Day 2, April 18, 2015: Morning Session - 9:45-11:15 a.m.

The Arrival of Virtual-Reality Journalism:
Using Immersive 3D Devices for Experiential Storytelling

Chair & Presenter: Robert Hernandez, Associate Professor of Professional Practice, **Annenberg School for Communication and Journalism at USC**

Panelists:
- **Nonny de la Pena,** Fellow at **USC School of Cinematic Arts;** Founder of Immersive Journalism VR Company, **Emblematic Group**
- **Taylor Owen,** Assistant Professor of Digital Media and Global Affairs, **University of British Columbia, Canada**
- **Ray Soto,** 3D Creative Lead for VR Product, **Gannett**

Nonny de la Pena: Thanks, guys. This looks good. I understand there might be a problem with the audio with the movie, so if there is, give me one second to pause, because I really, really need audio. Some of these pieces are things you might have seen. I've talked a lot of place now, and so I've pulled some of them and got some new stuff as well. But I sort of launch right in into kind of the crazy experimentation I've been doing over the years. Let's see if we get this to work. Come on. Turn up audio? There we go.

[Video plays. Note: The man talking to Nonny de la Pena repeats everything he says in Spanish. Only the English is transcribed here.]

> *Man: Nice to meet you.*
>
> *Nonny de la Pena: Yes. Welcome to Los Angeles, California.*
>
> *Man: Welcome to Barcelona. I don't know, Nonny, if I could ask you to raise your arms. Keep them up, because now we'll show the robot. Can you move them a little bit more? Up and down? Nonny, I'm ready to interview you now for a few minutes. You're a journalist. You just interviewed a researcher from Barcelona, but in the body of a robot. What was that experience like?*
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> *Nonny de la Pena: So for me, it starts to feel very natural after a while. Occasionally, there's some problems with the -- with the arm fit. Maybe I moved too fast. But beyond that, very quickly, I'm there in Barcelona with you.*

[End of video.]

Nonny de la Pena: So, how did I end up in two places at once? It really comes down to this whole sort of feelings of how we have a digital representation of our-self. Anybody here remember A Rape in Cyberspace? So, this is a really classic story about a text-based virtual world in which a guy hacked in and started raping the women in the space, and the women were reporting feeling extremely violated. Like, why would even their text-based selves feel this strongly about their bodies? It's because you can have a real sense of presence in these places. Researchers, Mel and Maria call it RAIR, Response As If Real.

So, I like to show this slide, because this guy, he's wearing these goggles, right? And they feed into this video camera. So, he's seeing everything this way. So, he's seeing himself from behind. And yet, they brought a hammer down over here in front of the video camera, and he jumped. Because our embodiment is so much about where we see ourselves to be, as it turns out.

And so even in that robot, I mean, I'm driving the robot, but really, it's about the face that I'm seeing the space through the eyes of this robot, and pretty soon, my body starts to feel like that is where I am. And these are the kind of sensations I've been experimenting with in VR for a while and starting to become quite successful.

So, this feeling of being, it's hard-wired in our brains, obviously. So, I started taking this stuff and calling it immersive journalism. And basically, I've been utilizing gaming platforms. And obviously, 360 video in the last year has gotten very strong as well to convey news documentary stories. Basically, you put the audience at a virtual reconstruction of the scene. You use visual and audio material from, you know, your traditional, boots-on-the-ground journalism that you would in anything. Anywhere, in any piece that I make…. Hunger in L.A.—we spent hours recording audio at foodbanks till we got the right piece. Every single piece, I use…. I was a correspondent for Newsweek. I made many documentary films. I've had the top ten most email pieces for *The New York Times*. I have done legacy media. And I'm bringing those best practices into this space.

And then, you know, the sense of presence that I was describing. The sense of embodiment and presence that is so unique to VR is what can make people feel like they are experiencing being on the ground as the story unfolds. Essentially, this is not really a new idea. I love this Walter Cronkite video that I'm going to show you in a second. And Martha Gellhorn, who was a World War II reporter, she called it *the view from the ground*. And isn't that what we're trying to do in journalism? And Walter Cronkite's wonderful series, You Are There.

[Video plays.]

> ***Walter Cronkite:*** *The Mexican province of Texas is not a part of the United States; although, it has been populated by a steady stream of Americans. These* Texians*, as they are called, are Mexican citizens. Their province is part of the Mexican nation, but their difficulties with the central government have steadily increased. Now, there is open rebellion.*

> ***Man:*** *March 5, 1836: The Siege of the Alamo. You are there.*

[End of video.]

Right. So that's it, right? Isn't that what we're trying to do with journalists? You know, put you there, right? So, one of the earliest pieces I made, I had done a documentary film, which included a long segment on Gitmo and the Guantanamo Bay prison. I had a lot of Freedom of Information Act material. And [I] ended up with a grant from the MacArthur Foundation, and they are a video coalition, to create a virtual Gitmo. And of course, this was a virtual space, but accessible, right?

And that was extraordinary, because we had this piece up in Second Life and suddenly we'd show up and there would be a class from Canada walking around teaching their students about Gitmo in a way that you couldn't learn otherwise. Not only that, we put a lot of video in there that would trigger when you'd walk through. That ultimately was pulled by the Department of Defense, because there was such an outcry over this footage, so we kind of also became like a little repository of the material within Gitmo about Gitmo in this very funny way.

And again, we really tried to stick to our…. I interviewed soldiers. I interviewed former detainees. And we tried very carefully to stick with good journalist practice. This video was one that was -- photograph was smuggled out by a soldier. This is how we would put you in the space. Again, I roll video so you get some idea of what went on in there.

[Video plays.]

> ***Man:*** *As soon as I had put on my orange jumpsuit, I was thrown into the back of a C-17 transport plane and….*

> ***Nonny de la Pena:*** *You're immediately bound and then a black hood comes over the vision of your avatar. We then integrated some sounds that were based on descriptions of what real detainees heard. When the black hood is removed, you find that you're in a cage. Most of the footage is from original Defense Department of detainees at Guantanamo Bay.*

> ***Man:*** *A replica of Camp Delta will be added to this camp x-ray soon. Nonny wants it to include a habeas corpus game enhancing the simulation of a place outside of the law.*
>
> ***Nonny de la Pena:*** *Like a regular videogame where you get your choices. What do you do now? Call your parents? Call your lawyer? Ask what you're in here for? And the answers are, "No, you can't call your parents. No, you can't call your lawyer. Sorry, not allowed to give you that information.*

[End of video.]

So then, we had all this information about stress positions, right? Remember that, you know, enhanced interrogation term and how that kind of shifted to torture? Well, with a lab in Barcelona, we're looking at, you know, how do you report on that? What does it mean? And we decided to couple a particular log that the Bush Administration said Al Qahtani had been tortured—no doubt, nobody is going to argue—and used that to create an immersive VR piece.

[Video starts.] So this, by the way, if you look at these, these are the… [video stops] Whoops, sorry.

[Video starts.]

Man: *We are going to put on this head-mounted display.*

Nonny de la Pena: This predates the oculus rift. These were called the wide five. And when I was making the pieces, this was all there was at the time—$50,000 goggles.

[Video continues.]

Nonny de la Pena: So, if you see, he's kind of breathing, moving, it's because—I'll show you in a minute—the breathing strap. When you're in this space, you're wearing a breathing strap, so the avatar is breathing at the same time as you are to help create that sense of your body being in the space. You know, you look down and your knees are up. [Garbled voice; unintelligible.] You're hearing that audio and we had an actor read it. [Video stops.] And it was actually, the log said, "Oh, sit down, stand up," three times. And we had the actor yell, "Sit down! Stand up!" That was the only change that we made in trying to experiment with this. So, we stayed as ethically to the script as possible.

But just to show you that everybody was sitting…. Afterwards, we asked people what was their body like. And they were sitting upright in this chair. Whoop. I keep hitting the wrong button. I'm sorry. There we go. That's the breathing strap. And everybody is just sitting upright in the chair. But we

asked them, "What was your body like?" And everybody reported being hunched over in a stressed position even though they were not. So like, they are seeing themselves in a mirror, and they're taking on this body. Like, crazy, crazy, crazy, right? And for us, it was like, what are the ethical implications of doing something like this?

You know, what does it mean when I have editorial control and can put people in a subjective experience? [Video plays. Unintelligible.] This video came out after we made our piece. And I think that nobody knew what it looked like in those rooms at the time. But I think we actually hit a pretty good balance. [Man on video shouting repeatedly in foreign language.] So he goes, "Stand up. Stand up. Sit down. Stand up. Sit down." OK.

Then Hunger in L.A., which Robert will tell you that we were working on together. And it was a really…. You know, it's funny. I would call this a traditional journalistic piece now. I can't believe I keep saying that, because it's on the web, it's got video, it's got text, it's got audio, but that's what the web is good at, right? So at this point, that, to me, is a more -- we've achieved that kind of level.

And I went with…. I actually had an intern, and we were hanging out at foodbanks to try and capture like a moment, what it's like to be standing in line when people are hungry. And I actually thought I wanted to make a piece about, what was it like? A lot of families, right? So, what is it like for a mother standing at the front of the line and then the food runs out? What does she say to her kids? But what I was finding in the audios we were recording was that people were actually kind of lowering their head in depression and not say anything. They were so down. So then, my intern came back and she recorded this crazy day. And she was here at this long line. And there was a guy in the line who had diabetes, and he did not get food in time, and his blood sugar dropped too low, and he collapsed into a coma.

[Video plays.]

> **Woman:** *There's too many people. There's too many people!*

And the woman [is] overwhelmed. There's too many people**.**

> **Woman:** *All right. Somebody just fall down?*

> **Man:** *[Inaudible.]*

> **Woman:** *Hey.*

> **Woman:** *OK. He's having a seizure.*

> **Woman:** *[Unintelligible.]*

> **Woman:** *Anybody in Texas?*
>
> **Woman:** *Yeah, I know.*
>
> **Woman:** *Somebody collapsed now.*

For him, the body is real, right? You can be very careful not to walk around the body. [video continues with unintelligible voices] Takes on this whole….

> **Woman:** *I'm glad somebody is....*
>
> **Woman:** *Yeah, yeah. Please. Please.*
>
> **Woman:** *And somebody is calling them right now.*
>
> **Man:** *Oh, my God!*
>
> **Man:** *What do you have here?*
>
> **Woman:** *Uh….*
>
> **Man:** *[unintelligible]*

So, that gives you the idea. You know, with multiple people who would feel that the body was there in front of them with incredible reactions. Sorry. Virginia Heffernan from *The New York Times*, by the way, in 2012 at Sundance, where we took this piece. [Video plays.] And then it's Regina Rodriguez, the actress. This is her the opening night of Sundance in 2012.

> **Nonny de la Pena:** *What did you think? Oh, you're crying! You're crying! Gina, you're crying! Oh…*

So you can hear me. I was really surprised that I was making people cry in these pieces. And in 2012, this is when Palmer was at UFC, and Palmer was like my intern there, right? He crashed in my hotel room. He drove the truck across. There were a bunch of people trying to make goggles, because we couldn't take that $50,000 pair with us to Sundance. We had to have some sort of solution that could be put on and off heads and be durable. And everybody kind of pitched in. These are the goggles. I don't know if you can see [or] how well you can see them. They're quite duct taped. But right here, you can see Palmer Lucky, a billionaire, the guy who was kind enough to get my boots from the car. Now, I'm still making immersive journalism and he's the billionaire! But anyway, moving on.

This piece, Use of Force, tells a story about a guy who was in this country. Brought in as a young teenager by his parents. Never been in trouble with the law. I think it was like 27 years later. No record whatsoever. During the

downturn, he had been working in labor, painting, fixing pools. It was Mother's Day. He got busted for stealing a bottle of Tequila and a steak, presumably for his wife. [He] was deported. [He] had five young kids. He tried to sneak back in. And a border patrol officer roughed him up. He'd been here long enough that he complained to the supervisor. You know, he had rights! No, he didn't have rights. What happened instead was the supervisor let him be taken to a dark pen by that very same officer, and the result was really brutal. [Video plays.] More than a dozen officers got involved in beating and tazing him to death. [man groaning] Now, once again, this would have gone unnoticed had it not been for two videos that surfaced two years later. And some of you might know John Carl's work in this investigation from Need to Know. John helped me assemble material for this. And when we finished the piece, we actually took it to BuzzFeed. [video stops] And I'll show you the BuzzFeed video that they made of this. Give you a better idea of what we've been doing.

[Video plays.]

> ***Woman:*** *I don't even know what these are. I guess cameras?*
>
> ***Woman:*** *Looks like somebody is going to shock me.*
>
> ***Man:*** *That guy is holding a light saber back there.*
>
> ***Man:*** *I think virtual reality really is like the next big thing. I think it's the new videogame, for whatever that means.*
>
> ***Woman:*** *It's so weird. There's like all these people, and I'm like, what is about to happen?*
>
> ***Woman:*** *How does this look with my hair? Pretty good, right?*
>
> ***Man:*** *Oh, got it. Whoa!*
>
> ***Woman:*** *This is going to simulate a cell phone, so it's going to be when you press this button here –*
>
> ***Woman:*** *Yeah.*
>
> ***Woman:*** *-- and you hold it up in front of you, a cell phone will appear and you'll have 60 seconds to record whatever you want until -- before you battery dies.*
>
> ***Man:*** *Oh, I see. Oh, my God! That's even crazier!*
>
> ***Woman:*** *All right. So, there's a bunch of cops here. They're like standing around. Something's going on.*

Man: *Oh, right here! That's not cool.*

Woman: *On the other side of a fence, there's all these -- people are just like kicking and beating this man and he's screaming.*

[Horn sounds; man groans, screams.]

Woman: *Look at this. And nobody is doing anything about it. Of course, nobody's doing anything about it, right?! Of course. Because that's what people do—they just watch. It's kind of messed up.*

Man: *Oh, here we go.*

[Horn sounds, man groans, screams.]

Woman: *I couldn't tell before, but I think he's handcuffed.*

Man: *I'm looking above. I'm seeing the horror.*

Woman: *Hey! We're recording you!*

Man: *Already not moving, but there's like five dudes beating him.*

Woman: *Same thing. These are not stopping.*

Woman: *I don't know. I mean, I just -- I can't believe that that, like, is real.*

Man: *I did not expect a recreation of a real-life beating.*

Man: *I thought it was going to be some sort of possibly some, you know, entertaining game. That was -- that was not the case.*

Man: *You feel kind of like helpless and isolated.*

Woman: *Hopefully, in that situation, you actually would be able to like somehow stop it, but I do think like the next best thing is recording it.*

Woman: *I wonder what I would really do. Like, what…. I know you'd want to say stuff. It's okay to say stuff, but it's like you -- I don't have the power to go and arrest the police. Maybe that's problematic.*

> ***Woman:*** *I think when you see something like that, you're like, "Wow, that was horrible!" But at least, like, the one comfort that I had is like the United States justice system will do something about it, and like people that do bad things get punished for that. And then, like, what we've been seeing the past few weeks is, like, sometimes that doesn't happen.*
>
> ***Woman:*** *The thing that was really disorienting is that it wasn't one cop doing it and his partner, it was all these other cops sort of standing around and watching.*
>
> ***Woman:*** *I think every police officer in the United States probably needs to experience what I just experienced.*
>
> ***Man:*** *I think everyone should give this a shot. And it should not only be for entertainment. I think there should be a whole universe of stuff that we can use this for. And this is definitely something I didn't consider at all, and it's really effective.*

[End of video.]

So, what's amazing about that video, it's gotten nearly 600,000 views now. And there's many, many, many comments, and they are not necessarily discussing the VR. They're discussing issues of race in America. And that's kind of extraordinary. I mean, that's, right now, in some ways, this is a bit of a bridge for the high-end thing, that you have to make a video to give access to larger audiences, right? But moving on to mobile, things are moving fast in that direction too.

And just a couple of other notes technically [that] I think you might find interesting. This is the woman who recorded the audio from above. And I brought her into the lab. I don't know if some of you might have seen the way that President Obama was scanned. I used the same technology, and I scanned her, and I motion captured her, and I put her in as herself. So instead of me filming her and having her be the witness say to me, "Oh, I did this, and then I did that," I actually had her reenact her own experience of the night through her body as much as through her words.

Finally…. Oh, not quite finally. Two more quick parts to tell you about. Project Syria we commissioned about a year-and-a-half ago now, a little longer. [It was] part of the World Economic Forum. A quick trailer to show you what it's like.

[Video plays of a young girl singing as a bomb explodes. No other audio.]

That video ended with the bombing. I had to go and find a bunch of videos, you know, that people had shot—photographs, videos—after the aftermath. And it was extraordinary to be going through these incredible videos in Syria.

There would be like 75 views or 375 views. We had to very carefully match it all. And I did also send a team for the second half. Some of you may have seen this. It's up here. It's upstairs. We're showing it here. I sent a team to the border of Syria and Iraq where Isis is so powerful now—I wouldn't have done that—to record brand new material for the piece as well.

This is Peter Gabriel in the piece at the World Economic Forum, and John McCain, some world leaders, [and[Assyrians. And then what was interesting is we took it to the Victorian Albert Museum. They didn't tell people who were coming into the room what -- you know, there was no advertising or anything about the piece. But there 54 pages of guestbook notes. And the curators told us they'd never seen such an outpouring of commentary on any of their installations.

So, we did some sports. We did this really fun Formula One piece where I actually again used documentary footage to inform various things that happened, including the way that the drivers had unionized to make their cars safer. (Oh, went too far, sorry.) This is a kid in it. And again, just to sort of show you what it's like for people when they're first kind of going….

[Video plays.]

> *Girl: Whoa.*

How embodied it is. How much these things feel real to them.

> *Nonny de la Pena: [Inaudible. Talking to the girl.]*

> *Girl: This is so cool!*

[Video ends.]

So cool, right? That's it. That's your thing. Last thing, we also have upstairs. We just decided to do…. I wanted to push my team to see how fast we could make something. And the Treyvon Martin case seemed to me a really still very relevant and important piece. And we decided to take the audio from the 911 tape and let that inform our build. I mean, you certainly don't see what happened between George and Treyvon at that fatal moment, but my team built it in under two weeks, to give you an idea. We *can* hit a new cycle. I think some people here might have tried it with the Gear VR on. Again, we have that upstairs.

But just so you know, the forensic house that helped us clean up the audio, they claim and assert and said they would have testified that they can hear George cocking his gun when he got out of the car. So, that's kind of an interesting bit of information with the piece.

So, we're trying to actually break some news elements while we're making these virtual reality pieces. So, there's really all kinds of interesting nuances in how to make these pieces. And that's on the Gear VR and on Google Cardboard. When you get your Google Cardboard, you can search Emblematic Group on Google Play, and you can download it and check it out for yourself as well.

OK. That's it. Thank you very much.

[Applause.]

Taylor Owen: Thanks. So, I just want to talk a little about this one project we have been working on. I mean, Nonny's been working on this for decades now. And for me, as a total novice in this space, it's really sort of a research project about an emerging technology [and] trying to immerse myself and our team into a group of people who are deploying a technology inside a newsroom. So, that's sort of the methodology we're coming at this with.

So, it's a partnership between the Tow Center and Frontline PBS and a production company called Secret Location. So, one of the methodologies we sort of developed at the Tow Center is, is there utility -- or we think there's utility in bringing together technologists who are developing new technologies, journalistic institutions or journalists who might want to deploy those new technologies, and then embedding researchers in that process to kind of watch and document how that's happening, and to ground that in a bigger journalistic conversation.

So, that's what we've been trying to do. And I guess one of the framings and I guess why I think Virtual Reality is interesting journalistically or why we should be talking about it journalistically is because, yes, this technology is moving forward at this breakneck pace. There's huge amounts of money going into it [and] there's all these new hardware extensions coming out, but almost all of it is being driven by the cinematic and gaming industries. And so, there's huge amounts of money going in it, but it's for very particular purposes, and it's by groups of people with very particular incentive structures, very particular production cycles, budget lines, right, that are often very different than a journalistic context.

And I think we need to think about what it means to bring those technologies into journalism and to ground those conversations in a journalistic conversation. And if you do that, there's sort of three big questions that I think come out of this that we've been sort of trying to tease out in this project.

I mean, one is, at what points do the new technologies engage in the journalistic process? And in VR, it actually is like all the way through the journalistic process, which makes it kind of interesting. So, right from the capture stage, it's new cameras. The editing stage—stitching stage—is totally

different and requires new technologies. The post-production stage of add interactivities [is] totally different. And then the broadcast stage requires new hardware. So, in all of these stages, something different is happening. And I think we need to sort of understand what that means along that track.

The second is, what does this mean for journalistic form and for narrative form? What does it mean for the positionality of the journalist when you're immersing a user in the perspective of the camera? And I don't think we've fulling come to grasp with that. And similarly, what does this mean for how we represent the lives and experiences of others? Journalism is always about representing others and bringing people as close as possible to the experiences and lives and events.

And does this bring us closer? I mean, it *feels* like you're closer, but it's still an active representation. So Nonny's projects are an act of representation in CGI. Some live motion projects, which I'll talk a bit about, make you feel like you're there. I mean, you're in video. You're seeing this world around you, but there's very distinct acts of representation that occur to bring you to that point. And I think we need to understand those.

So, the goals of this project then—so, this partnership—were to investigate and document this whole process of doing a live motion VR documentary [and] to better understand how this fits within the non-fiction, journalistic storytelling process. From Frontline's perspective, it was really to produce a good piece of journalism that sits alongside a documentary they were already doing. So, what's the added value of immersing someone in addition to the documentary they were doing? And then to just provide a little bit of critical reflection on this whole process. Does it work? What works and what doesn't? How does this fit within broader journalistic conversations?

So, when we started this six months ago, there weren't really any production 3D and 360 video cameras. That's a distinction that is important here. there's been 360 cameras for a long time, but to get depth of field, they also need to be stereoscopic, and that's a relatively new thing. So, there's a couple of cameras that are supposedly in production that will be coming out soon, but they are not [out now].

So we built this, and it's 14 GoPros in seven pairs to get stereoscopic footage. This is the kit. This is Dan Edge, who's a documentary maker for Frontline. And this is the kit. So, it's not like -- it's not really mobile, right? There's a fair amount of production that has to go into this.

So, the first step was the story process, right? So, what kind of story is good for this sort of thing? And the amazing thing about being with Frontline is they obviously have dozens of stories in production. And we got to talk and be a part of these conversations about, "Well, which ones would actually be good to immerse yourself in?" And we had a lot of fits and starts here. There were some….

At one point, we were going to be a part of a documentary that has now come out called Being Mortal by Atul Gawande, who some of you know, I'm sure. And part of his documentary was to document end-of-life conversations happening in hospitals between doctors and patients and families. I mean, It's like the most deeply emotional possible moment of people's lives. And he was sitting in on these end-of-life conversations and filming it in 2D. But the camera could be very removed and non-intrusive. And when we really thought through this process of what it would mean to put this sort of cyborg-like camera in the middle of that context and then to put a user in between these people in this conversation, it just didn't feel right journalistically or ethically or for a host of reasons, so we didn't do it, right?

But where we ended up is on a story that Dan Edge was producing on the Ebola outbreak in West Africa. And the points in which we decided to build an immersive narrative are sort of three quite human moments that existed in the early stages of the Ebola outbreak. One is at the location of a tree, where researchers think the virus was transmitted for the first time to patient zero. The village in which patient zero lived in which it was spread to a broader community. And then a field hospital, a regional field hospital where a whole host of human mistakes were made and it spread to a much wider context. So, we wanted to take people to those three different points in space.

This is Dan in Guinea with the camera at the tree, and this is him in the village. So, you can see it's still a very prototype camera. There's a lot of moving pieces. You literally have to get the 14 cameras running all at once off their own video cards. That below is a 360 audio mike that has to run independently. It has all these battery packs to power all the GoPros, right? So, there's a lot of moving pieces that have to come into play. It just is a whole other conversation, which causes a lot of problems.

So, some of the things we found, some of the conclusions from this so far…. And this is the first time I've really talked about this, so we're still really in the process of digesting what we're going to get from this, but here are just some initial stuff. One is there is no doubt that there's an incredibly powerful effect of immersion in live motion VR. There's one scene Dan shot where you're in the village and a little boy runs by you. It doesn't seem like anything, but almost everybody who's tried it, at the end, says, "Wow! It's amazing! It was amazing when that boy ran by *me*." And that's kind of an interesting moment, right? They are saying, "me," and that means something if you're making a claim that this is journalistic.

Second, this is really important editorially to shoot and think about the editorial process distinctly for VR. We ended up not doing that, in the sense that we had the filmmaker who is making the 2D documentary also going out and shooting and imagining the 2D VR. And I think you run into some challenges there.

Second is that it's incredibly—or third—incredibly difficult to tell a linear editorial or an editorial linear narrative in VR with multiple scenes, because it's really jarring to be in one place and then instantly be dropped in another place. And that's a problem. In most journalistic storytelling, we can see that. It tends to be linear. We want to take someone through a narrative or through a story, and that's really hard in VR. So, one of the things we really worked on are what we call these interstitial menus, which are essentially places in between scenes of immersion that either give you context or allow you to choose where you want to go or just ground you essentially in the overarching story rather than the depth of one individual scene. And we found those were really important.

And related to those, we're adding interactivity into the live motion video environment. And this is important, because, again, like, if you're just standing there looking around, there's a limit to how much context and information you can be shown. And so we did things like put floating 2D video screens inside the 3D environment and allowed you to pause it and navigate with your eye movements and all these kinds of things. All those sort of interactivity. There's ideas to put interactive data visualizations inside these environments. So, that's something that has a really strong editorial potential

On the production side, I mean, the team was big and it was expensive, right? This was very much a prototype type project, but this isn't insignificant. There were four people from Frontline, six people from the production company, including experts in four or five different technologies, right, and then the people from the Tow Center. So, it was a relatively big thing.

The industry is still developing the language. This is another thing. And you find this with all sort of tech adoption processes inside journalism, is that nobody really knows how to talk about them. And we *definitely* faced this. Like we'd sit around the table with these ten people and all trying to describe the same thing in totally different ways. So, we're starting to develop some language around this, I think. *Interstitial* you can tell probably came from an academic as opposed to a journalist, but there are words emerging from the collective.

The post production process is just way too cumbersome for journalism right now. I mean, you need to stitch all these videos together. You make them stereoscopic [and] stitch them together. You need totally different skillsets to add interactivity into them. So, it takes this really sophisticated production team to actually do all of this, and it takes a lot of time. And so until we automate that process, it's going to have limited use, I think, in many journalistic contexts.

And the fun one here is the hardware. We're in this kind of free-for-all for hardware right now. We saw at the beginning sort of the Cardboards and the

Oculuses and all of these, and they are all competing with each other, and they all do different things. So, one way to think of these technologies is along sort of a spectrum of capability. On sort of one end, you have these incredibly high-end, expensive, research-based tools that Nonny described, where it will allow you to move in space in a room and can be incredibly expensive. Then you have what Oculus is going to launch with, [which] is, again, like a very high-end project that is designed for really high capacity gaming. That's going to be their target. And then further down the spectrum is their Samsung Gear, which will also allow for video, but less full immersion and high processing rate. And then all the way down to Google Cardboard.

And along this spectrum, there's two things happening. One, there's one on the higher end. It allows for much more realistic immersion, much higher levels of interactivity, but requires crazy computational capacity and probably won't reach a large audience. So journalistically, maybe that's not where we want to be. On the Google Cardboard side, you can't have a lot of interactivity, where I think there's some journalistic value, but everyone here is going to get one, and so there will be a large audience for it.

We need to think about those tradeoffs, I think, when we design these projects. And we're actually -- we thought about this too late in this process, I think, in that we're now making that decision, but month-to-month there's new products coming out.

So I guess next for us, I mean, we're releasing this thing the next month or two, both as the Frontline large 2D feature documentary and then as this independent VR story. We've a report coming out for the Tow Center which documents this whole process. It touches on some of this reflection of what it means for journalism.

And then, I think there's some bigger questions we want to start getting at. One is, what does it mean for newsrooms to actually use this? Who do they need? What technology should they be using? How should they be thinking about the editorial process for VR? Second is around automating this whole post-production and interactivity space, which I really do think there's a lot of journalistic potential there, but it's just way too labor intensive right now to deploy effectively. And then a big one that Nonny's done a lot of, and I think we really want to do some too in the live motion space, is testing how people actually engage with this. How do they view the experiences they are immersed in? What's their emotional connection to them? Are they learning things differently through these experiences than through other media forms?

We just don't know that now. The reaction is always, "Wow! It feels like I'm there!" or "Wow! This is cool!" But not, "Do I understand it better? Am I more emotionally connected with the event I saw? Does this change how I think we should react to that event?" I think that's where there is some real research potential.

So, I'll leave it at that and look forward to talking about it. Thanks.

[Applause.]

Ray Soto: Yeah. So, I wouldn't say that I was a sucker. I'm actually pretty excited to be in this industry. So, yeah, as the introduction said, my name is Raymond Soto. I'm the VR Creative Lead at Gannett Digital. Before we get started, I wanted to share some really great news when it comes to the VR storytelling space. We are now the first developer of this type of content to have a paid sponsor. Through a partnership we did with the Inquirer, we now have the Christ Hospital in Cincinnati, who's our first advertiser to have paid for VR storytelling content, so that's pretty exciting. So with that, we're also releasing today our first VR app. So, VR stories, which you can search on Google Play and the App Store, which is available now. It will be great considering you're all going to have a Cardboard case.

So, what I wanted to share is kind of how we got there. You know, it's been a pretty crazy process over the past almost year now developing this type of content. And so yeah, let's go ahead and get started.

So, from videogames to VR journalism. You know, I've been in the videogame industry for a little over ten years. Started off as an art director and building creative teams that kind of developed these content, you know, when it comes to, you know, mobile games, PC games, and on from there. So, this feels almost as if it was a natural transition over when Mitch reached out to me from Gannett and we started chatting about, you know, what it is that we can build. You know, what really excites me is the storytelling potential within this industry.

Super Mario Bros., as an example, you know, it's a storytelling device. You've got the plumber who's going through these worlds to save the princess. I mean, what better way to build great storytelling content than to work with the best storytellers on the planet—yourselves. So, it's a very exciting opportunity for me to see where we can take this.

Also, from transitioning over from videogames, I love creative challenges. You know, it's being given a project and trying to figure out, okay, well, how can we develop this content? How can we get this out? And how can we deliver this to a broad series of platforms?

So, most importantly, the realization that VR is bigger than gaming. A couple of months ago, I was at the Game Developers Conference in San Francisco. I was attending a session by John Carmack, who's the Chief Technology Officer over at Oculus. And when he said this one statement, you know, sitting in the audience, it was great validation for me as far as making that transition from videogames to journalism. And it made sense. I got what he was saying. It was in the sense of, "This technology reaches a much broader

audience than just the core gamer demographic." I think we've seen just from the previous presentations, we see that there's potential developing this type of content.

So, why tell stories in virtual reality? So, I specifically chose this one picture to kind of share an experience that I've had. My wife travels quite a bit for work. And fortunately, I get the opportunity to travel with her. But times that I can't, she'll call me via Skype. And whenever she's in a new location, she'll call me up and ask me, "Guess where I am?" So, for this particular one, I had no idea. She turns the camera around and she was in Petra. It was pretty amazing.

You know, now with this type of technology, rather than relying on Skype, we can virtually take our consumers to anywhere within the world. We can bring their world or *the* world into their living rooms. You know, it's a completely immersive environment. You know, imagine being able to develop content where you can take your consumer, rather than just reading an article online or whether it's just a few characters in a Twitter feed, and being able to immerse them with that environment within this world that you've created or into various breaking news type content, whatever it is, from there.

And the one thing to be remembered is, with these types of experiences, as with videogames, they are the driver. They are not the passenger. With the different types of stories, it usually just matters -- it does not matter how they experience what they read, but within virtual reality, they can experience something from their own unique perspective and pull out, you know, different stories from within these experiences. My experience within, let's say, you know, the Harvest of Change projects that we put together is going to be very different from what somebody else comes out of it with.

So with that, experiences from unique perspectives. Over at Gannett, we've developed several different projects testing out what we can do with virtual reality. And we've learned quite a bit over the past year, but we've done long-form storytelling at the same time we've tried to templatize virtual reality. Because we realize that the production process for developing VR content can take some time. You have to start pulling in resources when it comes to developers [and] engineers, and at the same time, you know, videographers have to learn how to stitch photographs and video.

So, we've done several projects to kind of learn this process and kind of evolve. So, our first project was Harvest of Change. As I mentioned, it's kind of this long-form story. And it's a fully immersive environment, which allows the user to explore and kind of learn the story of this family in Iowa, on topics such as GMOs and climate change.

And what we've done with our subsequent projects, realizing that there's better potential or a different type of potential when it comes to breaking

news content, what we've done is we've templatized VR. What that means is all we have to do is rely on videos and photographs. We can drop them into our virtual environments and turn this content around within a matter of hours. So as opposed to, let's say, two months, two-and-a-half-month development cycle that we found with Harvest of Change, we can now release content within hours.

So with the technology, haven't we seen this before? You know, with the previous presentations, everyone's been talking about, oh, you know, the 80's, the 80's. You know, I was a child of the 80's. I remember the promise of the future and what *the* best at home experience can be. You know, to kind of share a story, I remember, I wanted to be the first kid on the block as a kid to try out virtual reality. And I asked my dad, "Can you take me to the mall so I can try this out?" So, we go on a Saturday. I'm standing in line for a few hours. I get to try on this headset. It's this big, massive headset that I had to support with my arms and kind of look around. I remember the experience was pretty terrible. There were 3D block environments, there [were] lag issues, and on from there. And I got out of it and I felt terrible. I mean, I asked my dad to spend half his Saturday and his money for me to try another promise of the future.

But the fortunate thing is, 25 years later, this content is here. I mean, the hardware is here and everything has pretty much caught up to these promises that we've had for decades. So, I feel almost as if this might be a bit harsh, but I'm trying to prove a point. There are quite a few skeptics. And I'm kind of equating these traditional journalists with Darth, Lord of the Scythe. [some laughter] But it's just to kind of prove a point.

So, constantly where I'm seated in the office, I'm having people ask me questions. "Why is it that you want to develop this content? What's the point?" The thing to remember is, this is not a replacement for great journalism. This is only a new platform. What we're able to do within VR is tell stories from a perspective that allows the users to kind of learn at their own pace what you're trying to portray within the story. So, what ends up usually happening is as soon as the person who's trying to demo this comes out of these experiences, the question goes from, "Why do you want to do this?" to "How do we do this?"

So, you know, don't fear change. You know, you have to understand the process when it comes to developing this type of content. It's fairly straightforward. And where you guys are pretty fortunate is you've got industries that have decades of experience building this type of content. You've got the videogame industry. You've got the film industry. I mean, each one of us—I'm still including myself in the videogame industry—are very excited to build this type of content. As I said earlier, we love telling stories, and what better way to do it than within this industry?

You also can't ignore the tech investments. The previous presentations kind of went over this, but you've got some pretty heavy hitters looking to get into this technology. The one thing that I find pretty exciting is realizing the potential that a mobile device can bring to the consumer. When you think of Google, for example, having released these Cardboards, you now each have a virtual reality device in your pockets right now.

So with that, now is the time to start. These headsets are currently available as developer kits. So what that means is, you can start prototyping [and] start building teams to research and design what works and what doesn't work. Joining Gannett almost a year ago, that gave us the opportunity to kind of experiment. And you know, we're constantly learning, and we're learning from what other people are building as well.

You're going to find a handful of pretty good VR experiences, but truth be told, there are quite a few really, really bad ones. But you learn from those and you kind of start building on top of that, especially when it comes to usability, visuals, and performance and whatnot. And the tools are available. You've got Unity Game Engine. You've got the Unreal Engine. You've got programs such as 3DS Max and Maya. As I mentioned before, you've got developers that are ready and eager to start building this content for you.

So, what will consumers want? Truth be told, consumers will know what they want once we give it to them. I mean, it's kind of Marketing 101, but it's true, and especially in this place or in this space. One thing to keep in mind is since these headsets are currently developer's kits only, the consumer version will not be released until holiday season. So, you've got an eight-month generous head start to start developing this content.

You know, as I mentioned earlier, you've got a few experiences already out there. You could start learning from those. And with Nonny and myself and their team, we're bouncing ideas off of one another. So, now is the time to not get left behind. As I mentioned, eight months head start. It's a great time to get into this space. So, you know, I'm going to cut this a bit short, but I just want to quote Doc Brown. So, you know, "When this baby hits [at] 88 miles per hour, you're going to see some serious shit." [laughter/applause]

So, thank you.

[Applause.]

Q&A Session:

Robert Hernandez: First, a round of applause. Hopefully you were amazed with this cool shit that's gonna happen now [applause] and at 88 miles. Nonny, I'll pose this question to you, but this applies to all of you. I'm sure you get this all the time, but the ethics of VR journalism. You've talked about

it before—recreating a space, recreating the Trayvon Martin moment when we don't know the answers. What is the ethics of it? And I don't know if Jay is here, but maybe we'll post a question [about] his VR journalism. We'll have him do a blog post and do a faux debate on that, but let's set that aside. The ethics of VR—how do you address that issue?

Nonny de la Pena: I think I mentioned that in the Trayvon Martin case, if you see it. We don't actually recreate the moment in which Trayvon dies, because we don't know what happened. Everything we recreate is actually very carefully made to respect the actual information that we have from the 911 tapes, where it's indisputable what was occurring at that moment. So in terms of ethics, I think the making of the content isn't what worries me. You know, things that worry me are things like nausea. That worries me. Is that going to kill us? How do we make sure we don't make people sick? And that's important, because, you know, people make content and they forget…. If there's any word of advice to everybody in this audience when they are out making VR content, the difference is your body is along for the ride. People's bodies are going along. And you wouldn't whip their bodies around, you know, needlessly, right? So, unlike when you can shoot and you can pan and you can push, with this, you have to be a lot more respectful of how you treat people's bodies in the piece to keep them from getting nauseous. So, that's…. You know, I know you wanted to talk more ethically—is there a problem?

Robert Hernandez: I'm going to push back a little bit, because there is a responsibility that I don't want us to glance over—that someone is porting into your story and is having a more intimate experience. We talk about audio being the backbone of storytelling. When you have your earbuds in, it's a very intimate experience. This is a lot more immersive.

Nonny de la Pena: So….

Robert Hernandez: And I agree with you completely. We're going to be ethical journalists and that's why I want journalists to be involved with this. But it's a question that we often get [on] that responsibility—how are you guys factoring it into your work?

Taylor Owen: I think that's one of the core questions of this. In one respect, it's no different than normal journalistic ethical conversations, right? You're taking someone to a place, and you're seeking to represent an event or an experience and in a journalistic way. And that is what separates the process of journalism from other processes, right? So, there's that, but there's something else to me with virtual reality that [is] part of what I think is interesting about it, but it's also potentially problematic, is you're making up -- you're tricking someone into thinking they are there, right? And when you think you are somewhere, you think you're actually seeing what happened. And there's a challenge in VR, I think, that that isn't the case. It's still a highly constructed environment [that] you're putting someone into.

You're choosing where to put the camera. You're choosing who's in the room. You're choosing when to press start and stop on the camera. You're doing a whole bunch of post-production stuff to it. And so, there's potentially a tension between those two things. And at the center of that tension is a potentially ethical problem.

Robert Hernandez: Nonny, say what you did to me.

Nonny de la Pena: Yeah, I would disagree with this, because I've put thousands and thousands and thousands, literally, of people through these pieces. And guess what? They know that they're here.

Taylor Owen: Oh, yeah, for sure.

Nonny de la Pena: They know they're here at the same time that they feel like there.

Taylor Owen: Yeah.

Nonny de la Pena: It's a duality of presence.

Taylor Owen: I agree. I agree with that, yeah.

Nonny de la Pena: And that duality allows them to have their own objective sense of the fact that they are not actually there. Is it emotional and engaging? Yeah, but so is any good content, you know.

Robert Hernandez: Exactly.

Nonny de la Pena: People jump in movies all the time when they're watching a feature film. Even documentaries, you tend to cry. Any good storytelling takes people there. And that's the duality of presence that I think we accept. It's not this crazy, scary, "Oh, my god, what are we doing to people?" or you're in the matrix and you don't know what the hell has happened to you. People know that they are here. And again, this is from --

Taylor Owen: They do.

Nonny de la Pena: -- thousands. And I collect data. I collect research. So, I'm very comfortable with that position.

Robert Hernandez: And every good story, whether [or not] it's text based, is edited and produced and selected and curated to have that optimal experience.

Taylor Owen: Absolutely.

Robert Hernandez: So, for me, the traditional ethic -- our traditional journalism ethic values applies to this as much as any other.

Nonny de la Pena: And sorry if I sound a little defensive. I just have gotten pushed back so well for so many years!

Robert Hernandez: No, I know. I know!

Nonny de la Pena: It's been years of defending myself.

Robert Hernandez: I know that that's the thing.

Nonny de la Pena: Sorry.

Robert Hernandez: No, that's totally fine. And that's the thing, why I wanted to start off [with this] was because you guys get hit up with the same kind of questions. And I just wanted to cut to the chase on that big one that's on the mind for a lot of people. The other is the adoption rate, and let's not even do that, but let me flip it a little bit in terms of our industry is not known to be the most nimble and innovative. We were late to the internet. We're late to social. We're late to mobile. But hopefully we've learned from those lessons. You've clearly learned to get ahead of this curve. What can you tell people who are hearing folks say, "Oh, it's not real yet," or, "It cost too much money"? How do you get them to engage or explore or to take this platform seriously?

Ray Soto: No, so, you know, making that transition from one industry to this industry --

Robert Hernandez: Welcome to culture shock.

Ray Soto: -- you know, no, but the realization is there's a great potential to really set the tone as far as what virtual reality is and especially when it comes to developing storytelling content. You know, leaving the videogame industry, I'm constantly asked by my colleagues, "Why did you leave?" and "How can I get in?"

Robert Hernandez: Yeah, right.

Ray Soto: The thing is, the videogame industry, sure, they're already developing content, but they kind of hold onto, you know, proven experiences when it comes to videogames. You're going to see a lot of first-person shooters. You're going to see, you know, MMOs and whatnot, but what better way to really push the boundaries of what great VR content is than within this industry? We have the opportunity to do that right now. And granted, it's a challenge trying to figure this stuff out, and there have been some really great experiences that have been already built, but it's the unknown that kind of gets me excited, especially working with all of you to

kind of learn where we can take this just beyond, you know, "How hard is this?" and on from there.

Robert Hernandez: And Taylor, when your report comes out, I wonder if people are going to read dollar signs and put it aside and say, "It's not time for us." How are you going to deal with that?

Taylor Owen: Not all of it needs to be that expensive. I mean, there's a huge spectrum of engagement along this. And I think the biggest thing that we just need is a ton of experimentation. There's a half-dozen live motion journalistic projects out in the world right now. And there needs to be dozens and dozens of them and hundreds of them. And we need to figure out, I mean, a whole host of questions around it. What works and what doesn't? What kinds of context are useful for this? Where is it just way better to have a live stream off a phone versus a full VR immersion, right? Like, we don't know any of this stuff, and we need to [know].

But to do that, we need a few things. We need journalists who are willing to go out and do it. We need the people who are building the hardware and the software to be actively engaging with that journalistic process, so all of these tools don't just get built for something totally different, so that at least these journalistic norms and objectives are a part of the conversation. And I think we need this to be documented. I mean, there's a real value, like when any technology is being adopted, in just thinking critically about how it's being used, why it's being used, what the impact of its use [is], and documenting that.

Robert Hernandez: Nonny, you've been in it from before, before. Like, you should be like hipster VR person, because like you were doing it before it was cool. And you've been getting all this pushback. And now all of a sudden, people are like, "Hey, how's it -- that's a really great idea." [some laughter] You've got a unique perspective, and I'm sure you were like waving at people saying, like, "This is something you should pay attention to." Now they are paying attention, but they are maybe paying attention a bit more, but they are still skeptical. How do you deal with that community of journalists?

Nonny de la Pena: So, you know, at this point, it's kind of gotten -- to be honest with you, I'm sort of overwhelmed now, right?

Robert Hernandez: Yes.

Nonny de la Pena: It's a really exciting moment to see a kind of dream come true, which that doesn't happen very often in life, but it also means we've got some great opportunities. For example, I had some kids from a poor area in LA, not a white face among them, come into my lab and do Project Syria. And then a week later, they're involved with a group called Global Nomads, and they are going to be on Skype with their peers in refugee camps in Syria. And being able to see all those kids go through and

go, "Oh, my god, now I understand a little better about these people I'm about to meet [and] what their lives are like." And that's the kind of things as journalists, you know, you dream about. Like, how do you get audiences to understand [and] engage and become more informed about their world? So, opportunities like that that I'm getting now because of this, it is, it's just a dream come true, really.

Robert Hernandez: What I've seen is that you just kept doing it and the industry caught up to you, which I think is so validating and wonderful and well deserved. Let's go with a question over here.

Carl Clark: Hi. My name is Carl Clark. I'm a master's student in Mass Communication at Texas State University. Nonny, awesome presentation. That was amazing.

Nonny de la Pena: Thank you.

Carl Clark: My question kind of goes to a little bit of what you were talking about at the beginning with the ethic of it. When there was a report that came out that some Reuters' reporters were killed in Iraq, then later because of Wiki leaks, we had collateral murder, and then that actually made it go more and more, because video is more immersive. And then with the even more immersive nature of VR or even augmented reality, with the Guantanamo piece that you were showing, like, you can really get a sense of what it would be like to be detained and all these terrible things being done to you. I guess you kind of already did talk about this a little bit, but my general question is, given the heightened emotional involvement in it, how do you deal with the ethical decisions of what context you're going to put in?

Because I remember after 911 feeling incredible amounts of anger over what happened. And anytime when the anniversary would come around, you'd see documentaries on the History Channel, things like that, and again, those emotions would come back. And so, only showing what's going on in Guantanamo and not showing the context of the anger that brought about these misdeeds, that's kind of my question. Where do you go with the emotional context of things? How deep do you want to go into it? And given the resources….

Nonny de la Pena: I think that's a good question, because for those guys at BuzzFeed, they didn't know what they were going through, right? And I always tell my audience members before they go through, you know, that they are going to experience "X" story. And so, for me, that was a…. I wasn't in the room when they did that. And I would have had some pushback, but they wanted to show that the pieces actually worked without anybody getting primed.

So, I don't think these are unimportant questions. A lot of this stuff, I don't have the answers. Nobody has the answers yet. And that's the point you

made, Taylor, right, about how we're all trying to figure this out together right now.

Taylor Owen: Yeah.

Robert Hernandez: In a world where you can recreate anything, those are the….

Taylor Owen: Recreate, but also, like, the one thing we haven't talked about is live VR either, right? We know that's sort of coming. And so, all of these conversations about editorial control and journalistic process, a lot of those go out the window if we're just dropping people in locations as events are happening.

Robert Hernandez: Sure. Sure.

Taylor Owen: And there's a lot of ethical questions around that.

Nonny de la Pena: I've seen some great live auto-stitching.

Taylor Owen: Yeah.

Robert Hernandez: We've got a lot of folks with questions, so let's go with quick questions. Hit it fast.

Joseph Yoo: Hi. My name is Joseph Yoo. I'm a doctoral student at University of Texas. I have a lot of interest in VR, so all of the presentations are really awesome. But I have some question about side effects of VR which means the brain reacts to stimulus, so there might be some side effects, like a seizure disorder. So, I think, yeah, if….

Robert Hernandez: Do you know of any side effects, studies, things like that, by having the amount of displays?

Taylor Owen: No.

Nonny de la Pena: You're asking about side effects. Like, what kind of measureable changes are going on in the brain?

Joseph Yoo: Yeah.

Nonny de la Pena: Is that the question you're asking? Well, I know, let's put it this way, there are measureable changes that go on in the brain. I mean, I don't want to be disingenuous, but there are measureable changes that go in the brain when you use a hammer a lot. Your brain changes. Violin lessons. If you do it with a teacher versus when you do an orchestra, the brain is affected differently. I think VR will probably also -- depending how much you use it, like reading a book, it's going to be a difference in your

brain. Robert made that great point about we can't go out without our phone now. It's our extended mind, and it's become part of who and what we are. And I'm not sure that VR won't do that either, but I don't know if that's more of a bad thing than using a hammer. That's the only question. I'm not putting a judgment on it. I think probably there will be great changes.

Robert Hernandez: Yeah, it will change your brain. There's a company called Magic Leap out of Florida, and they are free-framing AR and VR on how their technology is different using natural light fields. That's one of the things. You know, stereoscopic screens often give you headaches after 15 minutes. And they've got the science. They've analyzed the science on focal points and light fields and why that affect is [happening]. Let's go to a question here.

Woman: I'm from the Brazilian newspaper, Folha de Sao Paulo. It's a question to Nonny. If you could, give us an idea how long it took to make the piece on Guantanamo, for example, and who is the audience? Like, who sees [it]? Is there a critical mass of people with Oculus?

Nonny de la Pena: I can tell you…. Yeah, very quickly, with Gitmo, I can tell you that every flight I got on, I turned to the youngest person around and say, "Do you know what Guantanamo Bay is?" and they would say, "No." And I'd say, "Well, that's the audience I need to reach." So, who are these younger audiences? They are very comfortable with their digital selves, the storytellers. When my son was in my living room, my daughter was in my home office, and she walked in the living room, and my son looked up from his computer and said, "Why did you leave?" And she just walked in the room. Why did she leave the virtual environment of Minecraft where they were hanging out? That is the shared space of the future. So, like, these are younger audiences that we're going to go for right now.

Robert Hernandez: Last question. And then I want to make an observation with you guys.

Carolyn Robinson: Hi. I'm Carolyn Robinson from Washington State University. And this is great. I'm really looking forward to the future of this. Just some concerns. Nonny, you have been very, very careful about being very respectful of reality and matching up your facts to what's going on. I'm wondering if there's any concerns about the future when it's widely spread and anybody can put this together. Are they going to be as careful with representing the truth of the situation as you have been?

Nonny de la Pena: We know propaganda has been used in newspaper and posters and film. And these are important questions. That's one of the reasons why it's really great that these guys have gotten in, that Gannett's got in, that people are going in and trying to inform the space with the best practices in journalism first, so we can make sure we can give our audiences

critical thinking about what's an ethical, appropriate piece and what could be garbage propaganda. And I think that's important. Go ahead, Taylor.

Taylor Owen: Yeah. Just one thing building on that is, we've all been talking about building journalism using virtual reality, and if you see where a lot of this conversation is going in industry…. I mean, Facebook is basically saying, "We're going to create virtual environments." And so another question related to that is, what does it mean to do journalism inside those virtual environments --

Robert Hernandez: Exactly.

Taylor Owen: -- where people are doing things like you're saying, where there's propaganda, where there's everything there is in real life? What does it mean to be a journalist inside those virtual environments? That's one of the next conversations.

Robert Hernandez: Great. One thing I want to observe really quick is there's always a discussion of digital divide and the lack of diversity. Perhaps it's just that we all know Rosenthal, and he recruited the first group, but three out of the four panelists are Latino, and that's something to think about—that we're either really smart and ahead of the curve and reflective of, Fusion said, "the future of America," but that's something to think about— diversity and those challenges. How do you factor that in? Quickly, is that something you've thought about or noticed—diversity in the VR space?

Taylor Owen: I'm the white guy. I can't be diverse. [laughter]

Robert Hernandez: No, apparently, you can't do it.

Taylor Owen: That's what I heard. [laughs]

Robert Hernandez: But you're here. You're here amongst. You're cool. You're Canadian! You're Canadian.

Nonny de la Pena: [laughs]

Ray Soto: So, from my perspective, it was one of those things where I've never considered it being in the videogame industry. But transferring over into VR journalism and meeting new individuals yesterday at the mixer, that realization of, like, wow, this is pretty diverse. I never thought about the fact that, you know, being Latino, it's pretty unique to be developing this type of content, to be leading the charge with such a great group of people, to define what this is.

Nonny de la Pena: Unfortunately, I end up always…. Well, things are changing, but a year ago at Silicon Valley at a virtual reality conference, I was the only woman and the only non-white in like practically two days of

panels and 300 people. There were only five women in the room. So being in an audience like this is, again, really magical, because I think that maybe we have interesting diverse stories, and therefore, we're bringing that to the table, to VR.

Robert Hernandez: Thank you, Rosenthal, for inviting us. Sorry to take away moments from your coffee, but a round of applause for this great panel.

[Applause.]