Rob Carroll: Again, like it was personal, you know it's not causing mass panic in the streets, but he just went from being a regular dude in a mall wearing a piece of technology, to somebody who was seriously afraid for his life even if just for a moment.

Marion Archer: It was like this second layer of reality, and that was a little confusing trying to look around and touch the things that were in the actual world, and use those senses. But, I couldn't because I was in this virtual world and it was taking over my visual and spacial sensory aspects of my brain.

Danny Rice: Hello and welcome to the Bloomington Public Libraries podcast, Shelf Understanding, where you can really learn to understand your-shelf. I'm your host Danny Rice, children's librarian, book mobile driver, second life first runner up. This month we are going to be talking about one of the latest and fastest growing technological crazes, virtual reality, or VR.

People have been trying to invent a passable virtual reality experience for decades but most have failed, mostly due to a lack of adequate technology. Now more than ever though, we're kind of experiencing an exponential advance in what our technology is capable of, not to mention how close and comfortable we are with the technology that we already use every day. Now, historically speaking, besides a few extreme cases one of which we'll talk about in a minute, people have always had an understanding that there was a disconnect between themselves and the media that they're consuming. We don't all think that we're literally living in the movie that we're watching, or the video game we're playing for example.

But, what happens when that disconnect starts to disappear, even incrementally from our viewing or playing experience? We wanted to find out, by which I mean subjecting one of our guinea pig, I mean coworkers, to a little experiment. As it turns out, the Bloomington Library actually owns what is called an HTC Vive, virtually reality system, which is one of the leading models currently available on the market. We've used this for various programs in the past, one in which a group of teens had to work together to diffuse a virtual bomb, things like that. We decided that we could answer some of our own questions by getting a little creative.

The first thing that we wanted to do was find a coworker who had never tried virtual reality before, have them demo a few of our programs, and then immediately interview them based on their experience. So, that's going to be our first segment. Next, we wanted to have an informed discussion about some of the moral and psychological effects of virtual reality, and luckily enough we have two coworkers who are very well versed in what exactly that means, so that will be our second segment, which will be after our break.

But first, the experiment.

You'll probably remember Marion Archer from our episode on puppetry a few months ago. Marion works in our technical services department processing newly ordered books, but she's also the podcast's resident researcher. Now, it also happens that Marion was the only member of our podcast team who had never tried any sort of virtual reality before, so we had Justin [Lomelino 00:03:24], our resident IT guy and virtual reality expert, who we will hear from at length in part two, log Marion on Matrix style.

The first program we had Marion try was a Google Earth demo, which places you in exotic locations around the world and allows you to explore the Earth as though you're flying around it.

These are some of Marion's reactions.

Justin Lomelino: So ...

Marion Archer: Oh, cool.

Justin Lomelino: Think this is Florence.

Marion Archer: Florence.

Justin Lomelino: Yeah.

Marion Archer: Yeah, it feels like I'm standing in a tall building looking out the window, which is cool, very cool, but not that different from an experience I've had in real life. So, neat.

Justin Lomelino: I think one of the things that they talk about with VR is the idea of presence, which is you feel like you're actually there, that you could reach out and touch something instead of it just being a display.

Marion Archer: Yeah this, I am like high up in the air so I'm far away from everything, so there's not really that feeling that I could reach out and touch anything.

Justin Lomelino: This one's fun too, it's turning to night so you can watch the stars come into the sky, see the milky way and all that.

Marion Archer: Oh, cool.

Justin Lomelino: So [crosstalk 00:04:25][inaudible 00:04:25].

Marion Archer: I have a phobia of being on the edge of things, so this is terrifying to me actually.

Justin Lomelino: You can actually lean forward a bit and make it closer to the edge.

Marion Archer: No, no, no.

Justin Lomelino: Oh, oh, oh, don't scoot too far back.

Marion Archer: Okay, okay, sorry, sorry.

Justin Lomelino: That's all right, you're doing great.

Marion Archer: Thanks.

                    So, I'm at kind of street level now, and it's not, it's pretty poly-gony, at this level of detail it's not exactly very accurate to real life, but it's still really cool. It feels like I'm there. Oh.

Justin Lomelino: Well, now you're right down there, yeah you're right, it does look pretty rough.

Marion Archer: This is pretty cool though, it feels like I'm walking down the street.

Danny Rice: We then had Marion and me play a popular VR game titled Keep Talking and Nobody Explodes, which is a two person game where you work together to diffuse a virtual time-bomb through a series of puzzles and tests. The catch is, neither of you can see what the other person is looking at, so you have to communicate to put together the two pieces of the puzzle that you each have.

                    Oh, you also have a time limit between two and five minutes while intensifying music plays in your headphones, adding to the fun. Our clumsy attempt at playing bomb squad sounded like this.

Marion Archer: Okay, it's going.

Danny Rice: What are the three modules?

Marion Archer: There's symbols, there's like a board, like a, I don't know how to describe that. It's like a square with a bunch of little blue squares, a black square with a bunch of little blue squares and two green circles.

Danny Rice: Is it like a number pad?

Marion Archer: Kind of.

Danny Rice: Let's start with the symbols.

Marion Archer: Okay.

Danny Rice: What symbols do you see?

Marion Archer: There's like a kind of tilted letter N, there's a kind of upside down Y, there's a kind of K or H letter, and then there's a real weird one with a bunch of lines with a triangle, and like a [crosstalk 00:06:15][inaudible 00:06:15].

Danny Rice:	Yup, yeah, yeah, I actually know what you're talking about. Okay, can you repeat those back to me?
	It did not end well.
Marion Archer:	Maybe I should call my mom and say goodbye.
Danny Rice:	That's probably a better use of our time right now. Okay so, the first word is hold correct?
Marion Archer:	Yes.
Danny Rice:	And, it's, "You are," "You," "Done."
Marion Archer:	Oh.
Danny Rice:	Uh-huh.
Marion Archer:	Nope, I got a buzzer. Okay, now they're different words. Press blank, right, be ready, yes, and what.
Danny Rice:	I'm going to be honest with you, I don't even know what this means, so I think we should just call it a day.
Marion Archer:	Okay.
Danny Rice:	We've had a pretty good life, right.
Marion Archer:	Five seconds left.
Danny Rice:	Yay. Three, two, and ...
Marion Archer:	Yup, done.
Danny Rice:	... There we go.
	I then sat down with Marion to talk about how her first VR experience had been.
	So, you're first virtual reality experience.
Marion Archer:	Yes.
Danny Rice:	How was it? What did you think?
Marion Archer:	It was okay, I kind of was hoping to have that experience with the old ladies in the videos you see in YouTube where they're kind of, "Auugh." And like, trying to touch everything and it wasn't that.

Danny Rice:	It wasn't that.
Marion Archer:	It wasn't that.
Danny Rice:	No. Maybe because your kind of used to modern technology, no offense to old ladies. Did you find it disorientating at all?
Marion Archer:	The only time I found it disorientating was the edge, when I stood on the edge of the cliff because that is my greatest fear is, not heights, but being on the edge of something about to fall off of it. Yeah, so that was a little like, ugh, that made my stomach drop.
Danny Rice:	They don't really prep you for that either, it's kind of just like, "Hey, guess where you are now, on the edge of a cliff."
Marion Archer:	Yeah, it went from like floating in the air to being on the edge of a cliff.
Danny Rice:	Would you ... off-mike you made a comment about like, "What, there's a cat one? How do I, how do I get that, how do I?" Did you, when you were finished, did you find that you were like what can I do to get this in my life, or are you find with it being a novelty thing that you kind of do once in a while, or?
Marion Archer:	The applications that we used, that it was kind of like oh that's neat, like that's a fun thing that I did one time in my life, but I think that the applications, possibilities for applications for it are extensive and incredible. I was reading about it before I came in here and for things like social media, virtual reality social media, and interacting with people in real time and watching movies together like you're in the theater and then you can talk to other people in the theater. Training modules for surgeons and parachuters and things like that. So, it has all sort of real world applications that I think are realistic and useful. But, in terms of for entertainment value it was like, "That was kind of neat." But also, I'm not like a huge gamer or anything, and I could see that that, somebody who likes to play video games might want to do that all the time and never leave their house.
Danny Rice:	Yeah, so basically what you're saying is that like you're more intrigued by the potential than the actual product.
Marion Archer:	Yeah at this point but [crosstalk 00:09:21][inaudible 00:09:21] brand new, so there's not a whole lot of applications for it that are available at this moment.
Danny Rice:	Yeah.
Marion Archer:	But yeah, I think it has incredible possibilities.
Danny Rice:	Did you like the Google Earth aspect or the bomb diffusal aspect more?

Marion Archer: Oh, Google Earth. The bomb diffusal just felt like a video game where, instead of looking at a screen the screen was in my face.

Danny Rice: Right, okay.

Marion Archer: Yeah, I didn't really feel that much like in that different of an experience, but the Google Earth was really, really cool. It would have been even better, my favorite part of that was definitely kind of the walking around on the ground, in real scale, and at that, understandably, the detail at that level was kind of unrealistic. But, if they could get realistic detail that would be incredible.

Danny Rice: You liked that better than kind of the like floating in the sky?

Marion Archer: Yeah, the floating in the sky was fun, but it felt like I was very much separated from the experience, like I was standing in a tall building looking out.

Danny Rice: Sure, well that makes sense because it's like you know in your mind that that's like never going to be something that is real, I mean unless we have like anti-gravity boots or jet packs or something, but.

Marion Archer: Not if I have anything to say about it.

Danny Rice: Right, yeah. What about being in space?

Marion Archer: That was really cool actually. I think that the differentiation is that standing in a tall building looking out is something that I had experienced in my life so it was like, "This is familiar." But, the being in space is something I have not experienced, so that was really interesting and disorientating and new and fun and cool. That was probably the highlight of it for me, besides the walking on the ground which is something I experience a lot, so actually that's interesting.

Danny Rice: Walking on the ground, but walking on the ground in maybe a place you've never been before.

Marion Archer: True, yeah.

Danny Rice: Like, just being able to go to, where did you say you went, Pompeii?

Marion Archer: Pompeii, yeah, that was really cool. Thank you for saving my theory.

Danny Rice: Sure. What other impressions did it kind of leave on you if any?

Marion Archer: I don't know. I think that the technology has a ways to go, but I think the, just getting the technology off the ground is daunting, so the fact that they've got it actually working to a point where it's possible is promising. But, in terms of it being something that's accessible to a lot of people and exciting for a lot of people, I think there's stuff that needs to be done with the software I guess. The

hardware is where it needs to be but the software maybe needs to be worked on.

Danny Rice: Sure, this is a bit of a leading question but, what was it like when you took off the headset for the first time?

Marion Archer: My face hurt, because it kind of squeezes your face a little.

Danny Rice: Fair enough.

Marion Archer: You mean like coming back to reality?

Danny Rice: Yeah. That's exactly what I mean.

Marion Archer: From virtual reality to real reality. It was fine. It wasn't that disorientating to me.

Danny Rice: The reason I ask is that was probably the most disorientating part for me, because like you kind of adjust to the virtual reality in kind of a matter of seconds, and then when you take it off you're kind of like, "Oh, right, the world is like this again."

Marion Archer: There was some sort of, the disorientating part for me I think was when I was trying, when you were talking to me and I tried to look at you but I only saw the virtual room I was in. It was like this second layer of reality and that was a little confusing, trying to look around and touch the things that were in the actual world and use those senses, but I couldn't because I was in this virtual world and it was taking over my visual and spacial sensory aspects of my brain. That was disorientating to me, but once I took it off it was like, "Oh, okay, there's that person I've been talking to, and here's that desk I've been touching."

Danny Rice: Yeah. What, if you could wave a magic wand, what would you want to experience through virtual reality?

Marion Archer: Well I guess things I can't experience in real life. The traveling to different places was cool. What else, I guess maybe like doing surgery would be fun. Is that what you're?

Danny Rice: Well no, no it's not, because one of the appeals of the bomb diffusal is that you don't actually have to worry about blowing up.

Marion Archer: Oh yeah, for sure.

Danny Rice: So, I think I mean, surgery is kind of a risky endeavor, so being able to experience that without the risk factor could lead to a really interesting experience.

Marion Archer:	Yeah, I don't know, I've never been to, have you ever been to one of the theme parks where they have the seats that move around with the movie?
Danny Rice:	Yeah.
Marion Archer:	How did that compare?
Danny Rice:	Not really.
Marion Archer:	Not really at all.
Danny Rice:	I don't think, and I think it's because you're still, like, I'm used to being a movie theater so having the screen, you know, 20 yards away from you that to me, to my mind, still says, "You're in a movie theater." So, even if the theater itself is moving I still am aware. Whereas, when they strap the screen right to your face, it kind of blurs the line of this is real a little bit more. Obviously still not entirely because you know that you have a kind of uncomfortable goggles on and headphones and things. What did you think? Have you ever done anything like that before?
Marion Archer:	I haven't, that's what I was thinking like if you could add in to your shaking around to match what you were doing, like more, if you could add to the sensory experience in some ways.
Danny Rice:	Which is on the, they're kind of on the cusp of creating that.
Marion Archer:	Yeah.
Danny Rice:	Do you get motion sickness at all?
Marion Archer:	Nope.
Danny Rice:	No. People who do I think would be, would find that very disorientating, so I'd be interested to hear what they would have to say about that, how hesitant they would be.
Marion Archer:	I don't think they'd like it.
Danny Rice:	No, for example my father hates those movie theaters where the things move, because he gets sick. He got sick on like the Back to the Future one back in the day, yeah. So now, he can like not do that, so he probably wouldn't even like doing this. Do you have, after doing this, do you have desire to go out and by a virtual reality headset?
Marion Archer:	I have a strong desire to play that game where you're a cat and you knock stuff over, so maybe?

Danny Rice:	But that's it?
Marion Archer:	Yeah, yeah, but like I'm not one of those people that invests a lot in video games, so if I bought it for my kids or if they got it for a Christmas present then I would probably mess around with it sometimes, but it's probably not something I would purchase for myself.
Danny Rice:	Yeah.
Marion Archer:	Yeah.
Danny Rice:	Even though you can do things like the, some of the archeology and some of the like traveling and?
Marion Archer:	Oh, hang on, I didn't consider that.
Danny Rice:	Yeah.
Marion Archer:	Yeah, yeah, I guess it depends on the application, what kind of games would get me excited or what kind of experiences would get me excited. The ones that we played today, nah probably not, but if they were ones that were more relevant to my interests than yeah, maybe.
Danny Rice:	The technology is just kind of getting less and less expensive as they kind of go on, so like personally I am, think it's just too expensive for me, I don't think it would be worth it. If it were $50 instead of a few hundred, then that might peak my interest enough.
Marion Archer:	Yeah, I've read about Google cardboard?
Danny Rice:	Yeah.
Marion Archer:	Yeah, which is basically like the cheapest possible headset for the visual part that you can get, and you just put your phone in there. I don't know how much that is, I tried to see but I didn't see, but ...
Danny Rice:	Think like $25. Seven? Okay.
Marion Archer:	Seven dollars?
Danny Rice:	Seven dollars.
Marion Archer:	Can you play that cat game on it?
Danny Rice:	You can.
Marion Archer:	Oh.

Danny Rice: Does that?

Marion Archer: Yeah, I am absolutely buying that as soon as we leave this room.

Danny Rice: There you go then, so okay. Anything else to add?

Marion Archer: Well, okay, so one anecdote that I have that I read when I was in college doing a paper about movies from the 50s and 60s. I read an anecdote from the, kind of the turn of the century when movie theaters just kind of became popular and people started going to see silent films and stuff. People weren't use to that kind of technology and a fly got in the projector, so these people were watching this movie and there was a giant fly projected onto the screen, and there was a stampede to get out because everybody was so terrified because there was a giant monster fly in the building. Because, they were so unused to the technology that it immersed them in this world and disoriented them and they thought that it was, anything could happen, so they didn't know what was real and what wasn't.

                     I feel like being desensitized to that kind of technology has made me not have that kind of reaction to virtual reality.

Danny Rice: Which makes sense.

Marion Archer: Yeah, and a little disappointing because I was kind of hoping to be like, "Oooh."

Danny Rice: You wanted it to be more disorienting?

Marion Archer: I did, yeah. I wanted it to blow my mind.

Danny Rice: I hear what you're saying though, yeah.

Marion Archer: Yeah.

Danny Rice: Marion found it to be an interesting experience, but it wasn't as life changing as she had originally expected. There's quite a bit more to VR than the simple demos and games that Marion tried though. We'll have more on that after our break.

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all manner of ebook for absolutely free and keep them on your e-reader device for either two or three weeks, your choice, pretty sweet, huh?

And now, back to Shelf Understanding.

Justin Lomelino and Rob Carroll have been friends pretty much forever. One of the main things that they've always bonded over is therir love of technology, and they're two of the most well versed people on the topic that I personally know. The fact that I work with them and I'm regularly treated to listen in on their conversation about emerging technologies is really just a perk.

If you've ever been at our library and had an issue with a computer or a piece of technology, chances are Justin was the one who showed up, fixed it in a few seconds, and then left as suddenly as he appeared.

Rob works the front desk regularly, and has actually been present for every single thing we've ever recorded for this podcast, including this. Hi Rob! As he has become our resident sound engineer. We just usually don't let him talk. This time though, we broke protocol and I sat down with Justin and Rob for a round table discussion about the future of virtual reality and where this technology is heading.

So, virtual reality is nothing new, I mean they've been trying to get it going in some capacity for a long time.

Rob Carroll: I remember very specifically getting headaches from the game boy, Virtual Boy they called it.

Justin Lomelino: Virtual Boy, yes, yes.

Rob Carroll: [crosstalk 00:21:19][inaudible 00:21:19] Toys R' Us in Alabama trying out the tester model, trying to play a Mario game and just walking away hating everything in my life.

Justin Lomelino: For anybody who hasn't played a virtual boy, it was a headset on a stand that you stuck your face into, the controller was connected to the headset so that you had to kind of hunch over to use it ...

Rob Carroll: It was uncomfortable in every way.

Justin Lomelino: Yes. The graphics were a black screen with red lines on it, and it actually gave a lot of people headaches with use.

Danny Rice: When was this?

Justin Lomelino: That would have been late 90s, 96, 97, somewhere in there, yeah.

Rob Carroll:	The best part is you can actually still get like emulators for it, so you can recreate the headache inducing experience of the virtual boy on your own personal computer now-
Danny Rice:	A dream come true.
Justin Lomelino:	Yes.
Rob Carroll:	With real recreative technology if you get your-
Justin Lomelino:	Yeah, right.
Danny Rice:	So, I guess, is technology the only, the advances in technology I should say, is that really the only reason why there's been kind a boom in, a return to the fascination with VR?
Justin Lomelino:	I actually kind of think it has more to do with a shift in thinking. I have a, one of the earlier attempts at VR, I have a 90s era VR headset. Basically the head tracking, all it was doing was replacing your mouse for looking around, so if the software didn't support the way your head was moving it wasn't natural, it didn't line up. It really didn't work at all. I think with modern cellphones and having them loaded up with accelerometers and all those sorts of things, there are a lot more folks out there who are a lot more familiar with programming to devices that can detect speed and detect changes on orientation and things like that. That's allowed these programmers to create this software that actually, you know, can respond to the way your head moves in real time.
	It's a combination of like the technology got fast enough to be able to make those changes very, very, very quickly, which is what you need for it to feel smooth. But also, there's a shift in thinking from this is a peripheral to the computer, to more being this is its own device that needs its own sensors and its own way of operating.
Danny Rice:	I see. Hmm. Now, the two of you are kind of more on the cutting edge of, you're more early adopters with technology. I'm still kind of hesitant about it. Virtual Reality for me, it's an interesting experience but I'm also kind of afraid of it. I think part of that has to do with, I don't, I don't like the fact that it makes me question ... it kind of gives me like an existential crisis of, you know, I'm doing the Google Earth thing floating in space and I just kind of ...
Rob Carroll:	You start to doubt your own sensorium because it's being-
Danny Rice:	Yeah, absolutely.
Rob Carroll:	Information is now being piped in from an outside source that you don't really feel any agency with it.

Danny Rice:	Yeah, now what would, I guess, what is your answer to my hesitation?
Justin Lomelino:	First before I go into that, I want to throw out I actually had an interesting experience with the library's headset, related to what you're talking about. The first VR headset that we had was an Oculus Rift developer kit, so it was prior to commercial release, it was very kind of grainy and glitchy compared to what we're using here today. However, the first time I used it, we got it in and I got it setup on the computer, I used it for maybe two or three hours and then lunchtime came. I took it off and went to lunch. I had the hardest time driving my car, because it was almost like my brain wasn't really connected to what my body was doing just after a couple hours.
	After using it a little more that sense has kind of gone away, I think I've adapted, but initially it was incredibly disorienting. The couple times we use this at the library, we actually give disclaimers to people, you know if you experience motion sickness, if you have heart issues, anything of this sort let us know immediately if you're having any problems and we'll get it off of you because, it's not uncommon. I do think there's some risks associated with this technology too, it's not as innocuous as your basic, you know, like a television would be or a game console or something. There's some implications to it that we don't normally have to consider with new technology if you ask me.
Danny Rice:	Such as?
Justin Lomelino:	Well for one, like how immersive it is, you know. If you're playing a game or watching television something like that, it's very easy to kind of disconnect and walk away. When you're in an environment where all of your sensory input is related to the entertainment, it's super easy to lose track of time. I could see this getting to a point to where a lot of people are basically addicted to playing with virtual reality, it's very compelling once you've used it. I could see that being a real issue.
Rob Carroll:	I don't think it's really a linear sort of acceleration of how people adjust to this kind of thing. Like Marion is talking about the movie theater and the fly in the projection being so freaky to people that they stampeded out. Well that was, you know, an initial sort of shocked reaction to what was a new technology then. Our own reactions to this kind of technology are likely to be much smaller, more contained, in that regard, but also a much greater disconnect from what we've already experienced because we're so used to sort of joining with our media. Like, you know, anybodies who's really gotten into a book has experienced putting the book down but not being able to leave behind the emotions that have affected them while reading this-
Danny Rice:	[crosstalk 00:27:02][inaudible 00:27:02] staying in the world of the story.
Rob Carroll:	You know, a well written story will have a character at some point be kind of a cipher for the reader to inject their own self into. Well, here's another aspect,

like a physical sensation for you to inject yourself into, and it's not super easy to pull everything back out that way.

I don't know if anybodies seen that video online, this was my favorite of the viral videos with them, but it's a guy trying virtual reality on a roller coaster like in a mall or something and right as he's crested the big rise and starts to go down, he tries to sit down the chair behind him and I'm hoping what must be his buddy pulls the chair away from him and he just flips out. Completely loses his stuff. Like, arms flailing, people are trying to grab and calm him down, he's like ripping the technology apart trying to get out of this experience, that again like it was personal. You know it's not causing mass panic in the streets, but he just went from being a regular dude in a mall wearing a piece of technology, to somebody who was seriously afraid for his life even if just for a moment that he's going to fall and, you know, be killed on this roller coaster.

Justin Lomelino: Yeah, it definitely, heights in virtual reality definitely feel real. I'm someone with a pretty intense fear of heights, even the demo that came with that first Oculus headset that we had had a portion where it had you drop the equivalent of maybe 50 feet. Every time my stomach would drop, I'd get sweaty palms, I mean it really felt very real. I think that's one of the interesting things about this, too.

So far so many people are using this platform to try to convey experiences, you know, put you at a place that you weren't at or give you a role that you weren't able to have. Like, there's a really cool game out there right now called Cat-Lateral Damage, where you're a cat, you see everything from the cats' perspective, and your goal is to just destroy the house. I mean obviously we're not cats, we can never experience what that's like, but I wonder as we have people try these experiences that are not only way outside of their norm, but outside of anything they could possibly experience in reality, how that's going to affect our psyches and the way that we think about the world and how we want to interact with it itself.

At some point, is virtual reality and these sort of alternative experiences going to be something that's more compelling for some people than their day-to-day mundane life going to work, coming home. I think there's a real risk that it will be. That could be pretty bad, it really could. A lot of people could just kind of check out.

Danny Rice: Yes.

Rob Carroll: [crosstalk 00:29:41][inaudible 00:29:41] you're talking about kind of the work of William Gibson, which I know you have read as have I, where he was considered the father of cyber punk, which is not a genre you really see a lot anymore. But, in his world, which at that point in the 80s he was writing about this era, basically, we're in right now, where people do carry around laptop personal computer devices like we do now and jack in to his kind of early idea of what the

internet would be like, and that's where they live. A lot of times characters in his stories follow this sort of Japanese paradigm of having a living space that in some cases in his stories is literally just big enough for the persons body and a few personal effects. They live their life out completely in this sort of digital realm.

Danny Rice: Or like Ready Player One to some extent.

Rob Carroll: Correct.

Danny Rice: Which, I don't know if it explored the concept quite as deeply as that, but basically you're online presence becomes more important and more kind of impactful than your actual physical presence.

Justin Lomelino: One of the things that I thinks really interesting about VR is its one of the technologies that we've seen actually led by fiction than by technical achievements. You know, a lot of what we've seen come into the VR world have been things that have been talked about by Science Fiction writers for decades. The technology didn't dictate that this is the direction we would go with it, it's more that people wanted VR and kept trying it until they found a way to make it actually viable and workable. But, this sort of experience is something that we as a society have been trying to talk about for decades and really haven't come to any conclusions about.

Danny Rice: Well, and that kind of leads into the, right now we've kind of been talking about virtual reality as a media for entertainment, but tell me a little bit more about ... I know we've talked about this before but, tell me a little bit about some of the non-entertainment aspects, and some of the value that virtual reality could have here.

Justin Lomelino: Well, it's related to what I was saying earlier. You can put people into experiences that they aren't used to having. You can take somebody, who for example has a fear of heights like myself, and do aversion therapy where they would experience a drop, 10,000, 100,000 times until your brain kind of just disconnects and gives up on that.

Danny Rice: Gets used to the terror.

Justin Lomelino: Yeah, exactly. I mean, this is proven science, we already do this, this just gives us a platform to do that with a lot more things. On top of that you have various training applications, you know, with virtual reality you can teach somebody how to do something without them having to be there. There are quite a few professions that have a certain element of risk, particularly when you're training and learning how to do it right. Virtual reality gives you the ability to completely remove the risk and put people into a scenario that feels very real, and can even induce sort of physical reactions to what you're going through, but is actually risk free.

	Like diffusing a bomb, or like surgery.
Danny Rice:	Yeah, absolutely.
Rob Carroll:	That stomach dropping feeling that Justin was saying that he gets, that, when you experience it in real life, is actually your organs floating around inside the cavity of your body. The fact that your brain can recreate that just based on a visual experience ...
Danny Rice:	Ah, that's crazy.
Rob Carroll:	... is like, the interconnectedness of our bodies and our minds is amazing. But to, sorry to kind of hijack this, I was watching you and Marion do this and this is my own nerd-dom, but kind of from an ontological standpoint I think that this whole experience, regardless of how you use this as a medium what your experience is, is forcing us to kind of reconsider what we know about how to communicate in general.
	I mean here's Marion or you looking at a box with things on it, and you're trying to use words that you've never used in that fashion to describe things that are really every day stuff. Buttons, symbols, patterns. And, there's a huge disconnect there too, between the speaker and the listener because they don't have the shared experience to build off of. Even when they do you know, when you and Marion switched you had both experienced both sides of it, then it was still a little bit easier to talk about now that you had the shared experience, but you didn't have the shared vocabulary.
	I think that's what's going to continue to be really interesting about this, because now people once, you know, they have some design experience and people are making their own apps for this stuff, kind of the home brew thing comes along. You know, people make their own websites now as whereas 10 years ago it was still kind of a specialized field. People are going to be able to start codifying their own very personal experiences and relating those to other people in a much more different sense than we've ever experienced before. I think again writing is one of the best ways that we've had to do this. I think Neil Stevenson is a great example of a writer that really draws people into a world that seems at once familiar and yet different. This is going to be a whole new way to get people to talk about the idea of communication.
Justin Lomelino:	There a couple of things that I want to add on to what Rob is saying here. One of the interesting challenges for the VR developers this time around is learning how to interact with the world. Some developers, like the developers of Keep Talking Nobody Explodes have decided to essentially take that interaction outside of the virtual reality space, where you're talking person to person and you're using a paper manual. But there's still, to this day, quite a big discussion on very basic things for simulation software.

For example, what is the proper way to move around virtual reality? If you don't have the ability to walk around the space, if your headset doesn't support that, which some do, but if you don't there's a real major disconnect from having the intention of, "Oh, I'd like to be over there and check the stuff out." And, actually being able to do it. The things the developers have found is even these really simple actions as they try to implement them they don't work. People don't expect them to work that they would have programmed it in the past, so they're being forced to rethink the interface between a person and the technology and what that means.

I think with what Rob is saying with communication that goes right along with it. One of the so called killer apps for this platform that's been touted since we've seen this VR revival kind of come back, is the idea of an avatar chat program where you select some sort of virtual character and you're in a room with other people and you're able to talk to them. Nobody to this day has been able to do that well. Nobody has. There have been multiple attempts and the thing they run into is that there's too much of a disconnect between your intention and what you're actually able to do.

If I walk to another part of the room, should my friends voice sound different because he's in a different part of the space? These are considerations that we didn't have in the past with technology that we're now being forced to face as our technology becomes like closer and closer to this is what real life is like, this is how this experience is. It's forcing these people to reexamine their basic approach to you know, how do we simulate the world, how do we create spaces that feel natural to people and that react in the way you would expect them to, and not in a way that's video gamey or computery or whatever.

Danny Rice: Right.

Rob Carroll: People are still amazed as am I even when you play a game like, I guess, Battlefield 1 is a great example of that. Not only with how realistic the world can look, even though it's generated by a computer, but how well the physics engine mirrors actual physics that you would expect. That's usually from a controller, static screen in front of you sort of way where you are aware that you're injecting yourself in this small fashion into the situation. When it's being thrust upon you in a virtual reality scenario like that, I think again we are facing sort of an exponential jump in the difficulty of figuring out how to do that, because there's so many different things that you've got to realize with ... it's taken us this long just to get an accurate mirroring of physics going on from an outside perspective. From an inside, it's a whole new ball game.

Justin Lomelino: I think there are real consequences, potentially, to putting people into these sorts of experiences, too. When the movie Saving Private Ryan came out it was very popular, a lot of World War 2 vets went to see it. Universally their reaction to it was, it was too real, that the opening scenes of the movie were causing

grief and flashbacks and things of that sort for these people that went through it.

I think as we create more and more real experiences things that have this concept they use in VR, which is presence, the sense that it's there and you can reach out and touch it, which is not something you have with a traditional flat monitor. We're going to put people into situations where we may have problems like that.

For example, if you take a former soldier and put them into a video game about war, you know, playing that with a controller and a flat screen, not really that big of a deal. A lot of people handle that fine. But, what about when you feel like you're there? Are these people going to have issues with PTSD and things of that sort, it's a real possibility.

Danny Rice: Well, it's all fun and games when it's a guy in a mall, you know, on a roller coaster on a virtual roller coaster. But, what if it is a life and death situation for someone who has lived through life and death situations.

Rob Carroll: I did just see a video on Reddit of course of what looked to me like the very first real good adaptation of a first person shooter in VR, where like somebodies got their hands around a submachine gun and they're rounding a corner trying to pick off an enemy unit. Like, that looked real.

Justin Lomelino: Well, this has been an issue in the video game industry for a while too, at what point do you draw the line and say this is too real, that we're encouraging people to pick up this kind of behavior. When I'm playing with a controller it's very clear that I'm not the guy carrying the gun, but if I'm in a virtual reality simulation where I feel like I'm holding it, and I feel like I'm targeting other people when I feel like I'm pulling the trigger, is that rewiring me to be more okay with those kinds of actions? It's unclear.

That's the ultimate battle with technology nowadays, it moves so quickly and there's so many different fronts on which we're seeing new developments that society as a whole isn't able to step back and have these conversations about, do we believe this is worthwhile, is this good, are there behaviors that we need to watch for or disclaimers we need to put in place? None of that's there. The approach now is throw it out there and let's see.

Rob Carroll: Yeah, see what sticks.

Justin Lomelino: This is not the only field where that's the case. That being said, I do think VR is a really valuable technology. I think it's going to make a difference particularly with, like I was saying earlier, the training things, the psychology things, places where-

Rob Carroll: Education.

Justin Lomelino:	Education is a wonderful one. Where you want to put people into places where they haven't been before. But, I do think that our society ... or, excuse me, the conversation about this that our society is having is going to happen after the fact. The damage will be done and then we'll step back and say, "Do we like this, do we want this in our lives, is this really an improvement."
Danny Rice:	That being said, what's kind of on the horizon, what are the?
Justin Lomelino:	Well, so that's a, getting pretty crazy. There's already companies that are working on things. There's a, what are they called, omni-directional treadmill. The idea on this is you use a VR headset and you use one of these, and you can walk in any direction and the VR simulation responds to your walking. You're not moving around the room, you don't need the big space, but it's like you are or you feel like you are. I think as the technology advances we'll see the normal technology advances we always do in everything, like higher resolution, lower response times, it'll feel smoother. More alive maybe as the lighting technology and whatnot gets better. I think the real advance is bringing it closer to real life, we're adding things like haptic feedback gloves, where when you're wearing those if you reach out and grab something in the simulation, the gloves actually push on your fingers in the same place you would feel pressure if you were grabbing the objects. You get a real sense of the object is there, without it existing at all.
Rob Carroll:	Think about that in terms of training for surgery rather than in something like a game, like you could get a realistic idea of how it feels to cut into this particular area of a body.
Justin Lomelino:	Am I doing well? You get that kind of sensory feedback.
Danny Rice:	What's the worse thing that could happen, right? Sure.
Justin Lomelino:	Well, and I think that's, as we approach these more real experiences we're going to find that the urgency of that conversation is going to increase, because there are going to be moral implications along with that, too. Once you have the ability to simulate an entirely new reality, you have to talk about what kind of realities do we think it's appropriate to simulate, because right now the sky's the limit. If you can set down and code it, you can create that experience. As that becomes more and more real that's kind of terrifying to me, honestly.
Danny Rice:	Personally, I'm still a little skeptical about VR. But, the aspect of it that I find most appealing are those of the educational and training nature. Using a powerful tool like VR to gain new knowledge certainly seems to me to be the best application, but I have to hesitantly admit that the entertainment value is also extraordinarily high. Again, the real appeal of VR for me is that it can have you experience the world in ways that you otherwise wouldn't be able to. Or, at least to experience things without the associated risk. This can be a double edged sword, though.

Once again, dear listener, I leave it to you to decide for yourself.

Well, that's all the time we have this month for Shelf Understanding. I hope you enjoyed listening. If you did, please help us spread the word, tell your friends, subscribe, and watch for future episodes. As always, if you did not enjoy, please keep it to yourself. Thanks again for listening to Shelf Understanding.

Music from today's episode comes from the Colfax album Tape, and the songs were Keep It Together, I Like That Sound, and Celica. Acquired from magnatune.com. Magnatune, we are not evil.

How did we do?

☆☆☆☆☆

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