

Nation balance in Original War

Original War is an excellent game when it comes to single-player, but its multi-player seems like an afterthought in the light of its balance and stability problems. In this document I shall cover what problems can be seen with the balance of multi-player, how we tried and failed to solve it in Throwback modification and how I think it should be done, based on my previous experience.

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Table of Contents

State of nation balance in Original War.....	3
Hard numbers.....	3
The whole story.....	4
State of nation balance in Throwback modification.....	6
Guidelines for balancing Original War.....	7
Nation balance.....	7
In-depth balance.....	7
The hall of shame.....	7
The balancing process.....	8
General How-To.....	9
How to get changes to testers.....	9
How to choose testers.....	10
How to choose testing environment.....	10
How to make balance changes.....	11
How to test balance changes.....	12
How to process tester feedback.....	12
Commentary on individual game components.....	13

State of nation balance in Original War

The experience from Original War multi-player can be in general described as: Americans are the best, Russians can match Americans if they can survive till late game and Arabs can only win with mine rush. While the problem on the whole is not so simple, the most glaring issues can be seen just by looking at the vehicle statistics.

Hard numbers

Lets compare the best vehicles each nation can muster.

	Morphling HG	Heavy Tracked HG	Half-tracked Gun
Defense	50	65	40
Speed	14	7	12
EFF (vs vehicles)	55	55	40
Price (crates)	95	105	85
Build time	100	80	60

All vehicles use manual steering and combustion engine.

HG = Heavy Gun

In order to properly grasp the differences one must remember how Original War works as a strategy game. Unlike other games, in Original War you are very limited in how much units you can field. Not only is there a hard limit on the number of operational vehicles you can have but using a manual vehicle also hampers your economy or research – a man sitting in vehicle is not building more of them neither he is researching technologies.

Because everything is done by your people and you will “never” (few special maps do spawn extra people) have more than you do at the start of the game, you need to keep them as busy as possible. You can’t have people walking two minutes to enemy base to fight and then go back again. With exceptions of special professions and base defense, infantry is non existent in Original War thus vehicles are that much more important. And what about defensive structures, you may ask. Well, a tower costs roughly 2/3 of a equally armed vehicle in crates. What you get for that is basically a tougher vehicle which can’t move. Since you have to go collect crates around the map and you need to eventually kill your opponent, a vehicle is much more valuable than a tower. Really, barracks are the only consistently useful defensive building thanks to low requirements and high damage output potential.

A quick look at the table tells us that Arabs are clearly outmatched. All nations are on the same level with medium chassis but Arabs got nothing which can match heavy guns. And those can enter the game during first 10 minutes of the game, hardly just a late game problem for Arabs. Of course, you could say that Arab is clearly the swarmy kind of nation and they just should build more vehicles. But then we hit the game’s limit on vehicles. Not only Arab players have as many people as other players, they also lack the ability to make computer vehicles which are the easiest kind to produce

en masse. Sure, they got remote control and apeman control but one still needs people to operate and the other requires extra resource which, on top of that, is time consuming to collect.

American vs Russian seems all right. One has speed, the other has armor. However, the experience from playing multi-player tells us another story. The significantly higher speed of morphling combined with it's quite decent defense and long range of heavy gun allows for hit and run tactics against Russian tanks which allows American to pick off enemy tanks without getting hit by full force of the enemy group, withdrawing when it gets too hot. Indeed, the morphling is so fast that not even medium vehicles can keep up with it.

But that's not all, folks. morphlings also get extra speed from computer tech upgrades and 30% extra defense from weapon tech upgrades, making it one of the fastest vehicles and matching Russian heavy tracked defense rating. And it only takes longer to produce which to be fair is barely any negative since we are most of the time limited by resources rather than time.

In short, American morphling HG has a deadly combination of speed, range and armor which allows it to dominate the battlefield, hampered somewhat on less open maps.

The whole story

Fortunately, it's not just vehicles which make the game here. There are also technologies and weapons which can shift the balance. Both Russians and Arabs have some tricks which help them but from what I have seen they are just not enough.

First, lets see what exactly we deal with here. American player is running on solar power, is capable of producing arguably the best vehicle in the game and has both computer and remote control. To reach his full potential he needs weapon upgrade 3 and computer upgrade 3. As a bonus he might do optoelectronic laboratory which would grant him snipers and with optoelectronic upgrade 3 he would double his unmanned vehicles (15 PC, 15 remote). He also has no need for siberite.

Arab has a problem. While he also runs on solar power and has remote controlled and somewhat of a computer (apemen) controlled vehicles, it has no chassis hard enough or weapon strong enough to match Americans.

When it comes to vehicles their best bet would be self-propelled bomb, which is quite effective against both buildings and vehicles, but has the problem of needing a lot of siberite (25), having to get close and being one shot only. While Arab could in theory outnumber American with his weaker vehicles, in practice this does not work thanks to remote and apeman control being harder to utilize compared to computer control and the Arabian gun having less range than heavy gun. Combined with greater number of vehicles its hard to get them all shooting at something let alone focus firing. Another tactic which can yield some success is production of weak solar remote vehicles and using their self destruction as cheap substitute for self-propelled bomb. Of course, both are near useless once there is enough heavy guns concentrated on one place.

The best advantage that Arabs have actually comes from their soldiers thanks to remote mines. With some proper planning and a bit of luck, Arab can blow up most of the enemy forces, thus getting an advantage. This is of course hard to pull off. Not only you need to guess right at where the enemy will be going, you also need to have soldiers ready which might be a problem since you would

rather have them doing something more useful than sitting in barracks. It also puts you on defensive, you have to lure the enemy to attack you. It's much easier to send a few soldiers to enemy base and blow up their buildings. If you catch him by surprise, it can win you the game (assuming you follow up with a proper attack to finish him off). Though, depending on the map, it might be hard to get to him unnoticed. Just few apemen patrolling around base can rapidly diminish your chances of crippling him and you will be left in personnel disadvantage.

Russians have completely different kind of problem. Their best vehicles can match morphling HG in all but speed. That can be compensated with the use of time lapsers or, in earlier parts of the match, with bazooka's decelerator ammo. Their only means of vehicle control is manual steering and computer control but they can produce behemoths, which are basically two to three heavy gun vehicles in one, and can hack enemy PC vehicles which works over the PC vehicles limit. Thus they can match the power and numbers of the Americans. Only if they were not so slow...

Here is the catch. Russians have no solar power plants. That means they need to mine siberite or they won't have enough oil to do anything (assuming there is 1 oil and 1 siberite per player). You don't just mine siberite though, you also need to research few technologies. So you need a siberite laboratory which costs you 5 siberite. You also need a siberite power plant – 20 siberite. But wait, don't forget we need those decelerator rockets, the pesky Americans will be here soon! So what will it be, do you get the space-time laboratory first, burning more oil and producing less vehicles, or do you get siberite laboratory and power plant first, having more vehicles but nothing to keep morphlings from running to repair?

But yes, if there was more than 1 oil deposit, the Russians would benefit much more than Americans would and this would no longer be a problem. Still, to match the Americans, Russians need to research 3 technology trees – weapons, computer and space-time, whereas for Americans, weapon and computer technologies are enough. And while morphlings will get butchered by comparable number of Russian tanks consisting of a balance of time lapsers and HGs, you need to catch them first – morphlings are faster than medium vehicles. That is not an issue when you go attacking their base but will cause you a headache when you search for crates before you have upgraded computer vehicles. Because morphling HG is fast and strong, the American player can keep few of them running about, hunting for Russian cargo vehicles. Which means that Russian player has to escort them, thus wasting their people's time, or he won't get any crates.

In conclusion, Russian is definitely more equal to American than Arab is but he still has a rough deal.

State of nation balance in Throwback modification

Throwback is a multi-player modification for Original War in development of which I have participated. Apart from creating a few maps my main work was in helping with balancing, since both me and SaliSakal (mod's founder) have seen the problems in base game which limits the variety of gameplay.

During the course of a few years we made many changes to statistics of units, buildings and technologies, even adding new weapons or radically changing their purpose. We managed to tone down the most glaring issues and opened more playstyles for the multi-player meta. Over the time, my focus shifted from balancing the nations to balancing everything, since Original War has quite a few weapons and technologies which are underpowered or straight up useless (examples include flamethrower, light gun or double machine gun).

Yet, the game as a whole still remains imbalanced and is burdened by many minor changes which no longer make sense or were always unnecessary.

The reason why we ended up like this is first and foremost lack of play testing. Often there were many changes made at once, tested only on paper or in editor.

I did learn some valuable lessons and a lot about how Original War works during my experimentation with statistics. There were also many good ideas we tried out and I will be referring to changes in Throwback during the following pages of this document.

Guidelines for balancing Original War

Balancing a real-time strategy is not a simple task. There are many variables. Changing just one can cause others to require a change as well. The hardest part is evaluating the state of the balance since human players cause the game to progress slightly different each time. In order to avoid mistakes which were made in Throwback modification, I am offering following advices on how to proceed with balancing of the game, many of which could probably be generalized for other real-time strategies as well.

However, there is a choice to be made first. You can choose to balance the game on the level of nations only, or on the level of individual game components. I will touch on both approaches and then provide general advice which applies to both. The last part of this document will be comments on balance of certain weapons, buildings etc.

Nation balance

This is the simpler approach. You and your testers play American vs Russian over and over, while making small changes, so that both nations have roughly the same chance to win. Then you do the same with Arab vs Russian and American vs Russian.

During the second phase you have to be careful though. If you make a change to American or Russian statistics, you will have to check the American-Russian balance is still fine. Stick to changing Arabs, since Americans and Russians are pretty similar in their vehicle capabilities. Because you balance Arabs against two nations, you can do this as an iterative process – balancing against one nation, then against the other and repeating until you are satisfied. Or you can balance both at once, checking every change in matches against both nations.

In-depth balance

This is the harder approach but it would yield better result. Not really when it comes to balance, both approaches balances the game in the sense that all nations have roughly equal shot at winning the game, but more in the sense of making the game better, opening more viable strategies for the player.

What you do is that you take a look at everything players have available and you make it useful in at least some situations or, as a last resort, remove it from the multi-player game. There are some obvious examples of things which are in the game but nobody uses them.

The hall of shame

Flame-thrower

It is completely outclassed by rocket launcher. It has the same damage per second (DPS) as rocket launcher, it can hardly hit anything which moves, has much shorter range and costs a hefty amount of oil. If there is rocket launcher available, no one in their right mind will build flame-throwers. Heck, even if the rocket launcher was not available I still would not build them – better to have more guns.

Double machine gun

Because it requires factory in order to be built, no one builds it because there are better things available. If you as an Arab want to kill people, you do rocket launchers or just self destruct into them. Not to mention anti-personal weapons are hardly a priority thanks to lack of infantry.

Light gun

Light vehicles are good for two things – radar and very early cheap kills on enemy engineers. Putting a little gun on it won't change that fact. It could be effective in swarms but as I already explained, swarms can't be really done in Original War and even then it would not be cost effective against heavy guns.

There are of course others but this should be enough for the illustration.

The balancing process

Balancing this mess piece by piece will be a very long process (I am guessing at one year of every day matches, might be less with more people helping) . There are two main phases to this:

Phase One

In this phase you take every nation individually. Testers will be playing only as that nation against each other and the goal will be to identify underused suboptimal weapons, buildings, professions, technologies and make them useful in at least some situations.

You start with balancing weapons against each other in terms of vehicle effectiveness. Right now, the optimum is to go straight to heavy guns since they are at the beginning just as good as normal gun but has longer range and will eventually become much stronger. You need to allow for a situation where normal gun is a better than heavy gun. You can do that for example by screwing a bit with gun upgrades, which would allow you to make heavy gun weaker at the weapon upgrade level 2 but get back into lead on weapon upgrade level 3. Or you can balance by making one weapon weaker against infantry/buildings where the other is not as good against vehicles but is not in trouble when mixed army shows up.

Then you look at weapon effectiveness against soft targets. For that you first need to give players reason to build them in the first place which means buffing up infantry so they are a threat to common gun wielding vehicles. Then you balance effectiveness of various weapons against infantry, basically making guns and rocket launchers less effective against them and promoting use of Gatling gun and/or machine gun.

Leaving you with balancing against buildings which forces you to give players reason to build defensive structures, making them threatening enough so the enemy will want to bring rocket launchers for attacking the base.

In general, you have weapons which have an obvious role and then you have weapons which overlap in role with other weapon (laser vs gun). There you need to find a niche for each weapon - laser means going optoelectronic tech path and is stronger vs vehicles but vulnerable to infantry, whereas gun means weapon lab and is more versatile.

As you can see, balancing weapons calls for changes for other parts of the game as well. After you are done with weapons, you have most of the work after you and the game will behave noticeably

different. When all weapons have a use case, more optimal strategies are available.

That leaves you with balancing things not directly combat related. There are certain technologies which are just not that useful. For example apeman language for Americans. The time investment is simply not worth the benefit. You need to research two extra technologies, wasting time of 2 scientists hunting apemen and what you get inferior alternative to crane and cargo bay. While apemen can still be used as scouts or put into radar tower, most people don't bother. When you find this kind of issue you can help it by just making those technologies already researched at the beginning of the game.

Other underused things in the current state of the game include siberite and solar engines, siberite and oil power plants, teleporter, machine guns, siberite decay, apeman driving, towers, invisibility. These may not hold true as the state of balance changes and may slide into their own useful place.

When you move onto the next nation, copy stat changes for things which are mirrored across nations, for example guns, and keep them as they are unless there is a good reason to change it (might happen in Phase Two).

Phase Two

Very similar to nation only balance. You do the same as stated in that section but you pay close attention to keep all the tools players have useful for something.

General How-To

Here I am putting my recommendations on how I think you should proceed with various tasks regarding actually making balance changes to Original War.

How to get changes to testers

I recommend making a very light Original War modification with only the balance changes in it. Testers will use this mod to play test changes to game balance. There are several reasons for it:

- In Throwback we had negative attitude in our community to balance changes. Discarding the inevitable people who get angry at any kind of change to their game, the issue was that there were too many changes too often. People were understandably annoyed having to constantly update the mod and relearn the game. That was made even worse by the little frequency with which we played.
- Modification allows testers easy access to the files with game statistics. That makes checking the raw numbers easy and they also can make quick changes to test out ideas without waiting for next mod version. That of course should not happen often, since testers should play with the same changes but is very useful for figuring out what kind of change could work out well.
- Balance changes are not bundled together with other changes in Original War patches like UI or bug fixes. That makes it easy to go back to previous version in case of a screw up.

How to choose testers

Testers should be people from the community. They should have a positive attitude towards changing the game balance. They should have enough free time to play often and they should understand that this is a long process and should be able to bear with it. They should be (or have potential to be) good Original War players and understand how the game works. It is a welcome bonus if they have their own ideas how to balance the game but they have to understand who calls the shots and that their ideas can be rejected.

Which of these traits are more important I leave to the reader.

Once the testers are selected, allow for them several weeks to play against each other under the same environment which will be used during play testing, so they get to a similar level of a competency.

It is important to remember that bad players don't know how to make the game more balanced. More on that in tester feedback.

How to choose testing environment

The Original War multi-player allows for many options. Not only you choose a map, you also choose many things within the map such as number of people or resource availability. Whether was that made for the sake of more choice or the developers just couldn't decide on how their game should be played is anyone's guess. The problem is we need to choose one environment and stick with it.

Whatever we choose it will become the standard way of playing the game.

- Pick a map without special rules or where the rules can be disabled. We want as few things affecting the balance as possible. Though you can consider extra victory conditions (e.g. leader death or king of the hill).
- Since I am for more variety in the game, I recommend going with a more open map such as Flags, Four to Win or Highlands. Maps with less room gives advantage to heavy guns because it is harder to get your superior number of medium or light vehicles all in the firing range.
- Choose between a map with advantageous starting position (e.g. Four to Win) and a map where bases are harder to defend (e.g. Flags). This choice depends on what will be the standard situation. Choosing map with easy to defend position will result in weaker defenses or balancing in such a way that players are forced to go out thus putting higher importance on vehicles. On the other hand, balancing for hard to defend map makes other maps prone to turtling thanks to stronger base defenses.

However both issues can be addressed using other means than stat changes. Turtling can be discouraged if it will result in the enemy ability to switch their workforce to build siberite bomb. However the turtle must not be able to just sit tight and build their own bomb faster than the enemy can build their own or destroy turtle by other means.

- Choose a map where shipments behave as you would want them to behave. Where as oil and siberite are gather right in the base, shipment have to be collected at distances ranging from within the base to far outside of the base depending on the map. Here again depends on what we want the standard match to become.

Dropping shipments outside the base forces players to fight over the map and makes defensive play a bad idea unless you own majority of the map. It also makes snowballing more of an issue. If a player manages to win the first fight and gets more shipments, they will have more vehicles for the next fight. This would be less of an issue in case there were hard counters in which case a smaller army outfitted specifically against what the enemy has would defeat the bigger enemy army.

The other possibility is dropping most of the shipments inside bases. That allows for more comebacks but also makes it easier for turtling to become an issue.

The last thing to look for is how much shipments do players get. Too few shipments are fine but they slow down the game and timing upgrades for extra advantage is less useful since everyone has more time to research. Too many shipments make the cost in shipments pointless and only thing which matters is time. The last thing to consider is whether the rate of shipments dropping should change over time.

- The same considerations as for shipments you have to make for people respawn as well, since people are in many ways another kind of resource.
- Choose the map settings. Again it depends what you want. My preference is start without base, 15 people, little experienced, no morale flags, no build up, siberite bomb allowed and everything else medium/normal (the actual effect depends on map's SAIL though). Whatever you do, use apemen and siberite bomb. They are part of the game after all.
- Theoretically you can specify additional rules and limits. I am against that, since I want as much variety for the players, but this is a matter of opinion.

The last thing to consider is making your own map specifically for the purpose of balancing the game. The map would behave exactly as you want it to and I would make it completely symmetrical with terrain corresponding to what you would want to be the standard.

How to make balance changes

- Keep them small. Do at most a few changes at a time and write down why you made that change for future reference. Similarly if you decide to go back and try a different change, keep track of why the other change didn't work.
- Before you drop a change on your testers, test it out yourself first. Sometimes the idea just obviously doesn't work or you may overdue it with the buff/nerf.
- Stick to changes which have small impact on other parts of the game. Don't do radical shifts in gameplay without good reason.

How to test balance changes

- Play only on the map you chose as your test environment.
- Play 1 on 1 matches. You can play larger matches as well but they should not be considered for balance decisions since the more players are involved the more wildly the matches differ from each other.
- When you are balancing nations, let all testers switch between nations so they get the feel for both sides of the balance.
- The more games you play between changes the better. More testers can make this process faster and more accurate.
- You, as the one who decides balance changes, should actively participate in testing as well, not necessarily all the time but regularly. If you don't know the current state of meta it will be harder for you to come up with good changes. Unless you leave this to others and stay only in a management role.

How to process tester feedback

Players who test the changes will of course have their own opinion on how the change affected the game. Unfortunately, opinions are inherently biased so one has to be careful when deriving conclusions from them.

A bad player is prone to wrongly pointing out something the enemy used as overpowered. That is why it is important for testers to be all good at the game and at comparable level. This problem is also lessened by playing multiple matches and switching sides.

Testers will speak their mind on if the currently changed weapon etc. is now better or worse and in what context, they probably also suggest how would they balance it. It will be beneficial for everyone involved to discuss further development and come into agreement on a next change to try out. Pay attention to good arguments, avoid turning the game into something not resembling Original War at all or unnecessary changes (“Wouldn't it be so cool if X could do Y?”) and when everything else fails, go with the majority.

In the case of other players downloading the mod, playing it and contacting you with feedback you should acknowledge their opinion in case they have interesting ideas but don't waste time with confirming claimed imbalance of certain weapons etc. since your testers should be much more reliable in that regard. Of course you can accept more testers as times goes on but make sure to properly train them to the level of your current testers.

Commentary on individual game components

ToDo