

Vector 3

Tactical Space Combat in Three Dimensions

History

Originally published in 1979 by Simulations Publications, Inc., *Vector 3* is a relatively simple space combat boardgame of my design, using Newtonian mechanics. On a number of occasions, players of the game have told me that it allowed them to under both Newtonian mechanics and vector arithmetic though the nature of these things had escaped them during school. While I hope some modern players will enjoy the game for itself, I also hope it may find a place in an instructional setting.

I've made some minor changes from the original edition. These include:

1. Allowing the possibility of more than two players. We actually playtested with multiple players back in the day, but the severe component limitations of SPI minigames didn't permit more; with this game, it's just a matter of printing more copies of the ship displays and markers.
2. Eliminating the concept of the 'defending' and 'attacking' players, since this isn't relevant in a multiplayer game. (It can still be played two-player of course.)
3. Rewriting the rules to be less SPI-legalistic, more readable, and so that you need read only the first part to play the simplest scenario.
4. Mines worked differently (and not as well) in the original game.
5. The technologies available in the four scenarios were different in the original game; the current scheme makes more sense given the "adding new rules with each scenario" approach of these rules.
6. I've eliminated the concept of torpedo duds (although offered it as an optional rule at the end) for reasons explained in my design notes (at the end).
7. The original game didn't allow tractor-pressors to accelerate torpedoes or mines.

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Components

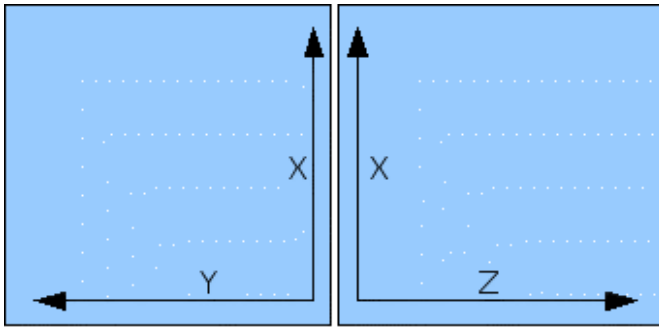
To play *Vector 3*, you will need several sheets of graph paper; scrap paper for use by the players and pencils; two dice; a pocket calculator (or ideally, one for each player); a set of pod markers; and a ship display. The pod markers and ship display are included as images with the zip file that includes these rules, but if you don't have them, visit <http://playthisthing.com/vector-3>

Simply print both graphics on a color printer. You will need one copy of the Ship Display for each player; one copy of the pod markers will suffice, unless you have quite a few players or are playing a game with a high number of ship points per player.

I recommend mounting the pod markers on light cardstock. Use a light coating of rubber cement, an aerosol mounting adhesive, or in a pinch a glue stick; let dry for 15 minutes or so; then cut the markers apart with a sharp scissors.

Space Map

To make the space map, take two sheets of graph paper. Cut each of them so they are now square, rather than rectangular. Draw lines ending in arrows one to represent X and Y axes, and on the other to represent X and Z axes, then place the two sheets of paper next to each other, as shown:



Since players will be writing on the sheets during play, you may find it helpful to tape the graph paper to the table at the corners. Try to keep the square grid aligned across the divide between them.

Setting Up for Play: Learning Scenario

Give each player a ship display. Each player should take a pen or pencil; if feasible, give each player a differently colored writing implement. If not, each player should choose a symbol (e.g., an X, an O, some other small symbol) to represent his ships in the game.

Before the game begins, each player decides on technology, then buys his ships, and pods for his ships.

Technology

Each player may choose to begin with Acceleration Technology 2 and Laser Technology 2, or with Acceleration Technology 1 and Laser Technology 3.

Ships and Pods

Each player then buys ships and pods, and each has 48 Ship Points to spend. Notice that, on the ship display, there are three kinds of ships; ones with spaces for 6 pods, ones for 9 pods, and ones for 12 pods. The 12-pod ships are not used in the Learning Scenario.

Each ship costs points to buy, and you must then outfit the ship with pods, which also cost points to buy. Use the following table:

Ship Cost Table (Learning Scenario)

Ship Type	Cost	Pod Type	Cost
6-Pod Ship	16	Cargo	1
9-Pod Ship	32	Cabin	2
		Laser	4

Each 6-pod ship comes (at no extra cost) with 4 cabin pods; only the additional 2 pods can be purchased. Each 9-pod ship comes with 5 cabins; only the additional 4 can be purchased. All pod slots *must* be filled. Note that cargo pods have no role in the game, except to fill otherwise unfilled slots.

Take pod markers for your pods, and place them on your ship display to show how each ship you have bought is equipped.

For each ship, also take a Manuever, Warp, and Power marker, and place it in the central area of the ship on the Ship Display, in the *highest* numbered box of the same type.

Initial Placement

Choose one player to place ships initially (if there's an argument, just roll dice to choose someone). He places his ships anywhere he wants on the space map; indicate a ship's position by making a mark in *two* squares, one on the X-Y part of the space map, and one on the X-Z part of the space map. **The marks must be in the same X-row** on both sections of the space map.

For each ship you place, indicate which ship it is by writing the same letter or number that appears on the ship display for that ship next to it. E.g., for your first 6-pod ship, write "A6," for your second "B6," and so on.

Once the first player has placed, the player to his left "warps in." Unlike the first player, he must place his ships in a group. Each ship in the group must be within 2 cubes of at least one other ship in the group, and no ship may be within 3 cubes of any other player's ship. (I'll discuss how to calculate "cube distances" later.)

Going around the table, each other player "warps in."

Once all players have warped in, the game begins.

Note: All ships begin with velocities of zero.

Winning the Game

During the game, players must keep track of the number of “victory points” they earn. One way to do this while making sure nobody fudges the numbers is to have each player keep track of the victory points of the player to his left.

Each time you destroy a pod on an enemy ship, you earn 1 victory point.

Each time you destroy an enemy ship, you earn 5 victory points, plus 1 point for every pod on that ship that wasn't destroyed yet.

At the end of the game, if only one player has any ships left, that player earns 10 victory points.

The player with the most points wins. If two or more are tied for the largest number, the game is a draw among them.

Ending the Game

The game ends when any of the following happens:

1. Only one player still has ships on the space map.
2. All players with ships still on the space map agree to end the game.

The players can also agree to a “time limit” before beginning the game, with the game ending after a set amount of time. (This is recommended in a classroom setting.) In this case, players who try to hold onto a lead by procrastinating and taking too long should be roundly insulted as unchivalrous blighters unfit to polish the boots of proper space admirals.

Play Sequence

In the Learning Scenario, players do the following, in order, each turn:

Movement: Players move their ships on the space map, by making marks on the map where each ship ends up, given its current velocity, and drawing a line (actually two lines, one on the X-Y map and one on the X-Z map) connecting their old position with their new one.

Laser Fire: Ships with undestroyed laser pods may fire at enemy ships.

Acceleration: Each player secretly notes on scrap paper how his ships accelerate (and therefore how they will move on the next turn).

Positions, Movement, and Acceleration

Position

Vector 3 is played in three-dimensional space, but of course the space map itself is flat. That's why there are two map sections, one representing a ship's X and Y coordinates, and the other the X and Z coordinates. You can imagine the position of the ship on the X-Z map as representing the height of the ship over its position on the X-Y map. Or to put it another way, if you were to fold the X-Z map up at a 90 degree angle to the table, you could show the ship's precise position in 3D space by drawing an imaginary line up from its mark on the X-Y map, and across from its mark on the X-Z map – the ship would be at the intersection of the two lines.

Naturally, a ship's X coordinate is always the same on both map sections.

Movement

Movement in *Vector 3* is strictly Newtonian.

A ship's velocity is expressed in the form of three numbers: the velocity's vector components along the X, Y, and Z axes respectively. Each vector component can be a positive or negative number. Thus, for example, if a ship's current velocity is 2, 0, -1, it will on the next movement phase move up 2 squares along the X axis, not at all along the Y axis, and 1 down (toward the center division between the X-Y and X-Z maps) along the Z axis.

Each player records his ship's current velocity on scrap paper, and changes the numbers when it accelerates.

During the movement phase, each player marks his ships' new locations on the space map, with marks on both map sections, and draws lines connecting the new marks with the old marks.

Acceleration

During the Acceleration phase, each player writes on scrap paper how his ship is accelerating. Orders are simultaneously revealed, and velocities changed on the same scrap paper.

In the Learning scenario, any player with Acceleration Technology 1 can accelerate each ship by 2. If a player has Acceleration Technology 2, he can accelerate 6-pod ships by 3, and 9-pod ships by 2.

What does that mean?

Well, you can change any single vector component by that number (2 or 3), either in the positive or negative direction. (Or by less, if you want.)

Or you can look at the Burn Component Table (at the end of the rules). As it shows, if your acceleration is 2, you can also change one vector component by 2, and a different vector component by 1. If your acceleration is 3, you can change two vector components – both by 2, or one by 3 and the other by 1 – or all three at the same time – 2, 2, and 1; 2, 2, and 2; or 3, 1 and 1.

The change you make permanently changes your velocity, so on the next movement phase, you'll move as indicated by your new vector components. And any subsequent acceleration starts from those values.

Example: A ship begins at rest (velocity of 0, 0, 0), and it can accelerate 3. The player decides to use his ability to change all three components by 3, 1, and 1, to change its new velocity to -3, 1, 1.

The Map Edge

If any ships run off the edge of the graph paper, just add additional sheets of graph paper as required (or move all ships some distance together to keep them on the playable area). There is no “map edge”; space is effectively infinite.

Laser Fire

At the beginning of the Laser phase, each player rolls the dice. The highest roller (re-roll if there are ties) gets to fire first. He first *one* ship, then the player to his left fires one ship, and so on, around the table, each player firing one ship each time, until each ship has fired.

Each ship may fire only once, and fires only at one target. It fires as many times as it has undestroyed laser pods.

Cube Distance

First, determine the distance between the firing ship and its target. To do so, you use the

Pythagorean Theorem. Count the number of squares between the two ships along the X axis; separately count the number of squares between them along the Y and Z axes. Square each of the three numbers; add the squares; and take the square root of the sum. Round the result to the nearest whole number (rounding up if exactly .5). This is the “cube distance” between the two ships.

$$\text{cube distance} = \text{SQUARE ROOT OF } (X^2 + Y^2 + Z^2)$$

(Yes, this is what you're using the calculator for.)

Next, look at the Laser Fire Table (at the end of these rules). At the top of the table find the player's Laser Technology (either 1 or 2, in the Learning Scenario). Below it, find the range in which the distance to the target lies. Read across to the left to find the “to hit number.”

Example: A ship at coordinates 10, 20, 30 is firing at a ship at coordinates 15, 18, 22. The distance along the X axis is 5 squares; along the Y axis, 2; and along the Z axis, 8. 10 squared is 25; 2 squared is 4; 8 squared is 64. Added together, this is 93. The square root of this is 9.64 something, which we round to 10. So the “cube distance” between the two ships is 10. The firing player has Laser Technology 2, so looking at the Laser Fire Table, we want the “2” column. Looking down it, we see at the bottom “9-10,” and 10 is in this range (we couldn't even fire if the target were any farther away). Reading to the left, our “to hit” number is 1.

Determining Damage

For each firing laser pod on the ship, roll one die. If the number rolled is less than or equal to the “to hit” number, that laser pod damages the target.

Each time a ship is damaged, roll two dice, sum the rolls, and refer to the Damage Table (at the end of the rules). Find the roll in the left-hand column, and read across to the right column to determine what gets damaged.

If the damage roll is “2”, roll one die; on a roll of 1, the target ship is destroyed. Any other roll has no effect.

If the damage result is “Maneuver,” “Power,” or “Warp,” move the corresponding marker on the target's ship's display down one box. If it is already in the lowest-numbered box, remove it; this means that this ship system has been destroyed. (Note that 6-pod ships only have a

single box for each system, so a single hit to that system destroys it.)

If the damage result is “Pod,” now refer to the Pod Destruction Table (at the end of the rules). For a 6-pod ship, roll one die; the number rolled is the number of the pod that gets destroyed (numbers are shown on the Ship Display). For a 9-pod (or 12-pod) ship, roll a second die also; the two rolls together, on the table, determine which pod gets destroyed.

If the pod of the corresponding number on the target ship's display still exists, remove it from play. If it was previously destroyed, then the hit travels to the ship system (Maneuver, Power, or Warp) that adjoins the pod's box on the Ship Display, damaging or destroying that system just as if the damage result had been to that system directly.

Damage Effects

A destroyed pod can't be used; thus, a destroyed laser pod may no longer fire. (Cabin and cargo pods have no real game effect, and simply absorb one hit of damage each – but the destroyer still gets victory points for them.)

If a ship's Power system is destroyed, it can no longer fire laser pods (or use launch or tractor/pressor pods).

If a ship's Warp system is destroyed, it cannot “warp out” (see below).

If a ship's Maneuver system is destroyed, it can only accelerate by 1 each turn for the remainder of the game (whatever its Acceleration Technology may be).

If a 9-pod ship with Acceleration Technology 2 has taken one point of damage to Maneuver, it can still accelerate by 2 (instead of the normal 3) each turn. (If Tech 1, or damaged by 2, it could only accelerate by 1).

If *all* of a ship's Cabin pods are destroyed, the ship is considered destroyed, and removed from play. Similarly, if all three ship systems (Fire, Maneuver, and Warp) are destroyed, the ship is also considered destroyed.

Warping Out

At any time, any player may say that one, any, or all of his ships are attempting to “warp out.” You might do this to preserve the last tattered remnants of your fleet, or because a ship is so damaged that it's useless and you don't want

someone else to earn victory points for killing it, or because you are so far ahead that even by letting someone else get 10 victory points for being the last player with ships, you'll still win.

At the end of each turn, for each ship trying to warp out, check the following:

1. Are any enemy ships (or torpedoes) within 3 cubes distance? Then it cannot warp out, either this turn or next turn.
2. Was it hit by laser fire (or torpedoes) this turn? Then it cannot warp out, either this turn or next turn.
3. It also can't warp out on the turn that the player declares it's trying to – it could at the end of the next turn, assuming it passed checks 1 and 2 on both successive turns.

So basically, if at the end of two subsequent turns, it isn't too close to enemy ships and torpedoes, and doesn't get hit, then it can warp out. Remove the ship from play – it has traveled through hyperspace back to a friendly base, and is out of the game.

That's It!

That's all you need for the learning scenario. Read on for more options.

Basic Scenario

The Basic Scenario adds: the idea of Technology Points; unguided torpedoes; and multi-fire capability.

Setting Up for Play

In the Basic Scenario, each player gets 120 ship points – and 60 Technology Points.

Technology

Each player begins with a Technology level of 1 with Acceleration and Lasers, and no ability to use Multifire, Launch Pods, and Unguided Torpedoes. Using the following table, each player can buy tech levels with any of these technologies, so long as he doesn't spend more than 60 points in total; note that you have to spend to buy tech level 1 in the more advanced technologies. Each player writes down what he's buying, and then all are revealed at once.

Technology Table (Basic Scenario)

Tech Level	Accel.	Lasers	Launch	Unguided Torpedoes	Multifire
1	0	0	5	10	10
2	15	10	10	20	20
3	30	20	20	30	35
4	60	40	40	40	55

Ships and Pods

Similarly, players buy ships and pods (120 points), as in the learning scenario – except that 12-pod ships are now available, as are launch pods and torpedoes. 12-pod ships come with 6 cabin pods.

When a player buys a launch pod, he may also (and should) buy torpedoes for that launch pod. He must write down how many torpedoes are bought for that pod. Each pod fires torpedoes separately, and if a launch pod's supply is exhausted, it may not launch any further torpedoes.

Ship Cost Table (Basic Scenario)

Ship Type	Cost	Pod Type	Cost
6-Pod Ship (4 cabins)	16	Cargo	1
9-Pod Ship (5 cabins)	32	Cabin	2
12-Pod Ship (6 cabins)	48	Laser	4
		Launch	5
Consumable Type			
Unguided torpedo	1		

The “Initial Placement” and “Winning rules” remain the same.

Play Sequence (Basic Scenario)

In the basic scenario, the play sequence changes a bit to accommodate torpedoes.

Movement: Players move their ships and torpedoes on the space map according to their currently velocity.

Torpedo Detonation: Any player with torpedoes on the space map may detonate any or all of them, resolving damage to ships within detonation range.

Laser Fire: Ships with undestroyed laser pods may fire at enemy ships.

Torpedo Salvo: Ships with undestroyed launch pods and torpedoes in inventory may salvo new torpedoes.

Acceleration: Each player secretly notes on scrap paper how his ships and torpedoes accelerate (and therefore how they will move on the next turn).

Laser Fire

Laser fire works as in the Learning Scenario, with some minor changes:

New Tech Levels

Players can now buy Laser Technology beyond level 2, allowing them to shoot at greater ranges.

Multifire

If a player has Multifire technology, a ship with more than one laser pod may fire those pods at different targets. Multifire Technology 1 allows you target two different targets; Multifire 2 allows you to target 3 or more; and so on. Each pod can only shoot at a single target, of course, but different pods on the same ship can shoot differently. The same rules are used for resolving these shots.

Shooting at Torpedoes

Laser pods can shoot at torpedoes instead of ships. The same rules are used to determine the “to hit” number. If the torpedo is hit, roll on the Damage Table, as usual, but any roll of 7 or less (the rolls in parentheses) destroys the torpedo; other rolls have no effect.

Acceleration

Players can now have higher Acceleration Technology, and also 12-pod ships. To determine a ship's maximum acceleration, refer to the Acceleration Table (at end of rules). Find the player's Acceleration Technology at the left, and the size of the ship (in pods) at the top; cross-reference to determine the acceleration number.

Not that unguided torpedoes can also accelerate, as indicated by the table.

You still use the Burn Component Table to see how much a particular acceleration level lets you change the individual velocity components.

Torpedoes

Salvoing

During the Torpedo Salvo phase, ships may salvo torpedoes. Each player writes down which ships are doing so, with how many launch pods, and reveals their orders. Marks are made on the space map to indicate the presence of salvoed torpedoes.

Each launch pod on a ship may salvo a torpedo, once per turn. Each launch pod has a separate inventory of torpedoes; players must keep track of their inventory on scrap paper. When a pod's inventory is exhausted, it can't salvo any more torpedoes.

When a ship salvos a torpedo, the torpedo begins at the ship's location, with the same velocity as the ship.

In this scenario, all torpedoes are "unguided." That means they may accelerate, only once in the entire game, in the Acceleration phase immediately following the Salvo phase. The Acceleration Table shows how much they can accelerate by.

Detonating Torpedoes

During the Torpedo Detonation phase, any player with torpedoes on the map can detonate any or all of them. Roll dice to determine which player goes first; he may detonate one torpedo, then the next player to his left may do so, and so on, until no player wants to detonate any more torpedoes.

A torpedo's "blast radius" is equal to the player's Technology level with Unguided Torpedoes. When a torpedo detonates, it may damage any ships and torpedoes within that

blast radius, in terms of cube distance. Use the normal rules for determining cube distance to see if any potential targets are within the blast radius.

An exploding torpedo can affect *all* ships and torpedoes within its blast radius –including friendly ones!

For each target within the blast radius, determine the distance between it and the torpedo. Subtract the distance from the torpedo's Technology level, and add 1. For the target, roll this number of times on the Damage Table. **Example:** A torpedo of Technology 5 explodes 2 cubes away from a target. $5-2+1=4$; roll 4 times on the Damage Table.

Damage Effects

If a ship's Power system is destroyed, it can no longer either fire lasers or salvo torpedoes (or mines, or use tractor-pressors).

If a ship's Maneuver system is damaged, its acceleration is reduced as follows:

6-pod ships: A single hit to Maneuver destroys that system, so a 6-pod ship with any Maneuver damage has an acceleration of 1 for the rest of the game.

9-pod ships: A 9-pod ship that has suffered a single hit to Maneuver has its acceleration *halved*. (Round halves up to the next whole number.) If the maneuver system is destroyed, it has acceleration 1.

12-pod ships: A 12-pod ship that has suffered a single hit to Maneuver has its acceleration reduced by third. (E.g., multiply its normal acceleration by $2/3$ rd, and round to the nearest whole number, with exact halves rounded up.) If it has suffered two hits to Maneuver, its acceleration is reduced by two thirds. If the maneuver system is destroyed, it has acceleration 1.

Intermediate Scenario

The Intermediate Scenario adds guided torpedoes and mines.

Setting Up for Play

In the Intermediate Scenario, each player gets 200 ship points, and 100 Technology Points.

Technology

Each player begins with a Technology level of 1 with Acceleration and Lasers, but no ability to use other technologies. Refer to the Technology Table (at end of rules). Ignore the columns for Screens and Tractor/Pressors; each player can buy tech levels with other technologies, using his 100 points. Each player writes down what he's buying, and then all are revealed at once.

Ships and Pods

Players buy ships and pods with their 200 points; refer to the Ship Cost Table (end of rules), ignoring the sections for Screens and Tractor/Pressors. As in the Basic scenario, any mines or torpedoes (unguided or guided) must be allocated to specific launch pods; a launch pod can have any or all of these in inventory, however.

The "Initial Placement" and "Winning," "Play Sequence" and "Laser Fire" rules remain the same as in the Basic Scenario.

Torpedoes

Launch pods may now launch guided torpedoes, and mines, as well as unguided torpedoes. During a single turn, a pod can only launch one item – one of either type of torpedo, or a mine. Again, players keep track of their inventory on scrap paper, and when a pod's inventory of a particular item is exhausted, it can't launch that item any longer.

Guided vs. Unguided Torpedoes

Unguided torpedoes can accelerate only once, in the turn they are launched. Guided torpedoes can accelerate every turn (but at a lower rate, as the Acceleration Table shows). That's the only difference between them – aside from the fact that guided torpedoes cost more ship points to purchase at the beginning of the game.

Note, however, that a player has *different* Technology levels with guided and unguided torpedoes, so might have different blast radii for the two torpedo types.

Mines

When a mine is salvoed, mark its location on the space map. All mines, always, have zero velocity. (Yes, this is unrealistic – they would logically have the same velocity of the salvoing ship – but this actually improves gameplay.)

Mines cannot be fired upon by lasers; they are stealthy and hard to pinpoint (though the salvo event can be seen, so their presence is known by all combatants). They can be affected by the detonation of nearby torpedoes or mines, and are affected by torpedo detonation in the same fashion as other torpedoes.

The owner of a mine may choose to detonate it during the Torpedo Detonation phase; the effects are resolved as with torpedoes (determining blast radius and damage in similar fashion). Of course, each player has a mine technology level separate from his torpedo technology levels, so the blast radius and effective damage may be different.

Advanced Scenario

The Advanced Scenario adds screens and tractor/pressor beams.

Setting Up for Play

In the Advanced Scenario, each player gets 300 ship points – and 160 Technology Points.

All technologies and items listed on the Technology and Ship Cost tables are available (see end of rules).

Play Sequence

In the Advanced Scenario, the play sequence is modified slightly to accommodate tractor-pressor beams:

Movement

Torpedo Detonation

Laser Fire

Torpedo Salvo

Tractor Pressors: Each ship equipped with a tractor-pressor pod may use it.

Acceleration

Screens

If a ship has any undestroyed screen pods, it receives the following benefits:

1. When the ship is the target of laser fire, the “to hit” number of the firing pod is reduced by ship's Screen Technology level. E.g., if the player has a Screen technology of 2, a pod with a “to hit” number of 2 or less can't be hit, and one with, say, a “to hit” number of 4 has the “to hit” number reduced to 2.
2. When a torpedo or mine detonates within range of the ship, the number of rolls on the Damage Table is reduced by the player's Screen Technology. E.g., if the player has a Screen technology of 1, and a nearby torpedo detonation would normally cause 2 rolls on the Damage Table, only one occurs.

Note that having more than one screen pod provides no benefit to the ship – except, of course, that if one screen pod is destroyed, the second still continues to provide the benefits of screens.

Tractor-Pressor Beams

During the Tractor-Pressor phase, each ship equipped with an undestroyed tractor-pressor pod may use it. A ship with more than one such pod may still use tractor-pressors only once.

If more than one player has tractor-pressors, roll dice to determine which goes first; that player may use the tractor-pressors on one ship, then go around the table clockwise, with each player having the opportunity to use his tractor-pressors on one ship, continuing until no player wishes to use tractor-pressors further.

Use on a Ship

The range of tractor-pressors is 5 times the player's Tractor-Pressor Technology. A ship may use tractor-pressors on any target within range.

The player may accelerate a target ship within range (his own or another player's), changing its velocity by as many cubes as his tractor-pressor Technology level. The target is accelerated just as it would be during the Acceleration phase, except that the player

using tractor-pressors is doing the accelerating, and not the target ship, and the target ship has no choice in the matter.

The ship using tractor pressors is then accelerated in exactly the *opposite* direction, by the same amount.

Example: A ship with tractor-pressor Technology 3 accelerates another ship by 3, -1, 0. The ship using tractor-pressors is then accelerated -3, 1, 0.

Reality Check: Just so you know... This is realistic, to the degree that “every action has an equal and opposite reaction.” However, to be *totally* realistic, we'd have to take any difference in mass between the two ships into account – thus, a 6-pod ship using tractor-pressors on a 12-pod ship would be accelerated more than its target. But we're not bothering with that for the sake of simplicity.

Use on Torpedoes

You can use tractor-pressors on torpedoes, just as you can on ships. However, only the torpedoes are accelerated – no change to the ship's velocity occurs. (Rationale: Torpedoes have much smaller mass, so the effect on the ship is minor.)

Use on Mines

You cannot use tractor-pressors on mines owned by other players (too hard to pinpoint). However, you can use them on your own mines; they are accelerated, and continue to move thereafter, in the fashion of unguided torpedoes, while the ship undergoes no acceleration.

Suggested Variations

The Learning Scenario strips the game down to its basic mechanics; each additional scenario adds complexity, but also interesting strategic options. However, each scenario also creates larger fleets. Experiment with a variety of ship and technology point pools, but with the full rules set (or with the intermediate rules set – screens and tractor-pressors are interesting, but not vital).

Torpedo Duds

The original game contained the following rule, which I've cut a) to reduce complexity, and b) because torpedoes are strategically imperative (see notes below). However, you can use them

if you want to:

Whenever a ship salvoes a torpedo or mine, subtract the relevant Technology level from 7. Then, roll two dice. If the number rolled is less than the number you determined, the torpedo or mine is a dud, and is not placed into play.

Example: You are launching an unguided torpedo, and your Unguided Torpedo technology is 2. 7 minus 2 is 5. On a roll of 5 or less, your torpedo is a dud.

Game Designer's Notes

Vector 3 is essentially a variant of the tactical battle system Redmond Simonsen designed (and I developed) for *Battlefleet Mars*, the strategic system for which was designed by Brad Hessel. *Battlefleet Mars's* tactical game – and to a lesser degree, this game – suffers from a fatal flaw.

The ships are battling across undifferentiated space. There is no terrain – not so much as a planetary gravity well, or objects that might block line of sight. There is no “weather gauge,” no ability to “cross the tee” -- in short, at least in *Battlefleet Mars*, no real reason for maneuver. Consequently, the game becomes a slug-fest; maneuver is irrelevant, and it's largely a matter of who has the larger force – and luck with the dice.

This is also, incidentally, the case with the Learning Scenario in this game – which I've retained because, well, it functions as a “learning scenario,” imparting the basics of the movement and fire systems.

What saves *Vector 3* game from strategic irrelevance are the mines and torpedoes; players have a reason to maneuver, to avoid the dangers they pose, and this provides for at least something in the way of strategic tradeoffs between objectives. That is, of course, also why, in this version, I've made torpedoes somewhat more effective, and mines considerably more so, than in the original edition.

It's still a game that has more “rules complexity” and less “strategic complexity” than something I'd design today; yet it's pretty good fun, in its own way – and does serve to illuminate both vector arithmetic and Newtonian mechanics, which is no bad thing.

Credits

Game Design: Greg Costikyan

Graphic System Design: Redmond Simonsen

Game Development: Thomas Philip Gould

Playtesting: Edward Jacobs, R. Scott Smith, Benjamin K. Grossman, Nick Jacobs, Barton Campbell, Carey Gister

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For more interesting games (both tabletop and digital) visit <http://playthisthing.com>.

This game is archived at <http://playthisthing.com/vector-3>

Vector 3 Charts and Tables

Acceleration Table

	Ship Size (pods)			Torpedoes	
Tech Level	6	9	12	G	U
1	2	2	1	3	4
2	3	2	2	4	5
3	4	3	2	5	6
4	5	4	3	6	6

Result is the acceleration value. **G** = Guided, **U**=Unguided.

Laser Fire Table

To-Hit No.	Technology Level				
	1	2	3	4	5
5	1	1-2	1-3	1-4	1-5
4	2	3-4	4-6	5-8	6-10
3	3	5-6	7-9	9-12	11-15
2	4	7-8	10-12	13-16	16-20
1	5	9-10	13-15	17-20	21-25

Find laser tech level at top, and range to target in the column below; number to right is "to hit number." Roll a die; if the roll is this or less, the target is hit.

Pod Destruction Table

DIE #1	6-pod	DIE #2	9-pod	12-pod
1	1	1-3	1	1
		4-6	2	2
2	2	1-3	3	3
		4-6	4	4
3	3	1-3	5	5
		4-6	6	6
4	4	1-3	7	7
		4-6	8	8
5	5	1-3	9	9
		4-6	*	10
6	6	1-3	*	11
		4-6	*	12

*= Roll again. Result is the number of the pod destroyed.

Burn Component Table

	Components Change		
Accel.	One	Two	Three
1	1	1,1	--
2	2	2,1	1,1,1 2,1,1
3	3	2,2 3,1	2,2,1 2,2,2 3,1,1
4	4	3,2 3,3 4,1 4,2	3,2,1 3,2,2 3,3,1 4,1,1
5	5	4,3 5,1 5,2	3,3,2 3,3,3 4,2,1 4,2,2 4,3,1 4,3,2 5,1,1 5,2,1
6	6	4,4 5,3 5,4 6,1 6,2	4,3,3 4,4,1 4,4,2 4,4,3 5,2,2 5,3,1 5,3,2 5,4,1 5,4,2 6,1,1 6,2,1

Damage Table

DICE	damage
(2)	See note.
(3)	Maneuver
(4-7)	Pod
8-10	Pod
11	Warp drive
12	Power

Note: On a roll of 2, roll one die again; 1 = target destroyed, any other roll has no effect. If target is a torpedo, parenthesized rolls destroy it, others have no effect.

Ship Cost Table

Ships*	Ship pt. cost
6-pod (w/ 4 cabins)	16
9-pod (w/ 5 cabins)	32
12-pod (w/ 6 cabins)	48
Pods	
Cargo	1
Cabin	2
Laser	4
Launch	5
Screen	8
Tractor-Pressor	6
Expendables	
Guided Torpedoes	2
Unguided Torpedoes	1
Mines	1/2

- = All ships come with the indicated number of cabin pods at no extra cost.

Technology Table

Tech Level					
Technology	1	2	3	4	5
Accel.	0	15	30	60	--
Lasers	0	10	20	40	80
Launch	5	10	20	40	80
Unguided T.	10	20	30	40	50
Guided T.	20	30	45	70	90
Mines	5	10	15	20	25
Multifire	10	20	35	55	80
Tract.-Pres.	20	30	45	60	90
Screens	40	90	--	--	--

Players receive Acceleration 1 and Lasers 1 for free; the cost of higher tech levels (in technology points) is shown. -- = not available.

Sequence of Play

- 1. Movement**
- 2. Torpedo Detonation**
- 3. Laser Fire**
- 4. Torpedo Salvo**
- 5. Tractor-Pressors**
- 6. Acceleration**