

Steam Link: <https://steamcommunity.com/sharedfiles/filedetails/?id=2945646840>

Youtube Link: <https://youtu.be/6UHm5HX7OoQ>

The youtube video shows a slower pace to fully show the levels and give time for understanding. These levels could be completed much faster if the player knows the solution.

These levels are meant to be harder than typical levels and should take between 1-2 hours for most players to figure out and play to completion. I used Bee2, which is an addon to the in-game portal editor to unlock more elements. This allowed me to add things like checkpoints, signs, or portal helpers which will define the location and orientation of a portal if it is shot at a block. Logic blocks also helped to make the levels more dynamic by letting changes occur to an item if something wasn't true or if only a selection of things were true.



Red Text = Influenced By Playtests

- 0:42
 - The player spawns directly facing a hole in the glass wall, which they should immediately know means that they portal to the other side, seeing as they are trapped in a glass cube.
 - Portals aren't actually required at all to solve the first puzzle, however the second puzzle is about teaching the player the importance of deleting portals. This requires the player to have already placed portals, which is why this beginning section is important.
- 0:54
 - The player figures out that the button alternates the two laser walls.
- 1:02
 - The player sees that the button drops a new cube
 - Hitting it again they can see that it destroys and respawns the cubes.
- 1:25
 - After some experimenting, the player will realize that that they can stack the cubes and hit the button to make it past the wall
 - The player is stuck in a vacuum, this is really their only option so they will figure it out pretty quickly. All the playtesters I've had figured out pretty quickly, except one, who managed to avoid the

puzzle by using the portable walls to launch the cube from the dropper onto the button for the same effect.

- Portal walls were limited in this area to prevent this.

- 1:45

- If the player decides to experiment they will see that the button raises the platform and locks everything outside the platform area into the area.
 - The natural assumption is that you need to be inside the platform area by the time a cube is on the button.
 - The fizzler blocks you from shooting putting a portal under the cube before the ceiling above the button

- 1:53

- If the player uses the fizzler, they can erase their portals and put a portal under the cube before the ceiling.
 - Originally, the fizzler was closer to the platform, which allowed the player to simply fizzle the cube, and therefore not learn the mechanic. It has been pushed farther away to prevent this.

- 3:20

- Player sees the door directly across from them as they enter the room and immediately are informed that they need to have 3 buttons pressed to leave.
- The fizzler and laser across the center of the room are to prevent the player from using it.

- This level has way too many minor changes from the playtest to point out individually, so only some will be pointed out. There were many lighting and antline/signage changes to make the level more understandable.
- 3:33
 - Player only has one direction to go, so they enter the tractor beam room
 - Most players immediately take the companion cube, as it's on the way and implied in the title of the level. Any who don't will quickly figure it out.
 - Players used to also be able to enter the laser room, but this allowed for sequence breaking for creative players.
- 4:00
 - Player sees that they have the ability to create and reset another cube.
- 4:15
 - Testing the button, players can see that it turns on the nearer tractor beam, preventing the aerial faith plate from taking them to the other side.
 - With a bit of exploring up top, it becomes clear that the goal is to get up to the first platform with both tractor beams on.
- 5:00
 - Performing a cube stack, the player can get up to the platform while keeping the tractor beam on.
- 5:16
 - The player doesn't actually need to travel across the room after they press the button, the cube can also be navigated from the floor. The player just

has a better viewpoint from the second platform. This also acts as a red herring for the second part of the level by already establishing a way in the players mind for them to reach that platform.

- 6:10
 - Player needs to find a new way to enter the newly reversed tractor beam. Turns out, it's as simple as getting back on the aerial faith plate.
 - Emotionally, it feels really cool to ride on a pathway system that you created.
- 6:40
 - Player places a cube on the first button, then escapes the button room.
 - Player has a good viewpoint for watching how the level changes, giving them a better idea of what they'll be working with to get to the second button.
 - This used to be more visually noticeable as there were lasers all over the place in this room. These were actually vestigial elements that prevented sequence breaking in earlier iterations of this level. As they were no longer necessary, they were removed. Much of the clutter in this room caused a lot of stress for the early playtesters.
- Intermission
 - Players already know the location of the second button, and it's likely on a platform that they've already reached at this point in playing.
 - The button room is the first checkpoint in the level, so players progress is saved and they won't have to restart.

- 7:30
 - Player sees the button that opens access to the second button room
(They probably had ages ago but it was still blocked by lasers).
 - Mindset tells them that they need to sacrifice a cube before they can even enter the room.
- 7:40
 - Players can use the newly reversed tractor beam to acquire the new cube,
 - It initially glitches on the button in the video, which I thought was very funny.
- 9:00
 - Players can use the reversed tractor beam to traverse along the ceiling, and make it to the second button room.
- 9:09
 - Players need to reverse their direction in midair and navigate to the fizzler
 - They'll likely already visit the button room initially and realize that they need to null portal. There's only one fizzler available to them, so the goal becomes obvious once they realize that. The fact that the fizzler is a new addition to the puzzle helps players get to that realization.
- 9:50
 - Players can use their null portal to transport their cube to the second button.

- Standing on the button that turns the fizzler off acts as a second checkpoint. It doesn't necessarily mean the player completed the puzzle, but it is always a guarantee that they've made it farther in the level.
- 10:20
 - Fizzler blocking the entrance to the second room is a new addition. It prevents elements from the tractor beam room from interfering with the later puzzles. Using items across different rooms was a problem with my initial playtests.
- 10:37
 - Seeing that the door is now unlocked, players will enter into the laser room, which they initially only have access to one puzzle to solve.
 - This is also a newly added checkpoint, as entering this room means that the player just finished the tractor beam room. This wasn't true in the playtests, as this room was accessible from the beginning.
- 11:50
 - Seeing both cubes with the laser puzzle, most players will initially set up the feedback loop using both cubes.
 - This is actually a red herring, as can be seen later in the level
- 12:05
 - Players unlock a pathway without a fizzler back to the main room.
 - This implies that these two rooms are inherently intertwined, and if nothing else, is an obvious indication that the companion cube should be brought into this room.

- This is the final checkpoint in this level, and it means that all that's left for the player is attempting the most dangerous part of the level.
- 12:30
 - The player will likely do a few experiments with the button at this point, and it will become increasingly clear that cube stacking is required, which will lead players to search for another cube.
- 13:00
 - This extra cube is actually one of the laser cubes. The room is set up so that a feedback loop can be created using only one of the cubes.
- 13:30
 - They may have already figured out this, but the player learns that the laser receiver alternates the location of the light bridge.
- 13:58
 - The player disintegrates the companion cube to alternate the bridges automatically, allowing them to reach the exit door.
 - A view of the button is presented via glass panes, so the player can visually gauge their timing instead of just guessing it.
 - This is pretty forgiving, The bridge collision is there the second it activates, even if it hasn't visually shown up yet.
- 14:55
 - Similar to the first test, the player is forced to portal immediately.

- This is for similar reasons as well. The twist here revolves around null portaling, which requires both portals to be placed already to be taught.
- 15:00
 - Player immediately lands on the button, which shows them what their final goal is: to be on the platform as it rises.
- 15:18
 - The player can delete one of their portals by having a wall panel move while their portal is on it.
 - It's easily taught this way, as it's the only clear interactable thing in the room.
 - This is the twist, null portaling can happen as long as one of the portals is deleted, and this puzzle shows that there are ways for only one portal to be deleted.
 - This is very important for the next puzzle.
 - This used to be done using the moving platform itself. It turned out that players didn't need to null portal because they could simply place the cube in the portal next to them. This also added a third portal wall that the players could abuse in the second level. Adding the wall panel to teach this mechanic instead made everything simpler.
- 15:40
 - Players drop the cube onto the button and then ride the platform up.

- It was mixed on whether or not the platform ride was good due to its slow nature with the playtesters. I decided to keep it for 3 reasons.
 - It helps to provide a greater contrast and tension as you watch one room slowly get smaller and vanish, up until you watch another room slowly get larger and be revealed to be this massive expanse.
 - This level is supposed to show a slightly older and more rundown Aperture, and the slow dull platform ride in darkness helps to convey that feeling a bit.
 - The puzzles in the larger room needed the entirety of horizontal space available, so the second room needed to be completely above the first room as opposed to its side. Because the exit door is about medium height in that room, it leads to a longer ride. I also can't affect the speed of the platform.
- 16:00
 - Player takes in the room and immediately has the location of the exit door as well as an end goal: find the button that unlocks it.
 - One feedback I got for this level was to add more light, so I added more observation rooms.
- 16:15
 - Upon stepping on the button, it becomes pretty clear to the player that they need to be on that platform as it returns
 - Thinking on it further, they need to find a way to remove a cube from the button as they stand on the platform

- This next puzzle is probably my most well designed, as well as hardest to explain.
- 16:37
 - The player connects the two portal walls, causing the cube to drop for the first time.
 - They probably won't notice the cube drop the first time unless they track the antline or notice the arrow of lights, which they eventually will as they see it from the other platform.
 - At this point, the player no longer has a way to remove their portals, which is a signal that they need to actually go to the other side of the portal, which would be hard to figure out for some if it wasn't their only choice.
- 17:13
 - After flipping the third wall the player can experiment to see how the laser will affect the receiver, if they didn't know already.
 - The main thing they should take notice of is that even if the position of the laser moves, if the laser still touches the receiver it's state doesn't change. That's what makes this puzzle very difficult. This along with the fact that the player needs to be waiting to catch the cube puts a lot of restrictions on how the player can solve this puzzle.
- 17:22

- The player can now swap around their portals so that they can catch the second cube.
- From here on out, the player will likely do a lot of experimenting until they actually understand the full scope of this puzzle.
- 18:30
 - The player forms a cube stack on the button, and destroys the cube to get a new one.
 - It may seem like they are in the same position, but the goal of this move was to flip the flip panel, which destroys the portal. That was the key to this puzzle as it means the player can null portal.
- 18:56
 - Using their cube, the player can now step onto the platform, and destroy the cube with their remaining portal, making it to the other side of the map.
- 19:07
 - Player is introduced to a room with a cube and a laser that will turn off the fizzler, which lets them take the cube out of the room.
- 19:50
 - Once the player steps on the button, they can see that the puzzle is similar to the second button in the tractor beam room: get the cube to fall through the portal while they're standing on the button.
 - This is a situational red herring, no null portal is needed at all and there are practically no similar steps in getting to the solution, it just gives the player a general idea of their final goal.

- The portal wall immediately in front of the fizzler is also a red herring, as it gives the player the idea that their goal is to have a portal that connects the inside and outside of the room.
- 20:15
 - The actual goal in this puzzle is simply to have a portal connected from the dropper location to the end location. The cube will respawn if destroyed, so the player can simply throw it into the water.
 - This is sort of a meta twist. It leverages the same ideas behind most null portal and ghost cube levels without actually using either mechanic.
- 20:33
 - With the button activated, the exit door is now open. The player just needs to find a way back to it, which will be easier said than done now that a bunch more puzzle elements have been activated: most notably two laser cubes are available and a new laser just activated.
 - The level used to end and the player would just walk all the way back to the start during the playtests. It was noted that I didn't have any real twist for cube stacking, which has been an integral part of both levels, so this final challenge is meant to provide a twist for it by using laser cubes instead of regular ones. The laser becomes the purpose instead of offsetting other parts of the level.
- 20:57

- The player will have to figure out for themselves what each puzzle element does.
 - The button brings down the drawbridge, which lets the player return to the first part of the second floor.
 - The first laser receiver turns off the laser wall that prevents access to the drawbridge.
 - The last laser receiver will raise the stairs to grant access to the exit.
- 22:04
 - If players notice the pretty obvious way to make it back to the first part of the level, they'll find the stairs are down, which certainly complicates things. The sign on the floor makes it pretty clear that it connects to the other laser receiver, so from here the player has a pretty big hint that cube stacking will be required.
- 22:40
 - By deleting the bottom cube while on the other side of the laser, the player raises the stairs and gains access to the exit.
 - It might be assumed that this is hard and finicky to do, but it turned out pretty easy as the cube button will aim the laser for you if you were slightly off.
- From here the player may just walk, taking their victory lap, to the exit and complete the level.