You're listening to Imaginary Worlds, a show about how we create them and why we suspend our disbelief. I'm Eric Molinsky.

Liam Erven has loved video games ever since he was a kid. And he was born blind.

LIAM: I've always kind of said, I feel like I accidentally started the concept of the playthrough. People would come over and I would rent a game. And so, people would be like, hey, that's a cool game. I want to play it. And I was like, cool, you can play it, but you have to describe it to me. And so, people would read text and play the game and describe the game. And I kind of lived vicariously through others.

But he was experimenting with playing video games.

LIAM: When you're a kid. I think you have an infinite, infinite well of time and patience. And so, you're willing to just sit and spend hours with something, but it was a lot of just trial and error and mainly just error.
Well, I've heard that certain games like Mortal Kombat is supposedly very good, uh, for blind players. How come?
LIAM: So, I think that the reason that things like Mortal Kombat are good for blind players is it's a lot of memorization, and you're memorizing moves. You're memorizing where your character is going to land when he falls. You're learning a lot of these things. I did become proficient enough to annoy everybody in the neighborhood. So, people would come over because I had all the games. I think a lot of people came over and went, ah, blind guy's got Mortal, Kombat will beat him up. And I ended up sending a lot of people away, really mad, um, because I learned these characters and got really good at them. And it, I mean, at one point there were kids that were like, we won't play against him anymore. This isn't fair. (Laughs) It was great!

Brandon Cole is also a blind gamer who advocates for accessibility in video games. And he likes to play Mortal Kombat because of the sound design.

BRANDON: Every character has their own voice, their own dialogue. Every single attack in the game has his own unique signature sound effect. Every single one. If you combine that with the way fighting games work, most fighting games like Mortal Kombat on a 2D platform, you know, 2D plane, and you're always across from your opponent, no matter what, no matter where you are, you're always across from your opponent. So, we never have to worry about where our opponent is. We don't, we don't have to see them because we always know we are across from them. And we can tell not only where they are versus where we are, we can even tell how far away they are from us.

Most of the games that are accessible to blind people are accessible by accident. Brandon and other accessibility advocates want games to be designed in a way so that blind people can play them easily. But that's getting harder.

BRANDON: Like that's one of the most frustrating things for us is that while video games are great and I will always love video games, uh, they continue to grow in size and because they continue to grow in size, they become more complex. And because they become more complex without some assistance from developers, a totally blind person has less and less hope of navigating them as time goes on.

Again, here's Liam.

LIAM: I think the biggest frustration is, you know, that great new game that came out? Yeah, you can play it. I can't. I have to like kind of watch you play it or experience it some other way. It is my biggest frustration is that I can't play what my friends are playing. Another huge frustration is that I can't socialize the same way that my friends socialize.

During the pandemic, multiplayer games have been a great way for people to get together without leaving the house. So, when blind players are asking game designers to keep them in mind, this isn't just about making a hobby accessible -- although that is important. This is about creating accessibility in virtual spaces that people are engaging with more than ever.

Most of the big games that get a lot buzz and media attention are what's called triple-A games. AAA games have big budgets. They're made by studios that have hundreds of employees. They're sold around the world, and they earn millions of dollars. Trying to change a culture like that is daunting.

But there is another type of game -- smaller independent games that can be flexible to accommodate blind players. In fact, there is a growing type of audio game that is specially designed for blind people. Aaron Baker is one of the most respected designers of audio games, and he is also blind.

AARON: I don't want to be creating audio games necessarily, but that's, you know, that's, that's where we're at, because I need to be able to play them other blind people need to be able to play them. So, I like to think that I'm making video games for the blind more so than, than audio games. Because to me, like when I did discover audio games, I was a little underwhelmed with what I found because I was so disappointed when I

found audio games. And like, they were so far behind where the games that I grew up with, even for like the 8-bit portable Gameboy color, you know, they were behind even that. I was very, very, I was very, very sad, um, about that.

So, he wanted to create a type of audio game that he could enjoy. And he designed them to be like side scroller games, which are games that are flat, 2D, and you're moving a character up and down or back and forth – like Mario Bros. But in his games, the screen is black. Everything is represented by sound effects, audio narration and dialogue. Like he did a horror game called The Gate.

AARON: Basically, if you said it was your first time playing the game, when you started a new file, every time you'd enter in a new level, we'd have a brief, a tutorial segment that would introduce the new sounds in the level. And some of the enemies like the ghosts, the goblins, the gremlins, the pits that you can fall into, if you don't jump over them, the vaults that you that are kind of like, um, I guess, treasure chests almost because you're never going to see, you know, a good well-designed game is not going to throw everything at you in the first level. That was my approach in that particular situation was in order to get literally 30, 40, 50 different sounds that you would need to play the game effectively, I introduced them only when you're actually going to encounter them. And I think that was, uh, that at least worked for that game. I've also sort of had this thinking that, you know, I can't do too much in, in one game because that's how a lot of audio game developers get burnt out and either never release anything or, you know, only release one product. There've been so many Kickstarters in the audio games community with lofty goals that just never went anywhere that just fell on their, on their faces because they tried to do too much too quickly.

Brandon Cole is a big fan of Aaron's games. Like when Brandon played a game that Aaron designed Manamon, Brandon was excited that there were audio cues for everything. Like this is the sound of your character interacting with a wall:

BRANDON: So, you know, if, if there's a wall in front of us or to our left or behind us or to the right, we know there's a wall there. We know when that wall ends. So, we can walk outside of a building and around the building and trace the corners of it in a much easier way. The complex levels in Manamon are, are essentially mazes. You know, there's no pictures on the walls. There's no like carvings there's no, no rune carvings of ancient things, nothing like that. But the level of themselves, the deep underground levels of, of mazes and dungeons are just really complex the twists and the turns and the finding your way, that's where the challenge comes in.

AARON: I feel like I couldn't make mazes half as complicated as I do, and I love making games hard, so that's important to me, but hard in a good way. I don't think I could make mazes half as complicated if you didn't have those auditory cues.

And the tools that Aaron uses are similar to the tools that audio dramas use, which are volume and stereo panning because they give you a sense of where characters or objects are located in this imaginary space.

AARON: And as you get closer to them, they get louder. And as they get closer to your right, they get louder that in your right ear, if you move further away from them, they get quieter in your left ear. Or if you're on the other side of them and you're moving toward them, you know, and they're to your left, then, then they'll get louder on your left. It's, you know, it just uses panning. So basically, we only have two, two elements of helping you figure out where things are volume and pan and, and a pitch to a certain extent. My games also, uh, when you're, when an object is behind you, it decreases the pitch, which is a very, very imperfect way of doing that. But, you know, you have to use the tools that we have.

Now unlike Brandon or Liam, Aaron is not particularly interested in the big AAA games that weren't designed for people like him.

AARON: I never bought a PlayStation 3. I never bought a PlayStation 4, and I'm probably not going to buy a PlayStation 5. In fact, I think the only a gaming console that I've ever really, um, I've ever really purchased are like, uh, usually, um, retro handhelds. I've got a Game Boy Advanced SP right here, you know, um, and that's because I grew up playing it and I can actually get some enjoyment out of the games because I, I know enough to be able to play it independently. I can usually get hours of gameplay without needing sighted assistance.

Yeah, that's interesting too, because I mean, people have such strong sense of nostalgia anyway, for the games they played when they were a kid and, or a teenager. And for you, there's this kind of like also this frustration of them not being what you wanted them to be. So that's really interesting that a lot of what you're doing is kind of like, yeah, what if, what if I could have made these games accessible to me?

AARON: Yeah. Yeah. That's, um, that's quite accurate. I would say. Instead of like, instead of even catching up with the video game industry, I just want to make the '90s and early 2000s accessible to, to, to blind people because audio games by and large aren't even to that level.

But what if AAA games could take the type of the tools that Aaron designed for audio games and apply them to huge 3D virtual worlds? After the break, we'll hear how one player decided he was going to change the industry.

BREAK

When it comes to accessibility in videogames, process has been slow for a while. The first big change came in 2010 when President Obama signed the 21st Century Communication and Video Accessibility Act. The law required streaming TV and any other digital communication service to have things like closed captioning, and voice chat. In 2019, the law extended to the games industry as well. So blind players can now easily access the menus of games – but there weren't a lot of improvements within the games.

The first big AAA game to take accessibility seriously was a game called Uncharted 4. It's part of a series of swashbuckling adventure games. And in the fourth game of the series, the designers added special button options for people with mobility issues, and a modification for players that are color blind.

These features were well received, but that wasn't always the case. Ian Hamilton is an advocate for accessibility in video games, not just for blind players but people with any type of disability. He says, in earlier years whenever there was an article talking about something like the need for colorblind accessibility.

IAN: There would be loads of comments in the comment section stuff like how dare these entitled people try to destroy our games, they want to ruin the art direction by thinking about colorblindness. It actually just took people actually seeing what games are color blind consideration looked like to realize. Okay. Because there's actually nothing to worry about. So it's progressed now, even now like this, the strongest arguments by the small remaining vocal groups are along the lines of, yeah, we're totally cool with like colorblindness and meme mapping and stuff. It's just this thing over here that we're annoyed about it, you know? So, so even though it can seem like there's, there's, there's this kind of opposition that has actually progressed a lot in, not a very long time.

And then in 2017, Brandon Cole was scheduled to give a talk at the Games Accessibility conference. In fact, he was the opening speaker before Naughty Dog – the studio that made Uncharted 4.

BRANDON (ON VIDEO): I am Brandon Cole, I am the guy they hired to open for Naughty Dog.

BRANDON: Since I knew that Naughty Dog was in the audience that day, uh, I very cleverly inserted into the speech, what I wouldn't give to play a game like the Last of Us.

BRANDON (ON VIDEO): You have no idea, none at all, what I wouldn't give to play a game like Last of Us, hashtag GA conference, hashtag open for Naughty Dog. (Audience laughter)

The Last of Us is the other major franchise that Naughty Dog makes. The game takes place in a zombie-like apocalypse, where you play some of the survivors. The first game had great character development, and it was a huge hit when it came out in 2014.

Sitting in the audience, during Brandon's talk, was the head of accessibility design for Naughty Dog, Emilia Schatz. She goes by the nickname Em. And Em says when she heard Brandon ask if they had considered designing a game like The Last of Us for blind people, she thought:

EMILIA: No, we hadn't. The answer was no. That seemed kind of, I don't know, beyond what we be able to do because our, our, we have a very visual, medium, you know, we put a lot of focus into like, what's on the screen. It tells you a lot of information, much of what you need to do and things like that. But the question really intrigued us.

So, after the panel, she talked with Brandon and eventually she invited him to the studio to talk to the whole team. The first thing he did was give them a demonstration of how he plays Mortal Kombat.

EMILIA: You know, we, we played him, he kicked our butts and, you know, he explained, you know, what the game was doing in their audio to be able to tell him things he needed to know in order to play the game.

Brandon also demonstrated how he played Uncharted 4. Naughty Dog got a lot of praise for the accessibility options in that game, but Brandon got to a point where his character was supposed to chase somebody across a roof.

BRANDON: And I calmly proceeded to show them how awesome I was at it by falling off the roof multiple times in a row, only because the reason I did this is because I needed to prove a point. And that point was that we have so little information in video

games, in their default states with, with no considerations for us. There's really so little information that we have.

EM: And then after that, he showed us, um, a Resident Evil game. He said that, uh, he found kind of by accident, but that's you, if you bring up the little PDA menu and then put it down, it essentially like rotates your character in the direction that they need to go. And all of a sudden that sort of unlocked this question of like, how do we make our game accessible to blind players? Well, we don't have to have a sort of accidental feature there. We can actually purposely develop this for a player like himself.

Em and her team had just started working on the sequel to The Last of Us. She knew if The Last of Us Part II was going to have new accessibility features, they would have to start designing them from the ground up. But the more she consulted with Brandon and other play testers, the more she realized how little she knew. Like at first, Em thought all they needed was to design a switch for blind accessibility mode or deaf accessibility mode.

EMILIA: Players really bristled at that because as we found, um, disability runs a huge spectrum and there's a lot of like people that have trouble in one thing versus another, all of the players that we talked to were very insistent about the fact they wanted to customize everything. They wanted all the options available to them, essentially. They don't, they didn't trust us as developers to know what they needed in order to play the game. So that really kind of opened up a huge box of worms for, I guess, trying to figure out how do we develop all these features? Because we ended up by the end of the game, having about like 65 different features you could flip on and off in the menu. How can anyone sort of make their way through all of those and find the ones they need?
Yeah, because some people are blind and some people are partially sighted, don't you have a feature where everything is high contrast for people with low vision?
EMILIA: Uh, yeah, absolutely. We found some goggles online that actually were visual disability, simulating goggles. And so we could actually wear these goggles that were sort of like all fuzzy or they had different like effects on them to make it so that it was difficult for us to see the screen. And we started developing a vision mode, which was essentially, it was a high, high contrast vision mode. And so, the first thing is we make the player, a bright color. Like I think we made them bright blue. The enemies are bright red. So, you definitely know the player and the enemies where those are, we made any interactable things like things you need to go up and like open a door or pick up an item that's on table. We made those bright, bright, yellow so that you can go and grab those. And then the rest of the environment, we sort of, um, kind of faded out. So, like things that were really close, uh, were really kind of bright and things in the distance were

dark, but they had some outlines around them. And then we started having play testers, try it out. And so that's, that's what we ended up with.

When The Last of Us Part II came out in 2020, Liam Erven was excited to play it. As he said earlier, he hates feeling left out when everyone is talking about a new AAA game – and there was a lot of hype around this game.

LIAM: Listen. It's so great to boot up a game and it just, have it go, hey, listen, I'm turning on text to speech. Hey, listen. Here's what all these sounds mean. Hey, listen, here's how to play. Okay. I'm going to drop you into the game. But there is nothing like actually experiencing a game yourself and knowing that you're controlling that character and, and like, ah, it is gorgeous. I really, I can't overstate how happy it makes me.

Like there is a feature that allows you to constantly scan for objects or people – like a sonar. And the game has different ways to guide you in the direction you need to go. Also, remember how Brandon showed the team at Naughty Dog how his character kept falling off a roof in Uncharted 4? Liam didn't know Brandon showed them that, but when he played The Last of Us Part II, he did notice:

LIAM: There's also, um, a really cool ledge guard thing. So if you're on the edge of a ledge, the game will stop you from falling off, which is kind of helpful. I mean, very helpful.

Liam's only complaint is that sometimes his character would be walking through an interesting location, but the audio cues were only telling him how to get from point A to point B. He really didn't know where he was until he found a game synopsis online.

LIAM: But you know, when you stop to look back, it's like, but I'm moving this character. I'm actually playing this game. So I kind of like, let it go because the fact is that eventually I feel like we're going to have more things like audio narration.

Which is when a narrator describes everything that's going on while you're playing the game. There isn't audio narration yet for AAA games, but it's starting to happen with game trailers. Like here is the trailer for a game called Assassin's Creed Valhalla -- which is made by the studio Ubisoft.

NARRATOR: In a snow-covered fjord, a Viking longship heads towards open water. A blonde Viking hangs from the stern from the vessel. A Ubisoft logo. A bird soars overhead as lightning flashes.

Liam hopes someday every AAA game will come with audio narration like that -- for the entire game, not just the trailer.

Now overall, The Last of Us Part II got widespread acclaim for its accessibility options. But the story within the game did not get as much positive attention. Players argued about the choices the characters made. The ending was controversial. On social media, things got ugly. But one thing everyone agreed on, even people who loved the game:

LIAM: It's not a fun, happy little game. It's very depressing. It's very dark. It. I would, I would really like a game that I could sink my teeth into that doesn't make me go, oh man now I need to like get some Kleenex or something, but I would love to see, I'd love to see the tech go into some like fun or happier games that we know would be a little more fun to play. And I don't mean by fun, I mean, just a little less stressful to play.

Brandon Cole doesn't care about any of that.

BRANDON: It doesn't matter as much what the subject matter is. I mean, it does matter like, you know, certainly there are some people who, even some blind gamers who might not want to play The Last of Us II because of its subject matter, but it matters less because here it is, it's finally here a big-name AAA game that you can play on your PlayStation at the same time on launch day with everybody else. And personally, I think the story is well told. I think it's great. I think it's, yes, it is sad and it, it can be, uh, it can be perceived as depressing, but I think ultimately it is a fantastic story that, uh, that is, is well-written and, and well told. And I loved it. I loved everything about it.

The ripple effect of The Last of Us Part II has been felt throughout the industry. Brandon got to work with the company Jackbox as a consultant on their party pack games.

BRANDON: I am the reason that a very, very cool feature is in Party Pack 7 right now, which is the fact that in Party Pack 7, you can press the up-arrow key. Uh, when you're in a room, a lobby, basically waiting for players to enter, you can press the up-arrow key to have the announcer for that game. Read the room code to you. That feature exists because the blind can't see the room codes.

And the accessibility features in the Last of Us Part II turned out to be popular for other reasons. Like normally in the game, a character would have to search methodically in every room to find stuff like extra ammunition.

EMILIA: Like maybe there's some ammo on a table or something like that. You see it, you go up and you have to face it for the icon to come up. And then once the icon comes up, you can press the button and, and you've picked it up. So we have an option that basically, if you get close enough to a pickup, it just grabs, comes to your character and you get it.

That's for low vision or blind players, but Naughty Dog discovered a lot of sighted players were using the feature because they didn't want to spend so much time treasure hunting.

EMILIA: Actually, I think there were a number of new stories that I read where someone was like, this one feature completely changed everything about the game. It made it so much better for me.

BRANDON: I found out when the game was launched, one of the people who reviewed the game for GameSpot, she was actually using the high contrast feature of the game, which was designed for low-vision players to basically help her out with her review. And because she wanted to be able to see items better and just get items more quickly and just, you know, get through the game. So, she used our high contrast feature designed for low vision players to help her do that.

Ian Hamilton told me about a study that a different game company did, which showed that if subtitles are automatically on when people start a game, 95% of players chose to keep them on. And if the subtitles are not automatically on, 60% of players choose to put them on.

IAN: They benefit so many people for so many reasons. Um, not just people who are deaf and hard of hearing, obviously that's critically important for them, but also people for whom English isn't their first language, people who are playing in a noisy environment. People who've got very quality audio sounds. People who have a baby who at the chance they get to play a game is when the baby's asleep and they really don't want to wake up the baby.

Em hopes that more companies borrow their accessibility features, but she knows it's not easy because the mechanics of every game are usually custom designed for that particular game.

EMILIA: You interact with different, different verbs in games. You know, some games allow you to jump or punch or I don't know, fly things like that. And other games do

other things. Um, it's a completely different experience and every single one of them. If you're looking at making them accessible, it needs to be sort of custom developed for those games. And I think that's one reason why, well, why we're so behind in accessibility games versus probably other mediums.

Ian says there's another hurdle to cross: misconceptions.

IAN: So now it's more about, um, misconceptions. So, people thinking that accessibility is, um, is, is really hard, really expensive, and it's going to be diluting down your game to suit some of those common denominator and stuff. They all things that are, that are very easily demonstrably false. But yeah, we need to educate people about this, developers about this kind of stuff, particularly where it comes into things like, um, return on investment.

Some accessibility is affordable and easy to do. Some isn't. But Liam says that should not be the only factor.

LIAM: What you are going to do is the right thing. So, I mean really at the end of the day, that's what it comes down to. Sometimes you just have to do the right thing.

And in the long run, there is a return on investment because making games more accessible means more people will buy games and game consoles. Accessibility improves design overall. And Liam says, people need to stop thinking of accessibility as us and them, the able-bodied and the disabled.

LIAM: It can happen to anybody. Uh, some of us are born blind. I was born completely blind and other people just lose it overnight. My, my girlfriend was, was born, like, had perfect vision, got a brain tumor, had to go for surgery, woke up, vision was gone. You can just lose it. And so, it begs the question of, if I lose it tomorrow, what can I still enjoy?

Em thinks about that a lot because we are the first generation that will be playing video games into our retirement.

EMILIA: We need to, as human beings come to terms, the fact that we're frail and that as we age, our bodies are going to degrade. All of us, most of us are going to have eye problems, um, hearing issues. You know, I think everyone in their lives is going to have some form of disability. I want to keep playing until I'm really old. And so, I hope other games, uh, pick up these features and, uh, allow me to keep doing that.

Me too. Getting old has never sounded so much fun.

That's it for this week, thank you for listening. Special thanks to Liam Erven, Brandon Cole, Ian Hamilton, Emilia Schatz, and Aaron Baker. I put a link to Aaron's audio game company, VG Storm, in the show notes. Extra thanks to Douglas Plante, a listener who suggested this episode idea.

By the way, if you'd like to hear another episode about The Last of Us and Naughty Dog studios, check out my episode Stuck in the Uncanny Valley from 2018, where I interviewed an animator who worked on the Last of Us series because they're considered some of the best games in designing people that are realistic and not creepy.

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