Per request, the rest of this document features a deeper discussion of the game mechanics. Most "art" in this section document was "created" by game designer Ken Levine. This was done specifically to avoid get caught up on issues of aesthetics for this design analysis. Proceed at your own risk. Irrational Games takes no responsibility for injuries, mental or physical, that may occur due to viewing these illustrations.

BIOSHOCK DESIGN ANNEX

Interface

BioShock is a first person shooter plus, not an RPG with shooter elements. The pacing, visuals and level of action all need to be on par with the best of action shooters. Thusly, the interface must adhere, for the most part, to standard first-person conventions in control.

Every action in the game falls underneath these core tasks.

- Character movement
- Mouselook aim and shooting
- Interact with objects in the world.
- Changing ammo types
    - Different enemies are more or less vulnerable to different types of ammo (e.g. Armored foes fear armor piercing rounds, but are less concerned with high explosive munitions)
- Changing fire modes
    - Semi OR fully automatic, grenades that can bounce OR stick, armor piercing rounds dripping with corrosive acid fired from a scoped sniper rifle with IR capability, etc.

Our interface must fulfill two goals:

- At heart, it is the interface of a first person shooter
- Any complexity beyond that must be:
    - Introduced slowly over time
    - Intuitive and simple to use.

BioShock Primary Interface		
	PC	XBOX
Move Forward		Left Thumb
Move Back		Left Thumb
Strafe Left		Left Thumb
Strafe Right		Left Thumb
Crouch		Press Left Thumb
Jump		A Button
Turn/Aim/Look	MOUSE	Right Thumb
Change Ammo Type		Black Button
Fire	LEFT MOUSE	Right Trigger
Interact/Weapon Swap/Reload	RIGHT MOUSE	B button

Change Weapons	Mouse wheel	Y button
Sniper Zoom	[illegible]	Left Trigger
Display Goals/Pause	[illegible]	Start Button

The Interface Commandments

In keeping with the design goals of BioShock, we've eliminated or radically streamlined almost all of the complexity of interface management. The shooter market simply will not bear overly complex interfaces.

We've accomplished this via a couple of key changes, which we like to call the "Three Commandments"

1 - Thou shall not have to deal with an overly complex inventory system

In System Shock 2, the player had to deal with numerous inventory items that he dragged around the screen with a mouse and placed in various inventory "slots". Not the case in BioShock. The three types of objects the player can pick up are:

- Ammo and Resources - Ammo is picked up and stored like every other FPS on the planet. As the player walks over it in the world, he "vacuums" it up. The player can never "drop" ammunition, he can only expend it via his weapons. Resources such as nanites, the currency of the BioShock world, are handled in the same way except they are expended in the tech stations (see below).
- Weapons - Weapon pick up and weapon dropping is handled much like Halo. The player can only have four weapons at any one time.
- Quest Items - The player will automatically pick up quest items and automatically "use" them at the appropriate time (for example, if the item is a keycard, it will be used when the player interacts with the relevant locked door. Or if the player wants to upgrade his crustacean form, first he must find a genetic sequence that will allow him to do so. These items will be automatically expended when the player interacts with the appropriate genetic modification machine.

2 - Thou shall not be bogged down with countless interface screens

System Shock 2 featured a bewildering variety of Windows-like interface screens that the player had to manage-- Weapon modding, hacking, paper doll, inventory, research, weapon repair, etc. The player was forced to manage this complexity through a Windows 95 style set of interface screens, full of buttons, tabs, sliders and other widgets.

One exception to this rule was character growth, which was handled in a unique, refreshing manner. The player couldn't level up his character at will. He could only do at specific "Skill Machines" located around the environment.

In Bioshock, we take this system and run with it. There will be numerous machines in the world for the player to interact with. The interface for using all of these machines is identical: i.e. you press a button. Let's use an example:

Wandering through the installation, the player comes across a machine mounted on the wall. From the distance, it looks something like this:

This is a temperature control device. So what, you may ask? Well, the creatures in BioShock (and the player) are often temperature sensitive. Heating things up around the a hydrozoan mutation can slow them down, distract them and make them less likely to notice you coming up behind them. De-humidifying the air will make many foes weak and dehydrated.

The red thermometer icon indicates that the temperature as at the hottest of it's 3 (perhaps 5) possible settings. The player can tell this from across the room. As the player approaches the machine, they hit the RMB, or the B button on the Xbox. This image zooms up in their screen (it will be a 3d model in the world, not a full screen interface)

The player can then use the forward and back keys (W and S) on the pc or the left thumpad on the Xbox to adjust the temperature. The nanite costs indicates how many nanites it will take to make this adjustment. The bar sinister on the top arrow means that the temperature is as hot as the system will allow. When the player right clicks or hit the B button again, this interface is dismissed and any temperature adjustments are made.

Another example is the genotype upgrade machines. These are machines that let the player buy new genotypes and upgrade existing genotypes. Again, the player simply has to approach one of these machines and hit the RMB on the PC or the B button on the Xbox controller. Each genotype only has 3 skills that can be upgraded, so selecting this will be a painless process that only requires (on the PC) the ↑ and ↓ keys to cycle between genotypes, the ← and → keys to select an upgrade, a LMB to purchase an upgrade.

3- *Thou shall be led slowly unto the valley of gameplay depth.*

System Shock 2 made a huge mistake: we dumped all of the complexity on the player from moment one. BioShock will address this issue. Besides just massively simplifying the interface, BioShock will slowly dole out depth to the player, just as the player becomes capable of handling it.

The first half hour to hour of the game will play just like a first person shooter. Move forward, move back, shoot, etc. Then the player learns he can use different types of ammo in his gun. After that, the player comes across an environmental control machine. "Hey," they realize after hearing some MP3 logs to this effect, "if I turn the oxygen up, my shiny new incendiary rounds will be more effective!"

Then the player will come across a new weapon and a weapons upgrade machine. "Hey, cool, I can upgrade my weapons!" Once the player has the hang of that, we introduce him to his first genotype mod machine. This machine will allow him to upgrade his single current genotype: human. Later on, after the player is comfortable with this system, we will introduce new genotypes for the player to encounter and experiment with. The player will be five to seven hours into the game before he has encountered all of the major game systems.

"Abandon now and forever your provincial precepts of genetics, your pedestrian notions of atomic structure. There is no poetry in your science, no music in your medicine. I've come to teach you to sing."
- Annals of the Conductor, Chapter V, Verse 11

The Bad Guys

A diverse range of enemies will inhabit the world of BioShock. The enemy list will include twisted genetic abominations, fusing human and aquatic creatures DNA with terrifying results. The cultists also realize the value of technology and have experimented in cybernetic enhancements, turning men into bizarre cybernetic killing machines. On top of these two threats, the complex and merciless security system with its robots, gun emplacements and surveillance cameras will be a constant thorn in our hero's side.

Enemy types:

- **Human zealot cultist**
- **Genetically engineered mammal/aquatic hybrids**
- **Cyborg killers**
- **Robots**

All of the various monsters have different combinations of resistances and susceptibilities, which make the creation of varied weapons necessary for maximum efficiency against the different creatures you encounter.

Players also encounter the ghostly apparitions of cultists who realized they had signed on for more than they bargained for.

"Love the greatest of the Conductor's creatures as you would the basest. For one day the beast may become your neighbor, and your neighbor the beast."
- Annals of the Conductor, Chapter V, Verse 11

Backstory

You are Carlos Cuello, a down and out former black ops specialist who has been drummed out of the service due to psychological instability. Taking a job as a deprogrammer (someone who "kidnaps" cult members and "de-brainwashes" them), his first job finds him undercover, flying towards a remote island called Salvacion with members of a cultist religious group called "Serene Dawn". Your job: to find the daughter of a captain of industry who has fallen in with the group and bring her back to her waiting parents.

As the plane comes in for a landing, you realize the cultists have seen through your cover. You dodge the bullet intended for you and it buries itself in the skull of the pilot. Now the fun begins…

Part 1: Crash

Pulling your pistol from underneath your seat cushion, you are thrown into a duel to the death with cultists on the plane. A stray cultist bullet slams into the pilot's skull, sending him sprawling over his controls. As the plane noses deeper into its death plunge, the very orientation of the world changes around you. You will have to fend off the cultist goons and reach the cockpit before the plane slams into the earth.

Pulling yourself from the wreckage of the crash landing, you find yourself on a remote volcanic island. Exploring your surroundings, you realize that the island is several miles in size, covered with tropical vegetation and partitioned by impassable cliffs of volcanic rock. You see thatched native huts, most of which have been burned to the ground. You can see the charred remains of several individuals lying around you, their bodies strange amalgamations of humans…and…and what?

Progressing through a tunnel carved into the very volcano itself, you must struggle through a nightmarish series of encounters in the near darkness. Your gun empty, you soon find a new weapon that looks like a strange, custom pistol. It is made of a material you have never seen before. It appears smooth, unformed, as if it were poured as single piece of alien metal. As you come out of the volcanic tunnel and into a valley you see a sight you were totally unprepared for: the cultic compound. This is no Jonestown, no rag tag collection of huts and pre-fab tin buildings. This is an installation worthy of any superpower. Tall, proud structures of concrete and steel loom over you. Paved, lined roads tear into the heart of the jungle. Power lines ring the installation and traffic signs provide guidance to the bustling population.

Breaking the eerie silence, a steady stream of recorded liturgy issues forth, from the mouth of the cult's leader:

> *What is the measure of a man?*
> *Is it the hands and feet?*
> *The eyes and ears?*
> *Or is it the Holy Spirit that animates him?*
> *If the body is lost, but the soul is saved, is that anything less*
> *Than a victory?*

You wonder where everyone went. The place looks like the day after Armageddon. Bodies litter the paved pathways and half the buildings stand in ruins. Something has happened here, something terrible. You also begin to find bodies of other cultists, some with MP3 recorders with audio journals on them. As the tales of the doomed cultists begin to unfold, you find yourself wishing the plane you put down had instead thrown itself into the earth with you onboard.

Part 2 and beyond…

As the player explores the surface installation, they realize they've only seen the tip of the iceberg. They soon discover an underground complex that runs deep under the earth, with various openings to other parts of the island, including:

- A lagoon overrun by strange amphibious creatures. Strange tendrils whip out of the surf, looking to lacerate the player with barbed fingers.

- A torturous path into the heart of a volcano, plagued by mutated seabirds and secreted, sniping cultists

- A terrifying descent into the bowels of the underground installation, where the player comes to the realization that the structures not only go underground, but under the ocean itself!

- A nightmarish trek through the winding plasti-steel maze of the cultists true home deep beneath the ocean's surface. Massive prehistoric fish bear witness to the modern horrors that seek to destroy the player…and the very species he represents.

The majority of the game will take place indoors, but the outdoor sequences will be used to provide more gameplay and aesthetic variety.

Multiplayer

The multiplayer aspects of BioShock bring something unique to the genre.

Story based deathmatch. What is it? Imagine playing the single player game. But you're not the protagonist. You're a guy playing on the side of the monsters in the single player campaign. Instead of predictable AIs running at the player, a second player (or third, or fourth perhaps) can step into the shoes of various monsters in the world that are nearby the player. These monsters are played in first person view by the second player (the monster player). Under the monster players control, these relatively weak but numerous AIs can stage ambushes, leverage AI monster attacks patterns to outflank the player, even play dead and spring back to life as the player comes around the corner.

How is this done technologically? It's not really a technology challenge. It's more of a design challenge. When you build the game, you probably have to lay down three different kinds of monsters in the editor.

a. Monsters who are only active in single player
b. Monsters who are only active in multiplayer
c. Monsters who are active in both single and multiplayer. These monsters will be the cause of the most bugs, because they're likely to break stuff in both modes. This means: no using monsters who are needed for cutscenes. No using monsters who are quest relevant, etc. This will definitely require some thinking.

Balance

The more open-ended gameplay becomes, the more stimuli that can be applied to the world and applied by the world onto the player, the dicier game balancing becomes.

Combinatorial growth as presented in BioShock provide many of the benefits of games like Diablo and Freedom Force. It will be impossible to test every possible combination

of character, weapon and environment in every possible moment of play. To successfully balance games with such open-ended systems, we must do two things:

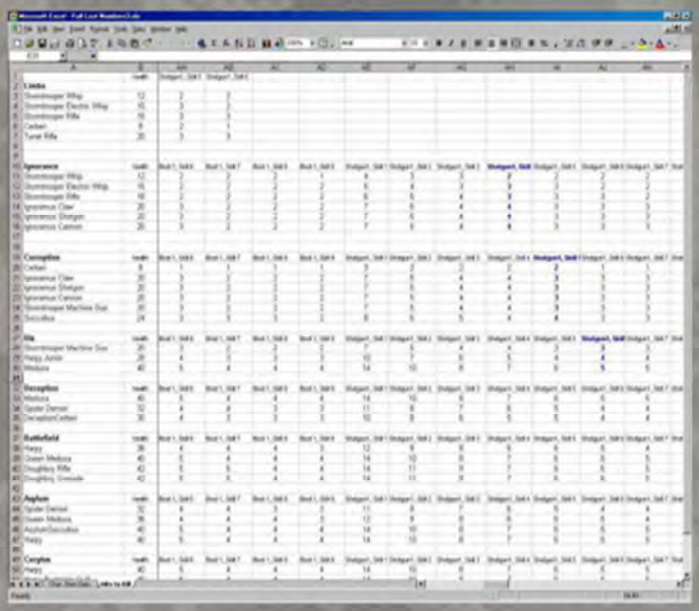
1) Extensively test (i.e. open beta)
2) Quantify, quantify, quantify.

Game balance doesn't exist in the mind; it exists in dozens of Excel spreadsheets. In these spreadsheets are the hundreds of proposed values that influence gameplay: weapon damage, monster hit points, effects of environmental mods, etc. These spreadsheets are used as a starting point for testing. In the process of testing, inequities are exposed and the data in the spreadsheets must again be modified to reflect the findings of the play testing.

There are no real tricks to balancing. It's work, work, work. Every game Irrational has done has been open ended in nature. Sometimes, you learn about balance after you've finished the game and it goes out to hundreds of thousands of useful data points.

System Shock 2: Too hard. Freedom Force: Much better, perhaps a little easy. If we had a couple more months, it would have been excellent. The Lost: We think pretty good. We are self-funding an extension to the project with the publisher's blessing to work strictly on balance and performance issues.

BioShock is budgeted with a nice sized balancing period at the end of the project, the time where it is most effective.



The joys of balancing *The Lost*