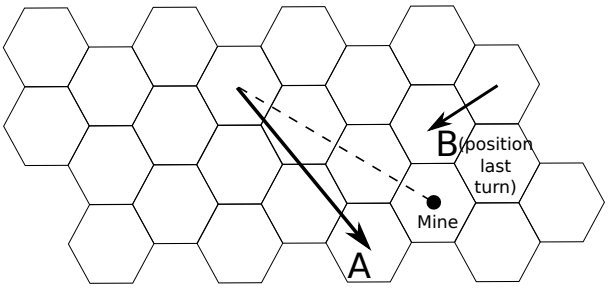

Figure 9: *Use of mines*. In this turn, ship A drops a Mine (and boosts to the side to avoid running into it itself). When it's B's turn, ship B will intersect the Mine's vector (and thus be hit) unless ship B changes its course. If it doesn't hit anything the mine will stay in space for another four turns.

Missile weapons are almost small spaceships of their own. The payload generally being nuclear and big enough to seriously damage or outright destroy any size ship, the main difference between missile types is not so much the destructive capability as how good they are at hitting a target.

To be hit by a missile, the enemy ship must either be hit directly or on its move pass through the current *head of the missile's vector*. Missile weapons are intelligent precision weapons and can separate friend from foe. The launching ship can thus coexist with its own missile in the same hex without danger. If a missile enters a hex occupied by several enemy ships, the attacking player may choose which one it attacks (or even choose to just fly by!).

5.3 Guns

Guns are massive mounted installations on the ship. They require large amounts of energy and heavy mechanical foundations to launch their projectiles or beams of energy. Guns use the *Gun power* attribute. Gun power is a joint description of how much of the ship's energy reserves and infrastructure is devoted to the guns. The bigger a ship's Gun power the more powerful can its guns be – but the less mass is available for equipping the ship.

Guns are fired on the Gun fire phase, after movement. The damage is rolled with a d6 on the *Gun attack* table and read in the collumn matching the ship's Gun power.

Each gun can only fire once per turn. If the ship has two guns, each weapon may fire either on the same enemy or on separate targets. This must be decided before any rolls are made and cannot be changed regardless of the outcome of the first roll. The two guns are treated as separate attacks (they do not stack).

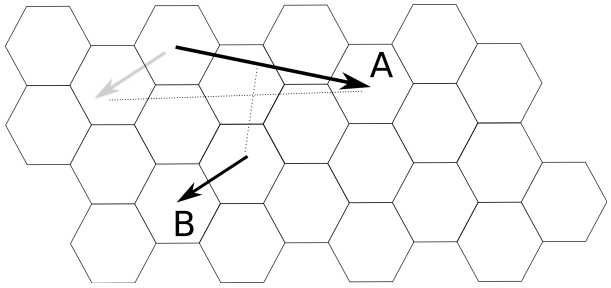

Figure 10: *Calculating gun attack modifier*. Ship A fires on B. The distance between the ships are calculated at the closest point of their vectors to be 1 (which is less than 2 and thus ignored). The relative velocity is much bigger; by vector addition it is found to be 4, which is two bigger than 2. The attack roll is thus made with a -2 modification.

Guns are affected by the *distance* to the target as well as its *relative velocity*. The distance is counted from the *closest* point of contact between the two ships' vectors. For every hex of distance *greater than 2*, a -1 modifiifier is applied to the attack roll. The relative velocity is found by simple vector subtraction (shift one vector's base to the base of the other and count the hexes between their arrowheads). Again, any relative velocity greater than 2 adds a -1 modifier.

Most ships with guns also have *retaliation capability*. This means that once the attacking ship has attacked and damage been applied, the attacked ship may fire back with

its own guns (assuming its guns allow it and the ship was not disabled or destroyed in the first attack).

6 Ship manifest

Each TriAv ship is created by filling out a *Ship manifest* as seen in Figure 11.

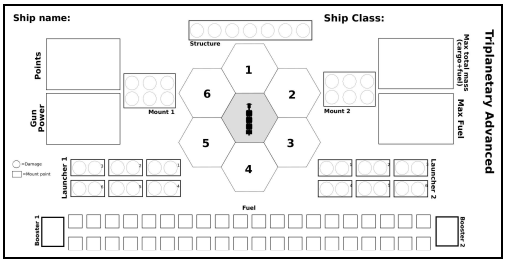

Figure 11: *The ship manifest.*

6.1 Basic ship properties

The ship manifest has four larger squares. These describe the basic attributes used for creating and outfitting a ship.

- *Points* work like cash and are used for buying ship weaponry and equipment. Some game scenarios require players to also use points to buy the ship(s) they want to use. Often some points have to be saved in order to be able to afford refitting and refueling the ship during play.

- *Gun Power* is a measure of the power of the ship's guns. The value is between 0 and 6 and changes the collumn you use in the *Gun attack* table. A high gun power reduces how much overall mass the ship can carry.

- *Max fuel* is a measure of how much fuel a ship can carry in its tanks. Each unit of fuel weighs one mass unit. This value is usually around 15-20 for a normal TriAv military ship.

- *Max total mass* is a very important attribute. It describes how much mass the ship can carry *including* the mass of its fuel. So if a ship has a Max total mass of 50 and has filled up 20 units of fuel, it can only carry an additional 30 units of mass.

6.2 Ship subsystems

The manifest has a central little image of a spaceship surrounded by numbers in a hexagon shape. Each of the six locations around the ship represents a certain ship subsystem. When equipping your ship you decide which of the subsystems hold your weapons and equipment.

When your ship get hit with the "T" damage type, as described in Section 5.1, roll a die to determine which subsystem was hit. Roll again to determine how much damage is applied to that subsystem.

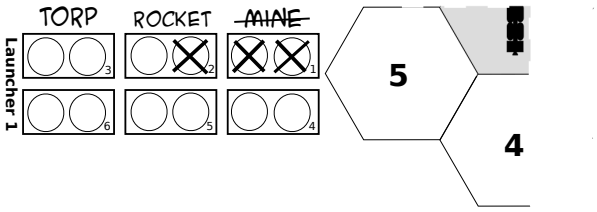

Figure 12: *Subsystem damage.* After a 'T' type hit, the player rolled a '5' – a hit on Launcher 1. The damage roll was '3'. Three circles were crossed out on the top row, beginning from closest to the ship. This destroyed the mounted Mine completely, but the Rocket is still operational.

- *Structure* (hit location 1) represents the frail central column of the ship, its command modules, computers and other vital systems. The Structure subsystem has 7 hit points (represented by circles); when all are gone the ship is destroyed.

- *Mount 1 & 2* (hit locations 6 and 2) can hold one Mounted weapon (like a gun battery) each. A mount has 6 hit points (represented by circles) after which the mount and weapon is destroyed. If there is nothing mounted there, the mount just represents armour. Excess damage given to the mount beyond the six hit points are applied to Structure.

- *Launcher 1 & 2* (hit locations 5 and 3) can each hold six launched weapons (represented by rectangles). The weapons loaded can be of mixed types and can be launched in any order. Each weapon slot has two hit points (represented by circles) making a total of 12 hit points per launcher. If a weapon looses its two hit points it is considered destroyed. Weapons are always mounted from the inside-out, top-to-bottom and damage is applied in the same way. If there is no weapon mounted where damage hits (or if the weapon was already launched), the damage is considered to have hit armour instead. If more than 12 damage is given to a Launcher, excess damage is instead applied to Structure.

- *Fuel* (hit location 4) represents the fuel tanks of the ship. No ship can ever carry more fuel than its *Max Fuel* attribute. As the ships accelerates, fuel is spent by ticking off the squares here. If damage is applied to the Fuel tanks, the result is always a loss of fuel – as many units are lost as the damage given. If there are no more fuel units to loose, excess damage is applied to Structure instead.

- *Booster 1 & 2* These are not really considered subsystems since they cannot be damaged. Each booster slot can hold one single-use booster (so each ship can only carry a maximum of two boosters at any time).

6.3 Designing your own ship

Gun power, Max fuel and *Max total mass* are properties of each ship's design. To design a ship, first decide how much fuel it should carry, and which Gun power it should have, then calculate Max total mass with the following formula:

$$\begin{aligned} MaxMass = Engine \\ +(4 \cdot MaxFuel) \\ -(10 \cdot GunPower) \end{aligned}$$

Engine is a value between 0 (default) and 40 and represents the use of a more efficient/more futuristic engine. This will allow you to create a greater variety of ship designs[5].

The *Point* cost of a ship can be found from

$$\begin{aligned} Cost = Maxmass \\ +(10 \cdot GunPower) \\ +(10 \cdot EngineBonus) \end{aligned}$$

(But feel free to modify costs up and down after what is required for the game).

If you don't want to design your own ships, Some standard ship types and engine design examples are found on the handout.

7 Equipment/Services

This constitues a brief technical description of the weapons and equipments available to

[5]Consider Engine a fudge factor. You will find that very high Gun power will not allow you enough max mass to mount any guns unless you also put in a more powerful engine.

be bought from bases for mounting on a ship. Each item has a point cost and a mass. How many points each player has available is decided upon before starting play. The mass of all equipment + fuel must never exceed the ship's *Max total mass* attribute.

7.1 Repair

This is not equipment but a service and has only cost, no mass. Buying a unit of repair will dispatch the base's technicians and robots to work on patching the ship up, restoring one point of damage from any subsystem[6]. However, repairing a spaceship is complicated work – every unit of repair bought will effectively *disable* the ship for one subsequent turn as repair crews work on it.

A ship buying the repair from an orbiting base will continue to orbit as normal while being repaired, for as many turns as needed.

A player may choose to abort the repair cycle prematurely (and get their money back) if the situation so requires.

7.2 Fuel

Fuel is the life blood of any spaceship. Each unit of fuel has mass of 1 and each ship cannot carry more fuel than is allowed by its *Max Fuel* property. A ship can only burn one unit of fuel per turn to change its velocity. A ship can opt to carry less fuel than their maximum, e.g. in order to fit additional weaponry.

7.3 Boosters

Boosters are single-use systems that gives the ship a temporary extra acceleration. Using a booster does not expend any fuel (it carries its own fuel), but in addition to using the booster the ship can also burn fuel as normal if desired. Each ship can carry a maximum of two boosters (in the Booster 1 & 2 slots).

- *Chemical booster.* This is a pack of rockets with solid propellant, pretty much like huge firework-rockets that are ejected once they burn out. Chemical boosters supply 1 additional point of thrust when used.
- *Orion booster.* This powerful single-use system integrates a deployable absorber plate with a nuclear charge of several kilotons. The nuclear weapon is ejected just behind the spaceship and detonated. The absorber plate protects the ship while converting the energy of the blast into a powerful acceleration[7]. An Orion booster supply 2 additional points of thrust in the turn it is fired.

7.4 Launched Weapons

Launched weapons are mounted in the Launcher 1 or 2 subsystems on the spaceship. All launched weapons self-destructs after 5 turns. All launched weapons except Mines and EMP attack with the "Missiles (any)" collumn of the *Other damage* table. Launched weapons may attack other launched weapons - any hit (including disabling hits) will destroy both weapons.

- The *Mine screen* is a small automated probe dispersing a vast screen of deadly unguided explosive charges around it, intended to maximize hit probability. Mines are unguided, so the launching ship must also avoid them. Mines are not as destructive as other launched weapons, but they are easier to hit with (See Section 5.2). They make for powerful strategic weapons to restrict the movements of an enemy.

[6]The only exception is lost fuel, which is simply recovered by buying more fuel...

[7]This may sound bizarre, but a variant of this has been seriously considered for a full ship drive.

- *Rockets* are relatively simple deep space weapons carrying a standard nuclear warhead. It has its own rocket engine and sensors, but having only a small fuel supply, rockets may only apply up to 1 point thrust at the moment of launching from the ship, after which it will cruise until it hits something or self-destructs.

- *EMP rockets* essentially consists of the same chassis as rockets but has its warhead replaced with a nuclear charge tuned to release energies causing maximum harm to electrical components. EMP rockets will not cause any direct damage to an enemy but can disable them for a longer time than any other weapon type, making it a powerful support weapon.

- *Missiles* are bigger than rockets but work along the same principles. Their bigger engine and fuel supply allow them up to 2 points of thrust at the moment they are launched from the ship.

- *Torpedos* are intelligent stealth weapons capable of being dropped out of their launch tubes to drift through space until the right time has come to fire its engine. A torpedo has one point of fuel to spend, just like a rocket, but may apply that thrust at *any time* during its flight.

- A *Booster Torpedo* is a torpedo with extra fuel tanks. It has two units of fuel which it can use at any time during its flight.

- The *Fusion bomb* is a tactical weapon. It is a massive, sleek bullet that can strike base armour or enter planetary atmospheres to take out hardened bunkers. It has no thrust capabilities on its own and cannot be used against ships (or other launched weapons, although it can be attacked by the latter). The only target it can be used against is planetary installations or orbital stations.

  A fusion bomb hitting a planet hex side will destroy any base located there. The attacking player can choose to destroy an orbital base instead of hitting the planet's hex below. A hit on an asteroid base will destroy that base, converting its hex into a normal asteroid hex. All ships docked (or at rest) at attacked bases will be destroyed along with the base, but not ships that happens to be passing by in the same hex.

7.5 Mounted weapons

These weapons can be mounted in the Mount 1 or 2 subsystems of the ship. A ship can have a maximum of two mounted weapon systems at any time. Both guns can then fire independently at two targets or twice at the same target.

- *Railguns* use a catapult-like rail system to electromagnetically launch a metallic slug at terrifying speeds. The projectile is just a dumb chunk of metal – the kinetic energy released upon a direct hit is enough to punch through anything. Ammunition is virtually infinite. But even though the slugs travel fast, even a minute course change by the enemy while the slug travels will cause it to miss by hundreds of kilometers.

- *Heavy Rail cannons* does not fire heavier projectiles than railguns, rather it has a much heavier support structure that allows them to fire the slug with higher speed. A shorter time for travelling down the rail means higher precision. A heavy railgun gives +1 to the

attack roll. The heavier mount however makes the ship loose its ability to retaliate when fired upon.

- *Laser batteries* use large capacitors to discharge a powerful pencil-thin beam of X-ray radiation across space. Delivering this energy to a point on the target quickly cooks through any defenses. The stubby laser turret itself is not very heavy, the problem is the massive energy requirements for each shot. A laser battery *ignores* any effects of relative velocity on its attack roll.

- A *Mass driver* is a electromagnetic railgun stretching the full length of the ship, designed to launch a heavier sliver of metal. Sometimes considered as a type of spaceship drive in itself, the kinetic energy delivered by a massdriver slug is tremendeous. A massdriver gives a +2 to the damage roll. Its structure however makes it unsuitable for retaliation-fire.

- *Flak decoy guns* are defensive weaponry. These automatic guns fire shrapnel ammunition that fill the space around the aircraft with small objects, expanding gas and pencils of laser light in order to confuse or even destroy the sensors or control systems of incoming missiles. Every Flak decoy gun reduces the attack roll of any missile (but not mines) by 1).

- *Emergency thrusters* are extra chemical rockets mounted around the cicumference of the ship. When fired upon by ballistic weapons (or lit up by a laser point) the emergency thrusters fire randomly to make the ship's exact position harder to track. Each pack of emergency thrusters reduce Gun attack rolls by 1.

8 Optional rules

Fewer sitting ducks

Whereas it may be realistic that a disabled ship is a sitting duck against further attack, situations may arise where an attacking ship keeps an enemy disabled indefinitely without any chance of defence. This can be boring and frustrating for the player. The following optional rule sections, used both or separately, may help alleviate this:

An already disabled can *not* be disabled again. If another D-type damage is applied to a disabled ship, it is ignored. Other types of damage are applied as usual.

After half the disabled time (rounded down) a ship's weapons come back online and work normally.

Space rendevouz

By matching vectors (speed and position), a ship may attempt to get into physical contact with another ship. Both ships must willingly accept the space rendevouz for it to happen. Fuel and launched weaponry (but not mounted weapons) may be exchanged between the two ships, assuming they can carry the mass. If more than 20 units of mass in total are moved between the ships, both ships must skip a turn to complete the move. Also Points (i.e. money) can be exchanged between ships if the players agree (Points have no mass).

This rule allows for refuelling tankers and other supply ships as well as allies helping each other out.

Surrender

This allows for a Space rendevouz, as above, between enemy ships, where one of the ships have surrendered to the other ship. The conditions of the truce is agreed on before-

hand by the players – usually how much loot the winner is allowed to take from the defeated ship, or how many Points should be transferred. A surrender is considered a binding bargain for both sides. The surrendering ship may not fire upon the approaching ship and whatever prize was promised will be transferred as agreed. Same rules apply to tranferring mass between ships as for the Space rendevous rule.

Boarding

By matching vectors (speed and position) with a *disabled* enemy ship, a ship may attempt to launch a boarding party to subjugate it. Both players roll a die; if the attacking player roll the highest, the enemy is defeated, otherwise the defender has fought off the attack. Only one boarding attempt can be made every turn, and *only* if the attacking ship is not performing any other attacks. It may also not counterattack.

If the enemy is defeated, the scenario may decide what happens; it could be anything from being allowed to loot the enemy ship (same mass limitations apply as for the Space rendevouz rule above) to the attacking player now playing the enemy ship as their own.

Civilian ships

By defining some ships to be "civilian" one can define all sorts of interesting scenarios. Civilian ships can carry weapons in their cargo holds but cannot launch them. They can represent supply ships or targets to raid if used with the Space rendevouz or Boarding rules respectively.

Special Asteroids

The coloured asteroids around Clandestine are impassable unless you know the exact route. Only ships belonging to the side that controls Clandestine may enter these hexes, others are considered to have crashed. Missiles entering a special asteroid hex detonates harmlessly without affecting ships in that hex (ships *already inside* such a hex can however fire out. Cannons work both ways). A Fusion bomb will destroy a hex of special asteroids (again without affecting ships), converting the hex into empty space.

Bases pick sides

Bases can be assigned to a "side" and count some of the players as enemies. All bases have a *zone of control* with is marked with a coloured outline on the map. Ships on the edge of such a zone is considered to be inside the zone. It is impossible to dock and refuel/restock at an enemy base unless this is especially defined in the current game scenario. Bases act first of all on the board[8].

Bases may have defences. A base can fire a launched weapon of type *Missile*(see Section 7) every two turns, or as often as defined in the scenario. The base is assumed to have an infinite amount of missiles. All weapons are affected normally by gravity.

Bases are generally equipped with one (or more) *Mass driver* (Again, see Section 7) type guns. Bases may not fire its guns at ships outside its control zone range.

The only weapon capable of harming a base is a Fusion bomb.

Mine fields

Mine fields may be deployed depending on the scenario. They consists of stationary *Mine* weapons located in space at the beginning of play. They most often have zero speed. A mine in a mine field use the same attack table as a launched Mine, but is not destroyed after 5 turns, it will last until it hits something.

[8]Meaning that ships tend to react to the actions of bases and not the other way around.

Fog of war

This is mostly suitable for campaign scenarios and simulate a lack of knowledge about the enemy loadout. Players don't reveal their ship manifests to each other. Launched weapons are announced and drawn openly when fired; also attacks with guns will reveal the ship's Gun power attribute.

Each ship has a detector range or 3 hexes, only when coming closer than this from each other do the two detecting players show each other their manifests. In the case of bases belonging to a particular side, a ship passing within their detector range will also reveal the ship's manifest to all players on the base's side.

Fog of war is mostly suitable for bigger scenarios. One can envision a fleet masking their movements by deploying unarmed empty ships as decoys.

9 Game scenarios

These are some simple game scenarios for quickly getting going. There is not much "story" to these; they are simply fun setups for a quick game. One can easily invent more elaborate scenarios and campaigns.

9.1 Training

For getting to learn the movement and gravity rules, newbie players may get going with the following initial scenario.

Setup

Everyone starts with a Corvette-class ship (Max total mass 70, Max fuel 20, Gun power 1) and 20 fuel points (full tanks). No other equipment and no weapons. They start on Earth and are assumed to launch with boosters into an orbital hex of their choice on the first turn.

Goal

Goal is to enter at least one gravity hex around Venus, Mercury and the Moon – in that order. The winner is the first one to return to proper orbit around Earth.

Special rules

Ramming is not allowed. Refuelling at any orbital base is free.

Variations

For full training in more aspects of the game, add a railgun, a mine and a rocket to all player's ships and let those also be restocked for free at bases. Let the control zones around the planets be no-fire zones.

9.2 The great planet race

Setup

All players start with one Frigate class ship (Max total mass 70, Max fuel 20, Gun power 2, Engine 10). They have 200 points for outfitting their ships as they see fit. Players start on Earth and launch with boosters into an orbital hex of their choice on the first turn.

Goal

The goal is to touch the gravity wells of all major bodies (i.e. bodies with normal gravity arrows, including the Sun) in the solar system. The first to return to Earth and get into a stable orbit wins.

Special rules

The control zone around Earth (green line) is a no-fire zone at the beginning of play. Noone may launch weapons or guns from it or into it. Whenever all players have left the zone it ceases to exist for the rest of the game.

Variations

Defining a particular order planets must be visited will create choke points and will be much deadlier since ships get closer to each other.

For a much calmer game, let all planets' detection zones be no-fire zones throughout the game, only allowing weapons fire in deep space.

9.3 Last man standing

Setup

All players start with 300 points and may buy any ship and loadout they can afford. All players start in space with speed 0. Ships's starting positions should be in a large circle with roughly the same distance between each ship. Size of the circle depends on how many players are involved.

Goal

The winner is the last one alive.

Special rules

All bases are friendly and usable by everyone.

Variations

Instead of last man standing, one can also let destroyed ships "pop" back onto the map at their initial position d6 turns after they were destroyed. Winner is instead the first one to score a pre-determined number of kills. With many players this variation helps to avoid players sitting idle because they were eliminated early on.

9.4 Industrial sabotage

Mercenaries are hired by a competitor to steal the valuable data from a science vessel before the company can make use of it.

Setup

The players are divided into two groups, the Guards and the Mercenaries. If uneven, there should be more Mercenaries than defenders. The Mercenaries fly Corvette class ships (Max total mass 70, Max fuel 20, Gun power 1). Guards fly Frigate class ships (max total mass 70, Max fuel 20, Gun power 2, Engine 10). Mercenaries have 100 Points for buying equipment, Guards have 150.

The Guards protects an unarmed science ship. This civilian ship has Max fuel 20 and cannot carry any extra cargo.

All defenders and the civilian ship start *in orbit* around Earth, at any hex and orbiting direction desired. Same goes for the Mercenaries, except they orbit Mercury.

Goal

The science ship must touch the gravity wells of Venus and Mars (in any order) before docking with the orbital research base on Io (must be the last stop). If it suceeds without the ship being boarded, Guards win a clear victory.

Mercenaries win a clear victory if they manage to board the transport and subjugate its crew, to then manage to escape with the stolen information back to touch the gravity well of Mercury.

If the transport is destroyed before it completes its journey (and without its secrets having been stolen) the game is considered a weak win for the Mercenaries.

If the secrets are stolen, but the Mercenary ship is destroyed before reaching Mercury, the game is assumed a draw unless the science ship does manage to complete its trip, in which case it's a weak victory for the Guards.

Special rules

The civilian ship moves last of all ships. Its movements are normally jointly agreed

upon by the defender players. But every *5th* turn it is instead controlled by the Mercenaries! Mercenaries may not use a boost that causes the ship to be immediately destroyed.

The Boarding rules are used. If the boarding suceeds, the boarding Mercenaries ship is assumed to carry the important data with it. The ship can be boarded any number of times to re-obtain the information.

If the civilian ship should exit the map, it is assumed to "bounce" off the edge, returning back into the map again with the same speed as before but with its direction mirrored. Other ships behave like normal.

Variations

The scenario may be too difficult for the Mercenaries (especially the docking part). By making the Mercenary control the civilian ship more often (say, every fourth or even third turn) one can make its behaviour more erratic and difficult to protect by the guards.

9.5 Hostile takeover

Two mega coorporations have moved from sabotage and espionage to full scale war.

Setup

The players are divided into two groups. One group controls the orbital base of Io, the other side controls one of the two bases of Mercury (the one facing Earth). Mars' bases are assumed neutral and available to all. All other bases in the solar system are closed to the warring factions while the conflict is going on. Equipment is bought normally at all available bases.

Each player gets 400 points to buy ship(s), using any loadout except Fusion bombs.

Each faction's home base starts with one free-of-cost Fusion bomb in stock.

Upon start of play, each home base may deploy one Mine up to two hexes away, with a speed of zero. This mine follows the *Mine fields* optional rule and is not destroyed after 5 turns.

Goal

The goal is to hit the enemy's headquarter with a Fusion bomb. If both bases are destroyed within two turns of each other the result is considered a draw, otherwise it is a decisive victory for the side first destroying their target.

Special rules

Optional rules *Fog of war*, *Mine fields* and *Bases pick sides* are used. Bases may launch *Missiles* every five full rounds (one round being when all players have moved once) and each also has a *Mass driver* gun.

Each base produces a *Fusion bomb* every 10 full rounds. A ship must be docked to the station to load a Fusion bomb. A bomb loaded from the home base is free of charge.

Variations

Closing Mars and opening some of the other bases for neutral use changes the tactical situation somewhat. For complete mayhem, let bases fire missiles more often.