

The *Fandominion* Balancing Act

A *Fandominion* Devlog written by Jonathan Pin

4 is a Bigger Number than I Thought...

As the person on the team in charge of the character controller, it also fell to me to balance the characters. Now, in some games that just equates to changing some numbers or tweaking little values here and there. As *Fandominion* is the first fighting game I've ever worked on, I didn't realize how much balancing would be. The short of it? It's A LOT. So much goes into the balancing of a singular fighting game character that I am quite thankful we decided to stick with only making 4. Even the few characters we did have were so unique from each other that honestly, I could write this entire devlog on just our Potassilass character alone! For every character, it isn't just attack damage that needs to be considered. There's also the animations and their frames, the size of their hitboxes, the size of their hurtboxes, their jump height, speed, their projectiles, how many projectiles they have, and the list just goes on- I haven't even mentioned potential matchups. Of course, I realized what I was getting myself into far too late. Dramatics aside though, I *did* have fun with it. Playtesting is one of my favourite aspects of the game design process for many reasons, one of which is how players can twist or abuse your designs to make you realize something you didn't think about. My team and I were always able to learn a ton regarding the game balance from every playtest session.



Observing Where and How I Messed Up...

During playtests, watching how players interacted with the characters and each other was what I was always most interested in. Oftentimes I would find little ways that people would find out how to abuse what had been implemented to their advantages. In the early stages of the game, we had a balance problem with every new character introduced- except for Potassilass. Nebulord had too much range, Magi-GIRL could be too spammy, and Windbreaker could *definitely* be too spammy. Potassilass was difficult to code and implement in the first place due to her complicated design, but when people tried her and didn't enjoy playing as her it got pretty disheartening. She was the only character that we actually had to redesign a bit. Originally, her up-special attack was her shield through and her up attack was a simple uppercut. She also had an uppercut incorporated into her 3-jab combo, another change that was made. To give her more range and to make her more interesting to play, we made her up-attack a shield throw and gave her a new "fly" attack for her up-special. This turned out to be a major improvement as she gained more range and mobility options, plus it helped represent the superhero fandom that much more. We also had to increase her jump height and damage to make her more balanced compared to other fighters.



Side by side comparison of Potassilass's up-attack before and after changes were made.

As for the other characters, they each underwent small tweaks, regarding everything from frame data to attack damage. Magi-GIRL's neutral special could be abused to the point where if it was the only attack a player used, then they could easily win. So of course, that had to get fixed by making it far slower. Windbreaker's arrows were also a major point of contention. In early stages, he was able to spam all 3 of his arrow types at the same speed, not allowing players to move and not giving players incentive to use any arrow type other than ice. Nebulord was the most interesting character however, as he was always one of the most fun to play. However, even as of this writing he's the most powerful character. Nebulord gave me the very interesting design dilemma of whether I should try to make all of the other characters as powerful as him, or if I should reduce his abilities in order to balance the rest of the game. The drawback on the second option of course coming with the risk that I could remove what people like about the character so much. I decided to blend the two options together and take the best reasonings from both.

Crunching the Numbers

While observing the playtests in person was great and helped our balancing decisions a lot, we also threw some telemetry into the game in order to get more mathematical data regarding characters. Results were interesting to say the least, but unfortunately they were also skewed. The reason the results weren't entirely accurate was for a few reasons. To give context, we got our main telemetry results from the share-a-thon event held back in February. During that time, we were having a bit of a crisis regarding points balancing with the minigames and hazards in the stage. The points-balancing formula we had at the time calculated the number of points players gained and lost based on the total number of points in play- an ever growing number. This caused major issues in both of our playable stages for completely different reasons.

On the Nebula Quest stage for example, we had just introduced a new hazard- an electric floor that subtracted points from players who touched it. The floor was overpowered to say the least- especially with the points balancing formula. Unfortunately I don't remember the exact formula that was in place but there were instances recorded in the telemetry where players lost hundreds of points a second by touching the floor. (As seen below)

| Player Name | Points Gained | Point Source | Seconds Into Match | Match Number |
|-------------|---------------|------------------------|--------------------|--------------|
| Windbreaker | -129 | NebulordStageElecFloor | 96 | 40 |
| Magi-GIRL | -120 | NebulordStageElecFloor | 96 | 40 |
| Magi-GIRL | -111 | NebulordStageElecFloor | 98 | 40 |
| Windbreaker | -84 | NebulordStageElecFloor | 115 | 21 |

This was fixed with a new formula based on individual character point values as well as the points total of who was in first. Either way, the general results for characters were still spread out over close to 50 matches.

| Character | Averages | Round Total | Win % |
|-------------|-------------|-------------|--------------|
| Nebulord | 267.3833333 | 41 | 0.4390243902 |
| Magi-GIRL | 142.4797802 | 52 | 0.2692307692 |
| Potassilass | 175.5798611 | 29 | 0.2413793103 |
| Windbreaker | 182.0984848 | 36 | 0.1944444444 |

Magi-GIRL, despite being picked the most, only won 25% of her matches. Windbreaker won the least, but Nebulord was the major outlier both in average point total per match as well as win %. Ever since then, I've been having a constant battle with Nebulord in making him less overpowered. My most recent changes have been to slow down a bunch of his attacks and lower his damage, but a new issue was found where his most used and fastest attack actually did double the damage than it should have. I'm sure that while not entirely responsible for throwing off the balance of the game, this discovered issue certainly didn't help matters.

I've come to terms with the fact that the game will never be perfectly balanced as it just can't be- there are too many factors at play. We did get to a point a month or two ago where everyone thought a different character was overpowered, which is a great place to be at. After all, if everyone is overpowered- nobody actually is. I will however continue tweaking, poking, and prodding our little guys to make sure that the game is as balanced as it can be and players can have the most fun.