# Exploring the Game Design for Ion Fury - Part 1

Hey everyone! Jonathan "Mblackwell" Strander here with Part One of a two part article on the core game design principles behind Ion Fury.

For Fury I acted as the primary programmer, the "Lead Gameplay Engineer", and the Designer who compiled everyone's ideas into something cohesive. I really wanted to share with everyone some of the behind-the-scenes decisions we made along the way. We had to come up with a lot of rules and guidelines to make the game we wanted, and I hope you all have fun learning about it! For now we're going to deal mostly with the most obvious thing: How levels were designed for the game's layered "Combat Loop".

First Ideas

Bombshell's world consisted of alien landscapes, and we had been tasked with providing something much more "real world" and grounded. In 2016 3D Realms gave the team permission to reconceptualize the game world and character for the Ion Fury version of the universe, barring a few key appearance markers for Shelly.
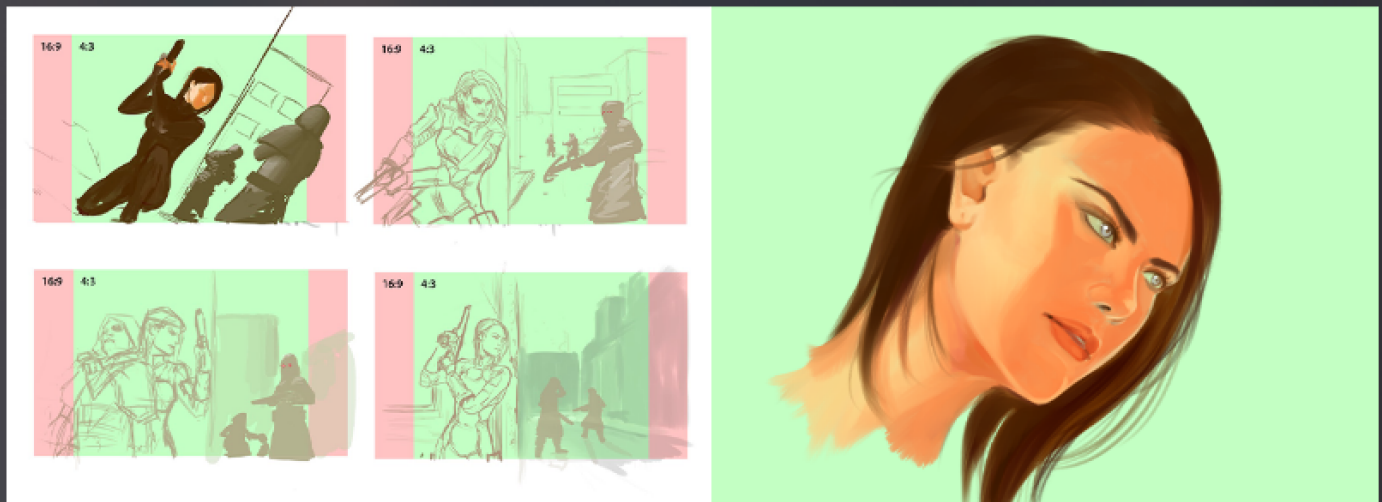
In our concepts Shelly would be not-too-young to be believable (around age 27), and grounded but snarky. Someone who may like to go out for a drink, but can get down to business with a "get shit done" attitude. She would be a reminder of the female protagonists we had grown up with like Ellen Ripley, Anne Lewis, Sarah Connor, Judge Hershey and countless others from action and science fiction.

The world would be Neo D.C.: a near-future dystopian cityscape with the world divided by financial and military strata. The player would travel from poorer districts to wealthier ones, climbing to different heights and construction quality. The background of how the world functioned wouldn't be explicitly told in story, but instead experienced by the player through the broader design.

1. Characters

Shelly "Bombshell" Harrison: the protagonist. This is the only character the player plays as, and the player controls this character for the entire game. Occasionally utters bad-ass one liners, but mostly just wants to survive. Would be well described as a female John McClane.

Blinky, Pinky, Inky, and Clyde: Harrison's squadmates. Don't get too attached--they all die!

Dr. Jadus Heskel: the primary antagonist. Turns men into machines for both work and pleasure in his quest to perfect humanity. Disgraced by the medical community and unwilling to let go of his life's research, Heskel's once noble motives have accompanied him on his descent into madness.

2. Story

2.1. Introduction

When Dr. Jadus Heskel was denied the legal rights to further advancements in his augmentation technology he disappeared from public view. Over a number of years he had begun amassing followers who believed they could create a new and better human race through the power of augmentation. His development continued in secret.

2.1.1. From the Player's View

Shelly Harrison works for the GDF and is forced to chase down Heskel after he and a group of fanatics begin to attack Washington D.C.

After a long and arduous journey through multiple areas of the city and underground labs Shelly is finally able to confront Heskel and in the process loses her arm. She is the only member of her entire squad that survives.

2.2. Theme

The Washington Incident is about *perseverance in the face of overwhelming odds and loss. A combination of duty and a sense of justice mixed with some old-fashioned vengeance* blowing everything up.

Game Loops Cereal

We worked tightly as a team to come up with the right balance of game systems. When designing the gameplay I placed a focus on consistency, believability, and multiple interacting learnable systems. This made things natural, flexible and fun for players, and gave mappers a clear way to communicate their intent.

Bullet Ballet

Since it's a large part of the gameplay, first we had to determine the flow of combat. This went through tons of iterations. Originally enemies had more health, and more "smart" tactics (like flanking and circle strafing), and combat was closer to a game like F.E.A.R. After lots of testing and experimentation we settled on a different goal:

Shelly would be a "glass cannon". Incredibly agile and powerful, but unable to take much direct damage. Players would need to actively avoid taking hits in order to win. To accommodate this, enemies were given distinct styles, attacks, sounds, and animation tells that make it easy to see a threat in advance. Each distinct cue gives a different warning, letting you know what kind of attack is coming to plan ahead for. Projectiles of all types could then be dodged and hits maneuvered around.

4.3. Game Mechanics

The basic gameplay loop revolves around the classic cycle of exploration interrupted by strategically placed enemy encounters. The ebb and flow combined with differing combinations of enemies (which all require different strategies) will keep things feeling fresh throughout.

Set pieces and clear design give the player a growing sense of familiarity with the environments, and will lead to the desire to explore again and again and attempt different play styles.

Instead of a few very tough and smart enemies we landed on large groups of "trash" enemies mingled with other types in order to turn combat into a dance of constantly shifting priorities. Mappers were directed to place enemies in groups with mixed types. Their differing weaknesses, movement patterns, and projectiles created the rock-paper-scissors-like ballet of picking targets and avoiding incoming fire.
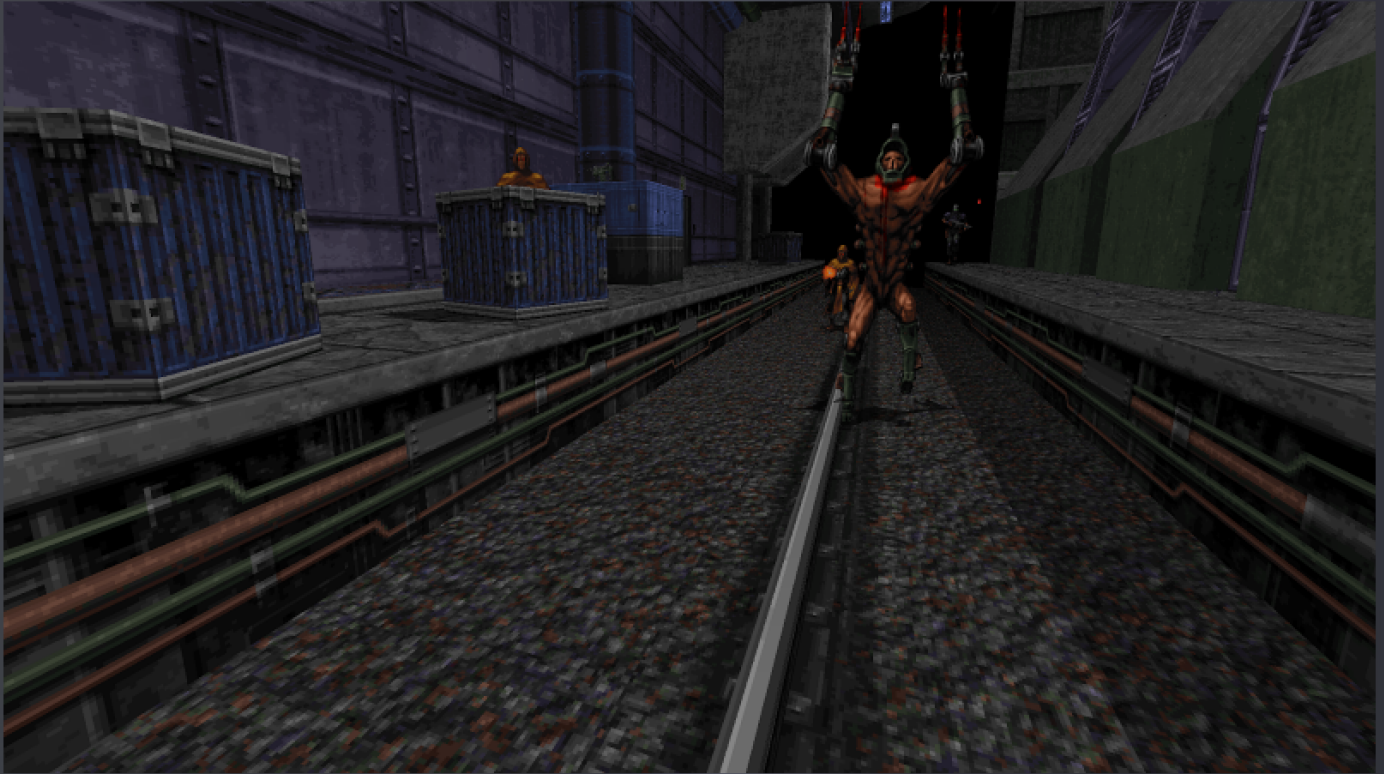
Lots of testing was done to balance "Time to Kill" and "Time to Death"— that being how long it took the player to kill an enemy and vice versa. Each enemy was repeatedly timed to see how long it would take before Shelly was dead starting from full health, and had their attacks tweaked to hit specific time targets. Each enemy also had an encounter stop-watched in order to see how many times you would have to hit them to kill them – measured in seconds – with both their health and Shelly's weapons adjusted accordingly.

Of course, we knew you can't always avoid every hit so there's...

Health Booster Boogie

To balance health we decided to have both instant use Medpaks and carriable Medkits. Mappers were told to restock the player in the next area after major combat (or long string of fights), and sparsely around the edges of those combat areas. Shelly's health declines rapidly when not successfully dodging hits, so the combination makes players feel like they are living on a knife's edge but still able to recover from mistakes. A late game addition was the occasionally spawning Emergency Syringe to help stay alive, as some players felt slightly too punished in close fights. To keep balance there's an actual check for your current health, and the number and frequency spawned depends on difficulty.

voidpoint

4.4.2. Items

Medical Computer/Medicomp: A small device that provides diagnostics and healing on the go.

Bomb bot: A small remote controlled robot normally used to investigate a bomb threat, Shelly can guide it around for recon, deploy it into an automated turret, or activate an "overcharge" to blow it up.

Bulletproof vest: Low tech, similar to police issued body armor. Reduces damage by 33%. Max of 100 armor.

Full Metal Jacket: With extra padding and impact sensors that automatically offset the force of any hit. Offers much better protection than a standard vest, reducing damage by 50%. Max of 200 armor.

Cloaking Device: Experimental and with an awful battery, this gives you 60 seconds of invisibility unless you move which doubles the rate of depletion. Shooting will break your cloak.

4.4.3. Instant Consumables

Small Medpak: Adds 10 health.

Large Medpak: Adds 30 health.

Misc Ammo: Varies per weapon.

Backpack of ammo: absolutely not yet another idea ripped off from Doom. Increases total ammo capacity by 50% and adds +50% to the current amounts of all ammo types.

As a bit of a boost to players and to build some lore, edible food pickups (Shelly's fav is Pizza) were added after initial testing as a way for players to restore themselves and even gain more than 100% health! Similar to arcade games of old, we decided that such a small object should give a small but important temporary effect with a touch of additional ridiculousness. Not only do you get more health, but the more you eat the faster all of your movement gets.

Even with all of that help, Shelly is made of glass so you'll still die quickly unless you have…

Shards, Shards Everywhere!

Armor became integral to balancing the gameplay. Keeping up your armor keeps you alive twice as long, so from the early days we included three sizes of armor suit (Light, Medium, Heavy). To make things feel more predictable, unlike games such as Duke Nukem 3D, there was no randomizer on armor's usefulness — the same size hit will always give the same size protection letting you soak damage and survive impossible feats. The Hazard Suit was planned early on not just to give protection from environmental damage but against all kinds of acid, gas, or "nuke" attacks that enemies might fire your way, giving you a hidden advantage.

To keep a constant forward momentum we added Small Armor Shards to replenish your supply in small numbers along the way. Us designers especially pushed for them for dual purposes: First, they would rain from enemies during big hits that caused gibs, encouraging you to keep the combat flowing and take risks.
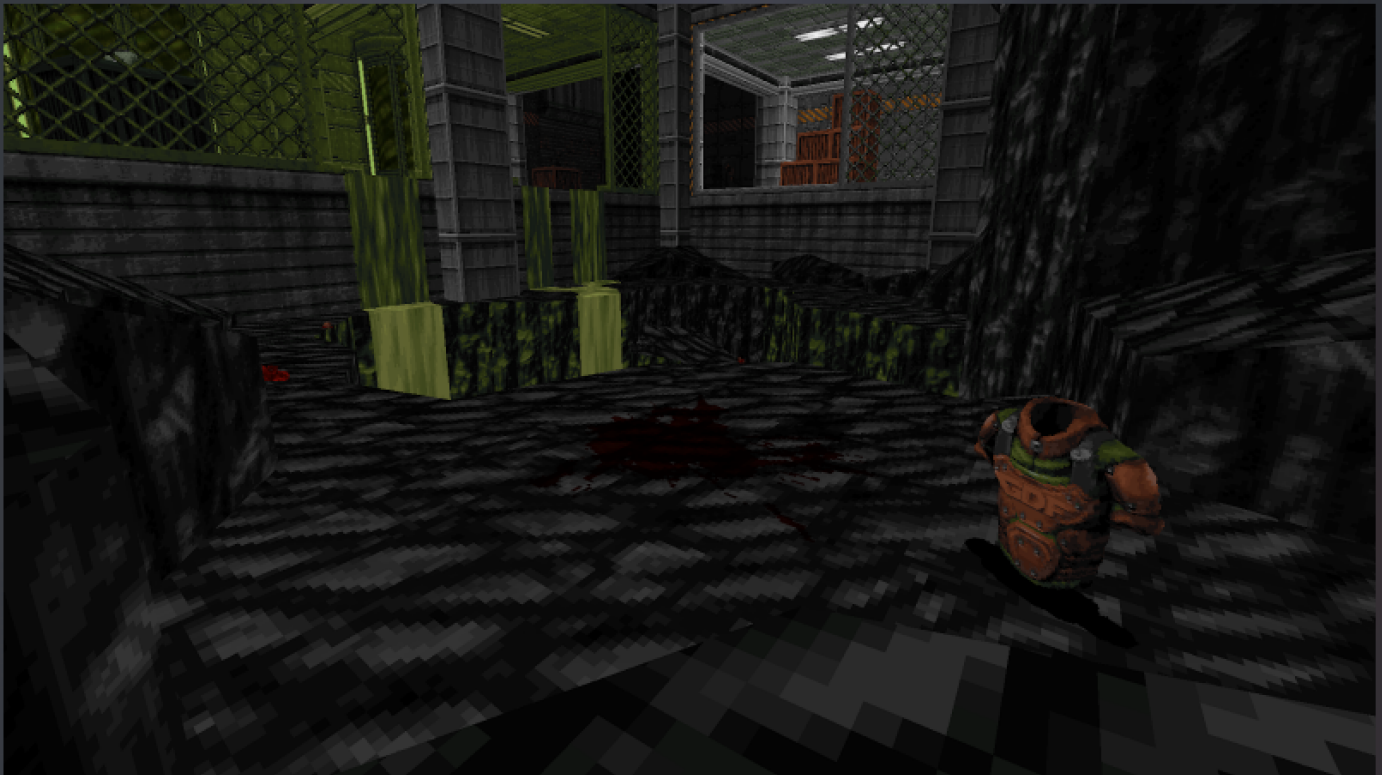

Second, since Armor Shards make players feel safer they would be used as breadcrumbs to guide you through the level. With a small nod to the designs from classic games like Super Mario Bros., major path points or important areas had them placed in distinct lines in order to push you in the next direction subconsciously. The more suggestions we made with shards, the more players were able to find the critical path without even trying.

- Armor shards should be placed liberally to guide the player along the game world and **keep them safe from harm**. Armor shards can direct the player to the critical path as well as hidden areas. They can also serve as a simple reward when the player explores off the beaten path so they do not feel they have wasted their time
- An additional Hazard Suit is planned to be present in the final game. This will reduce or eliminate environmental damage from things like toxic waste, and its lifespan will tick down both as it helps you, and as you take damage. Think of this as a sub-armor. Update this bullet point as the idea is iterated

Ammo/Weapon Placement

Weapons aren't just for making things go boom. Where, when, and how you actually receive weapons is an important step in the game's overarching design. Your arsenal is spread out over the entire game in stages to bring a stronger feeling of accomplishment, and to give the player time to become experienced with the new weapon they've just been given. The early zones feature Disperser (Shotgun) and Bowling Bombs alongside the occasional SMG. By the midpoint you start to see the Minigun and Ion Bow, and late-game focuses on giving a twist and a refresh to the game with things such as the Disperser Grenades. By this point you've also seen the Cluster Puck sprinkled throughout the entire campaign, meaning that the levels can act more as a test of the skills you've mastered.
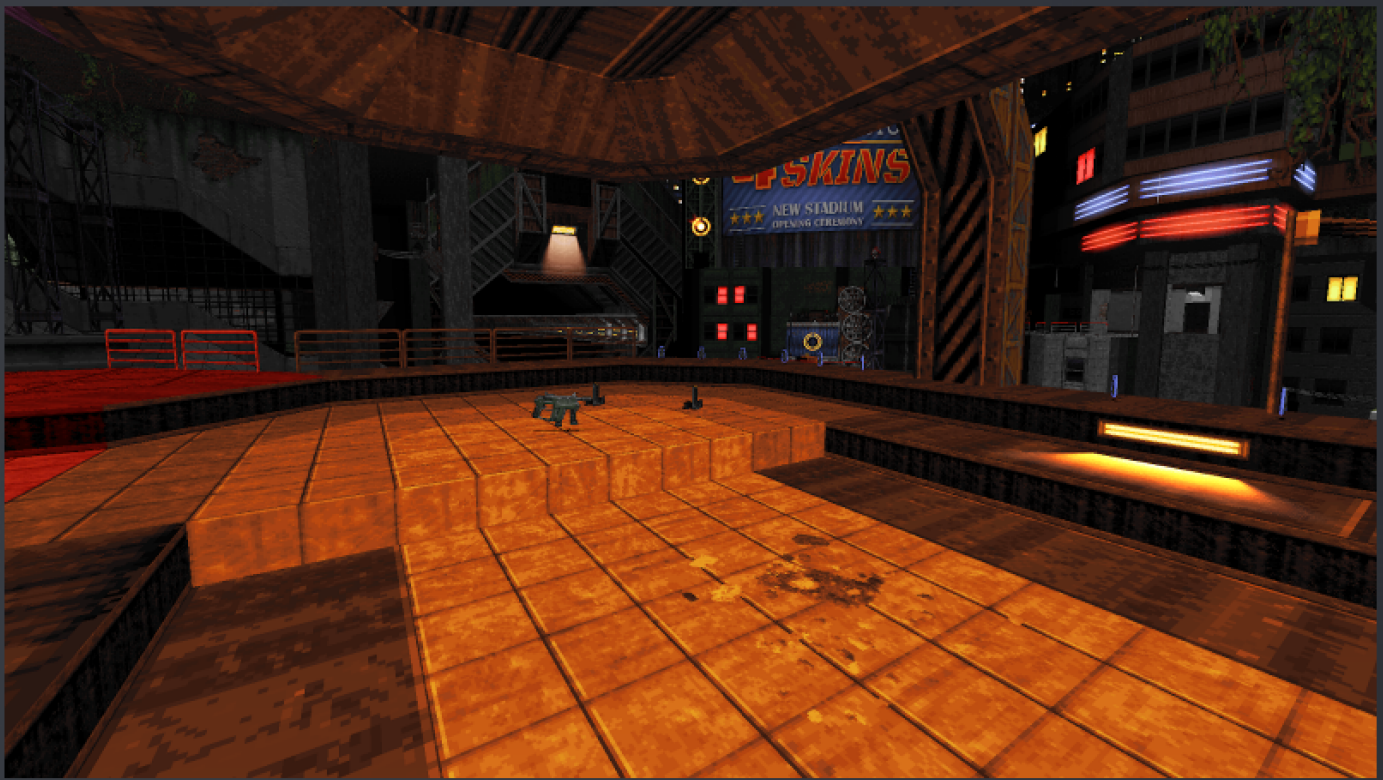
4.4. Weapons, Items, and Instant Consumables

4.4.1. Weapons

Bombettes: These are a sub weapon. Grab a handful and throw! 4-7 thrown at a time, these small bombs do very little damage and have a 3 second timer. These can be used to create some disruption!

Stun Baton: This weapon does little damage but has a bit of a wallop. Enemies hit by this will be tased and stunned for a brief time. Three hit combo by tapping, hold the fire button to give a big constant shock. This drains the batteries which recharge fully in 10 seconds.

 Loverboy: A real workhorse. The rate of fire isn't very fast but it does enough damage to be worth using in a pinch.

Plasma Crossbow: This weapon can do massive damage, and can even penetrate enemies if enough damage is done. However it has a ridiculous spread and is only optimal at close range.

Plasma Bombette Launcher: Put a handful bombettes in the firing slot of the crossbow and see what happens! An explosive ball of plasma rockets across the room and causes a nice explosion.

Chaingun: an old favorite. Takes a second to spin up and halves your movement rate while firing, but it shoots an impressive amount of lead in the desired direction.

 Bowling Bombs: These are thrown across the room and lock onto the first enemy they can find and will attempt to swerve to hit them. If they run out of momentum before they can get a target they'll wait for you to pick them up again.

Fire Spindle: Shoots a spinning column of fire along the ground. Any nearby enemies are sucked in and incinerated, their charred bones tossed aside.

Weapons which were meant as critical to progression were to be placed in obvious, well lit locations and positioned in a way that best attracts attention. Ammo for that weapon would appear near it so you could start to associate the two. Then a scenario where that weapon is useful would appear after, and players could learn a bit about how it works.

Slightly more than the bare minimum amount of ammo was placed along the main paths in order to balance the number of ammo restocks, with extra ammo placed off to the side and in secret areas. Secret areas could also be used to give the player less "important" weapons, and even the chance of seeing powerful weapons early on. Having the reward of extra bullets encourages players to explore the entire level, and gives less experienced players a chance to keep their weapons from being empty since being able to shoot with less accuracy means you'll run out of bullets faster!

When level designers wanted to require a certain weapon such as explosives, or highlight a certain style of combat, they were asked to place the weapon and some ammunition for it beforehand. They were also asked to restock the player after every autosave point, in order to refresh themselves from the hard work of getting there. Level Designers were otherwise discouraged from forcing players to stick to only one weapon by not giving enough ammo variety. Every weapon is useful, with a unique set of advantages and disadvantages that can be twisted to fit different combat situations. Even the starting pistol, the Loverboy, and your baton–the Electrifryer–can be used with great effect throughout the entire game (fun fact: big enemies are weak to it!).

- Always sprinkle ammunition (and potentially a weapon sprite) for a specific weapon before areas/encounters where that weapon is particularly useful
- Refresh the player a bit after save points/critical path progression when they may be low from previous encounters.
- Variety is the spice of life! Don't force the player to rely on only one type of weapon if ever possible
- Weapons are generally introduced/spread over the game zones as such: Pistol and Baton immediate, Shotgun zone 1, bowling bomb zone 1, smg zone 2, minigun zone 3 (from zone 2 boss), crossbow zone 3. However, it should be possible to get any or all weapons except the minigun early, including alternate ammunition, through the use of secrets. The earlier the "get", the harder the secret should be
- For the first (planned) encounter of a given weapon try to place at least one extra clip/magazine of ammunition next to the weapon sprite so the player will learn to associate the two

All of this subliminally tells the player to keep pushing through, and they feel a strong sense of accomplishment just from the act of getting and using the game's weapons.

PowerUps

PowerUps were added as a fun extra. Max and I, especially, are huge arcade fans and wanted to bring in that sense of something over-the-top into the combat loop. These were left as timed abilities to create small Superhero moments. It's a way to shift things to the player's advantage for a moment without seriously affecting the wider game balance. The Hazard Suit can do extra duty as a breathing tank — also getting you through toxic sludge and protecting you from toxic attacks, Super Damage doubles your attack power, Blast Accelerator gives you infinite instant-Homing Bowling Bombs, and so on.

Having the Jump Boots, which gives you a Double-Jump, meant the mappers could include new kinds of hard-to-get-to areas and secrets, as well as spice up the combat in open rooms. Honestly, this also was the most difficult one for development; particularly after we added the Pocket Inventory it meant players could (and did) potentially get to all kinds of crazy places!

It Isn't the End After All

Don't worry, we'll come back in Part 2 and talk about Secret Areas, Sounds, and much more! Oh, and don't forget Aftershock — it's an expansion after all so we're expanding with new elements, and I'll be able to talk more about them next time!

In the meantime don't forget to Wishlist Aftershock, and follow Ion Fury on social media for more updates.

Happy trails,
Jonathan "Mblackwell" Strander

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