Appendix

Interview | Ryan Laney

Nathalie Weatherald (NW): Tell me about how you approached the development of the visual effects.

Ryan Laney (RL): Development was out of necessity.

As you know, David France, he read an article originally by in the New Yorker by Masha Gessen. I don't know if you know that name. But, she had kind of reported on this, and it wasn't really well known - anyway, he jumped on a plane and went over and got access to an underground railroad, which is what was covered in Welcome to Chechnya. Yeah. And he shot for a year. And he had a good solid rough cut. And no way to take it to market. Yeah, so that's when, through that entire year that they shot, their first kind of tour over there, they have been trying all sorts of different ways to disguise people.

But David, because of this particular group that he's highlighting the trials of, it's very easy to anonymise the idea of a person and that kind of dehumanises them at the same time. And he wanted to maintain that human connection. So, when he came to us, his original idea was doing something like Scanner Darkly or in more modern terms. What is it, 'undone'? Which is an effect, sort of a cartoon effect over the footage, called rotoscoping.

So, we were introduced through a mutual friend and he came to us and said, can you do it? Can you can you automate this so that, one, we can afford to do it, and two, to not have to send it to a rotoscope farm somewhere, since we don't know who's gonna be seeing it or working on it, and they don't have security protocols in place. So that was my introduction to David and Alex Henty, the producer on the show.

And at that point, we did a test with style transfer, which is a machine learning tool that kind of applies artistic effects to video. We did a test with that. And the first thing that we noticed from their previous hands-on test, and this is that caricatures of people often accentuates the things that make them unique versus hiding them.

And so, we saw right off the bat that we needed to switch gears.

And so, we call, show them what we've done. And we're like, this is why we think this isn't gonna work. Then we have this other idea - if we can kind of move the bones underneath somebody's face, that will change who they are, like, fundamentally, their DNA in a sense, right?

If you have, I mean, think of any movie where you've seen a transformation of a person into a creature, you know, like the werewolf films, you know, something like that. The way that works is you get a 3D track of the head, and then you map the face onto it and you pull the vertices around. And, again, if you use kind of like human anatomy to make those moves, you can do it in a believable way.

That was the first case. And David said, we love it. But we also have to make this so good that even their parents wouldn't recognise it. Because it looked like the cousin of the person.

So, we had to, we had to take it a step further. And we rolled in this idea of style transfer, which is where you apply an artistic effect of somebody onto somebody. And we said, well, what happens if, instead of fitting in an artwork, we fit in another person's face?

And so, what the neural network does is it kind of separates what the face is doing - are the eyebrows up or down, are the eyes open, or closed - from what they look like. So, do they do have long eyelashes or short eyelashes? How are your eyebrows shaped, versus where are they.

So, in that sense, we're able to take those, those things that are very unique, and the concert of facial features in the face or in the organisation they are laid out, is what makes us unique. So, we were able to sort of combine these two ideas of moving the bones under the skin, and then changing the shape of eyebrows and lips to in no shapes to be able to effectively find that solution, which was so their parents wouldn't recognise them.

NW: So, would you call the technology you developed a 'deepfake'?

RL: Yes and no. There was a research paper that informed us that I think also informed deep fakes. So, they are both using neural networks in order to, to do things in the code, the deepfake code that I've looked at – we didn't use those tools for a couple of reasons.

One, code bases were binaries that came out of Russia, and we didn't feel comfortable installing… We don't know what's in it, right? It's not transparent. But if we code our own, we use Python and Google library called TensorFlow. If we code our own, we know what's inside, and we can at least audit what's going on.

So, the bigger thing for fitting against the requirements is deepfakes, they do this thing where they shift the pixels around in order to fit the faces better. What this does, is you get an identification transference, right? You lose that change in shape of the layout. So, when we do it, you end up where the eyes aren't exactly in the same place. A deepfake is more likely to have this identification transference, because it's doing a really good fit, for fidelity of picture, but we actually have more interest in hiding. We don't have any layers that cause that transference across, we can keep things separated in that way.

And then kind of back to the original question is, is this a deepfake? We think there's a kind of a philosophical conversation about it.

So, I've got 30 years in visual effects. If we were to say that a deepfake is anything synthesised with a neural network, then we say that, you know, in a mathematical identity, we say that, if that's true, then anything synthesised is fake.

And that means that everything in every movie I've ever seen, when you - I don't know if it's on Meet or on Zoom, they have the little button that says 'touch up my appearance' that uses removal of backgrounds - to use machine learning to know how to apply those effects, in which case, any video conferencing call is a false representation? Or is it, right?

So - we're both being transmitted through a compression algorithm right now, optimised by some machine learning protocol. So you just need to be careful about where that line is drawn.

So, there was a high-profile court case in the US this year where the prosecution tried to hand the witness an iPad, for purposes of identifying something in an image. The Defence objected and said it's on an iPad and iPads use machine learning and therefore that is not truthful in what it's representing. The judge sustained it. So, there is actually now legal precedents in the US that anything which uses machine learning, such as an iPad, which is presenting a video, is not real.

So then where do you go, right? Then nothing's real.

So, I think it's a really interesting idea in the bigger picture, where do you draw that line? I think it comes down to intent. And when the intent is obvious, showing somebody a picture on an iPad does not intend to be deceiving.

Obviously, what we're doing - every film we've worked on has a disclaimer, there's a halo that we put around the work so that even if you didn't have the disclaimer, you could be able to read and see, the audience can really see that there's something going on.

And we've tied that visual language to the blurry oval to also say that, you know, this is the language of disguising identities.

So, is that fake? Because what we're actually interested in is this fidelity of motion in the face. And we have a very high mark for that. So, we have high marks for fidelity of motion and the transference of emotion, then we actually have a truthful representation of what was originally there, even though the picture is different.

So, David wanted to call them 'deeptruths' because of this idea that we're actually allowing the audience to see something that is more truthful than darkened silhouette or a really blurry face, right, where there's no indication of what was actually there. We're giving us sort of this more honest representation than anything else that could be done. So yeah, it's really interesting.

As the conversation evolves, legally speaking, I think there's a lot of, of laws already on the books around fraud and deception.

NW: Have you been hit by any of them? Have any of them touched your work?

RL: No, no, we had a really warm welcome. We haven't had a single - that I'm aware of – a single negative response to it. In fact, one of the film's funders, Jesse Ferguson, was on Jimmy Kimmel. For his, I think, a book he wrote or another project he's working on. And he mentioned Welcome to Chechnya. And he uses the term deepfakes and Jimmy Kimmel's response was "it's the one good use."

So, there was this project, called In Event of Moon Disaster, I don't know if you've seen it, but he does this a really interesting thing where he presents this video, and it's on the topic of deepfakes. And he shows you some they recreated a speech by Nixon giving us the speech that was actually written - like it was a real speech - that was written in case something went wrong with the moon landing.

So, they recreated this sort of like, alternate history. It's the same setting is that he gave the moon landing presentation, except it was a different stage, this other speech. So, they do this, and they ask you a few questions. What did you see that's changed, etc, and then they show you all the things.

So, with deepfakes the technology that made them famous was used for non-consensual porn, and which in some places is considered sexual assault, and in some cases, the law doesn't care at all. There's some sort of high-profile moves in the UK right now to try to get legislation. I read about it.

I don't understand how if somebody goes on television, and he says something is not true about somebody they can be sued for slander, but, in most places, if somebody goes on television, and shows a picture of somebody doing something that they didn't actually do - I don't see a difference. I don't see where the current laws don't hold up to this new technology. And maybe people just need to say like, oh, well, visual language is visual language, and therefore all laws that applies as language should apply to visual language.

So, I feel like there's a lot of people that are like, well, we got to outlaw, we got to ban, and we got to do whatever. And I think that there's a lot of laws that should already cover this, if they were looked at from this lens of 'video is language which is communication, and therefore laws apply and communication should apply to a video'. So yeah, it's really interesting.

There was this really famous talk on I think, Crossfire, it was a PBS television show in the 80s or 90s. And Frank Zappa got on the show, surrounded by really conservative guys to talk about, what at the

time was a hot topic of banning songs that use certain words? Okay. And Frank Zappa must have said 100 times they're just words.

It's not the words that people are afraid of. It's the context. And I think that if we can, if we can move the conversation away from you know, what is this technology to what is this? What is this implementation of this technology doing? Then I think we get closer to an answer of how to legislate or how to have those conversations.

But as long as we say, you know, this thing is bad. Yeah. Something else will just pop up. That's just legally different enough to not be that thing, but more terrible because it had to evolve to be. Yeah, to get around the cracks.

NW: Have you had any roadblocks in the development?

RL: That part of the road went totally smoothly, like once we saw it work. I remember getting chills the first time. The first time it worked. I was on the phone with David and Alice. And he's like, Oh, my God, this is going to change witness filming. So, we did have a good idea right away.

However, we were concerned about one thing that was this uncanny valley, that's often a conversation topic in visual effects and how close can you get to human without, you know, if you're not if you're not close enough? It's off putting.

So, David hired Talia Wheatley in a Dartmouth College and she did a she did a study. And through that we had some high level of confidence also that this was the right we tried several things through her. And we felt like this was the right solution for that. As far as being enough. David was in dialogue with some of the contributors to the film and they felt like it was enough. One contributor, said when he saw the film, he felt like he was watching somebody else go through it. And that helped him process the trauma better.

We showed to Abraham - the first person we tested with. He's a friend in Los Angeles and said, Hey, we got this crazy idea, would you come sit for us? So, we did this little test. And we showed him and he's like, Oh, that's, that's really strange, because he's kind of my build. And I know that, but I know that's not me. So, he had a similar. Like, even though he knew it wasn't him felt like he was watching himself. So, with those kinds of perspectives of people who were very close to material, we felt like we did a good job of masking.

It turns out, Maxim, who's now known to the world, through the film, Maxim and Abraham are about a foot difference in height. But they're the same kind of build, like within their height, so it worked out well.

We didn't know what to expect [when we released the film], but certainly eager to see how people react. We went to Sundance, and there was a screening there. And in the Sundance screening, I had a couple of test clips that were related to the film on my phone, and just walked around. And you know, why are you here? Or we're working on this project? And can I get your opinion on this?

And all of that was like, Oh, wow, this is this is very different. So when we went and saw the film, there wasn't as much sort of concern about it, because we had these, you know, several days leading up to the first showing of the film. Yeah, it kind of trialled in town and talking to Nikki sort of getting feedback, because we were I mean, we had to lock down this, I mean, this was before the pandemic, but we had to lock down because of security. So, we were kind of like, in a bubble already.

So one interesting thing in the in the first screening, you know, so there's a disclaimer, and then the first 20 shots, we did this thing where we played out the softness, and also, the Assistant Editor, Maxwell Anderson, had gone in and taken dialogue out of the first shots, so the people weren't reading subtitles. And they could read the disclaimer, and then see faces and focus, and understand the

interesting effects and softness up close. And so that we had a lot of back and forth a lot in how we acclimate the audience so that they understand and this is a big part of, again, like the conversation of what is real and what is fake is having the dialogue with all parties, participants, David was in dialogue with the participants and we're in dialogue with the audience. And so, everything was kind of open.

So, there didn't seem to be any concern about the acclimation once people were in the film. You very readily just watch it as an audience member. You forget about you forget it there. Yeah. And then David, obviously, you've seen it. So, in this very specific moment, the press conference to be held comes off. And the audience gasped. It was so weird when I watched.

NW: Yeah, because you get so used to a character and I almost then it took me a minute to emotionally connect with this new face. Because for the duration of the film, I've been emotionally connecting with this other face, and to kind of shift the character who you're connecting with.

RL: Yeah, it's, it's funny that you say that because that was David's number one concern, really for a while. There was a discussion about Maxim being without a veil and all the people around him would be with veils, and he felt like that was not really authentic to the moment it was filmed because before the press conference, he was not known and after the press conference, he was known so, that was the, that was the time to do it. But he was concerned that he's like, Abraham is so cute and people are gonna love him. And then they're not gonna know what to do with this new person. But we decided that Maxim was cute also, and so it was gonna be okay.

But I think the emotive power of that, because it's kind of meta in a way because you're you also then become aware that you've been watching a disguise, which has been necessary for this duration. So, there's a kind of extra level that you're playing with.

Yeah, I think it actually did play into kind of the reception of it. Because without that people might have said, no, I'm not realising there's anything going on.

So totally normal, just a bit fuzzy.

NW: I read that you're working on new projects. Can you tell me what they're about?

China and North Korea, women's rights, human trafficking, dark money. Wrongful imprisonment.

We've consulted on about 50 or 60 projects at this point? Well, we haven't we haven't done all of them. But we've had conversations about how, you know, how to go about doing the work or how we are limited in our bandwidth. So, we've also shared a lot of what we do with people to help them to their own projects.

So yeah, we and we're currently doing talks and whatnot. We did a workshop with MIT open doc labs, right after the show. And the sort of the overwhelming consensus was, one, you got to put some gates on this.

And that it needed to be something that was available, not just to the biggest projects, but also to basically anybody that needed it. So, our goal, our sort of, like, pressure has been on how to automate things even more, like to be able to do it for greater numbers.

It was more shots than were in the original Matrix.

The production management of it was as effortful as, you know, a film of that scale. It's 400 shots. So, 400 shots is a small project. And the typical shots are like, you know, a Marvel film is going to have 2000 shots, which is basically every shot in the film.

But to do 400 shots on a documentary, missing two zeros in the budget. Yeah, you know, so we're already kind of in that, in that ballpark.

Anyway, we've put a lot of work into the production to so that they can shoot some of the data and they have more knowledge and how that stuff goes, they can do some of the prep work and that's helping bring that number down, also make it again, more available to films that otherwise wouldn't, wouldn't have access. So our goal is to make sure that you know, it gets out there but it's not just free willy nilly.

NW: Has the technique developed or evolved at all since Welcome to Chechnya, through the work on these new projects?

We've improved the resolution, the sort of the pixel quality.

There's a couple of things that we sort of learned on Welcome to Chechnya that we were able to like oh if we just did if we you know step this way a little bit, we can get a better result here. If we add this piece of information, we're getting better result there.

One thing for instance, in Welcome to Chechnya we shot nine cameras - we didn't know where it was gonna break. So, we overlay over again, everything. We shot nine cameras running, there was an issue with the camera triggers. So, they couldn't be remotely triggered. They hadn't actually had to go up and click. For the doubles.

And so, we've simplified that process. And we don't actually need that many cameras.

We didn't know what we didn't like what was going to work and what wasn't yet. So, when initially we probably shot for maybe an hour or two per person, we can now shoot in about 15 minutes per person. So, we've gotten we've gotten the sort of like, requirements of, again, by learning what worked and what we need, and whatever. The thing that in in that first round of data capture. You know, we're figuring out there, they're not actors. So, a lot of they're there while they're sitting there looking off in one direction where the director is. And so, like our whole data set was biased towards this one point of view.

So, if we just if we had just, you know, put all the data in as it came in, gotten the bias in certain eyeline that is above centre and a certain view that is, you know, off to one side. So, so in the in the sense of like, how will we improve some things with like, oh, well, if we tell the machine which way the eyes are looking, we can pair between the film and the data, and make sure we have the right eyes, so we get a clearer version of the eyes. So, a lot of little just technical, technical things like that. Again, like where we can split labour between what we're doing and what the clients doing. They can use their resources and reduced overall costs.

We didn't go the path where it will be patented. We don't hold any rights or copyrights over the finished material, it's a normal project where work for hire, we provide a service.

idea of patenting is an interesting one. But by the time we finished the project, like the industry had moved forward, the year after Welcome to Chechnya came out, Google presented a paper that was pretty identical to what we were doing.

And also, we had some risk if we tell people exactly what we're doing. Because what we're doing is we're creating an encryption key.

We're encrypting one phase, and we're doing that in a very secretive… like it's better to be a secret sauce than it is to be a patent.

You know, our market is a documentary film. It's not like we've invented something for the oil industry.

We've got a small market and they don't have a budget.

And it was also countered to that first conversation that we had with MIT where this needs to be available for everybody the way you make it available for everybody is you talk about how you did it, and they can build their own. The tools exist. TensorFlow is open source, Python is open source, like the tools we're using exist in the world. And anybody with a visual FX background who has the inclination, could actually do its work. And they're starting to they're starting to do more like, in the range of face replacements, Lucasfilm did something that maybe wasn't as successful and in the Book of Boba Fett, it was improved on, so we'll see, I think people are understanding it's, it's a hard thing to do.

But we do encourage other people to do it. Because I feel like that the more people there are doing it, the more that drives the cost down in the more not necessarily competitive, like you have to free but in in the oh, I'm doing it, I figured out this thing. And it makes it that much more efficient. And therefore, yeah. So by furthering the technology, and the things we can, we can work on cost.

And also, the more people who are doing it for this market, the more of the market can be served, because we are we are a limited number of brains. Yeah.

I think I saw something that said 60 to 70% of all content on the internet has video. I don't know what by what metric if they were, you know, megabytes or something, or reading time versus watching time. But they're projecting that is, is on an increasing tangent. So, the medium will be continued to be more original, which, if we think about it. We're humans, and we're tribal animals. Yeah, we, we want to have visual communication. We're not really engineered for reading, we're engineered for communicating in person. And so if, I mean, video is kind of a bad proxy, but it's maybe there's a group people that will learn better through video than through reading? I don't know, it's hard to say.

When we thought about the implications in that first call with David, we asked: well, who invented the blurry oval?

It was just suddenly used everywhere. So, I mean, we didn't really invent everything we just applied style transfer to in a very, very specific domain. So yeah, we're happy to have contributed something to the world, contribute something valuable to the world. And I feel like, my work is not done. I gotta, now that I have a taste of that. Got to do more.

I mean, my interest, lies in philosophy. And so, I was very excited about just the conversation about, you know, what is right in this and what is on the edge of this, so, I love those sorts of pedantic conversations about really nothing. For me, it's been having a taste of doing something that's valuable in the world. It's not to say that summer blockbusters aren't valuable, but it's a different, it's a different conversation.

I've already worked for ILM, and Sony in digital domain. So, I've already worked with the best people in the industries. But if one of those companies were to come back and say, come back, I would have to think about it whereas before it would be absolutely yes. Because they're great companies and they do they do the best work that exists in you know, creating alternate realities and I just I feel like there's such a desire to kind of leverage this. Like, oh, we can we can actually do a lot more here. We can add a lot more value in kind of a real way.

So, yeah, I think it's changed me and if I can get through the rest of my life and never do fictional work, probably that will be fine with me too.

I'm having these conversations in these places where they're not allowed to have encrypted drives, and they don't have power 24 hours a day, and in order to get a message out, they gotta go through a coyote who's going to take all their money and not actually pass the message on, and, and you start to look at like - wow, there's a lot of barriers, not just like going to market, there's a lot of barriers to getting information into and out of these places.

And so, for me, I've been starting to have some conversations about like, how might you sort of solve the problems in the enabling storytellers, as much as you are enabling them to tell their story like, so right now.

NW: Thank you for your time!

RL: You're welcome.