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

I have always been fascinated by creature design and makeup. I like watching those behind-the-scenes documentaries where an actor gets up at 5am for several hours of makeup to become this otherworldly character. And sometimes the creature makeup designer will say something like, "We thought we'd put these ridges on their foreheads and change the shape of their ears and paint half their face blue."

And I'm always disappointed when I don't get more insight because I went to art school. I know there's more to the design process than that. These characters were designed by humans for human entertainment. And they have to navigate through an uncanny valley between the human and the non-human, the earthly and the unearthly.

I got to speak with two major artists in the field of creature makeup design about their creative process. And I was geeking out the whole time.

First, let's start with Steve Wang.

Steve was only 20-years-old when he got his big break. He worked with the late Stan Winston on the movie, Monster Squad – which was not exactly a classic, even by 1980s standards, but it was a big special effects job. Steve will always remember the day he discovered Stan Winston liked his work because Stan used to play practical jokes on the young employees.

STEVE: Basically, what happened was I was working at the shop that day and everybody wants, was on set and I was prepping for something to go on set that night. And so I ended up, ended up with chatting with secretary while I was working. And so Stan comes in and Stan says, Oh, what are you doing? And I said, well, I'm working. And he says, well, it looks like you're talking to a girl. And I said, no, I'm almost done. I'm just, you know, and he says, okay. He says, get in my office, you know, I'm really pissed that she would hate out if I felt crap I'm fired, you know? Stan sat me down and he says, you know, I'm really, I'm really pissed at you right now. And I'm shaking in my boots. And you said so much so that, you know, you did a great job on monster squad. And I want to give you Predator to head up with me on this project.

And the design that he and Stan Winston came up with for Predator -- the killer alien with the mouth that opens up a spikey tent – launched a movie franchise and a toy franchise. Even if Arnold Schwarzenegger call it:

CLIP: You one ugly motherfucker. (Predator screams)

For most of film history, creature designers used foam latex. In fact, when I did my episode on the fans who collect movie props, the deterioration of foam latex was a big issue. You could spend a lot of money on a mask that Roddy McDowall wore on Planet of the Apes, but it would be crumbling today. So, the industry switched to silicone. Steve says, that's why everything looks so much better now.

STEVE: Silicone has a translucency, more like skin. And also, it's a solid compound. It's like a foam rubber it's solid, but you can plasticizer make it softer, a softer, as hard as you want over the years, they've developed these new ways of making prosthetics now that are just incredible. They look literally like skin, like under the, the most experienced, you know, artists, they could make makeups, it looks so real. You sometimes you have to like double take to make sure it's actually a makeup.

One of the misconceptions people have about creature effects is that it's all-in-one job. That may have been the case when guys like Stan Winston started out in the '70s. But now every level of creature design is broken down into separate jobs, from the concept artist, to the sculptor, to the painter, to the makeup artist.

STEVE: Like I'm one of the guys that actually build the creatures. I physically go in there and I'll do the head cast and I'll do the sculptures and the molds and whatnot and make the appliances. And then you send it on set to a, with a makeup artist that'll go on set and apply it. Not that I'm capable of playing it, but in my particular case, you know, I like to stay in the shop at work because rather than go on set for three months in a plane, the same makeups that three months' time I could be at another shop already on another project building some more cool stuff.

But there is one big misconception he always has to fight against.

STEVE: I think the biggest challenge is trying to get past the taboo of where the so-called man in a suit, and make it work within the film, you know, doing that. It's a difficult task in itself. A lot of people have done it and failed terribly and then in turn have hurt us and made our work look bad.

I have often wondered about the so-called man-a-suit, like the Creature from the Black Lagoon or the Alien in the first Alien movie. Logically it doesn't make sense that so many non-human creatures would have two arms, two legs, and a head on top. Although there is a scientific theory that our physical layout is the most efficient design for a highly intelligent life form on any planet. It's also definitely the most efficient design for a TV show or a movie on a tight budget.

I asked Steve which is more challenging, designing a scary monster or a friendly non-human character played by an actor in a suit.

STEVE: The friendly alien is definitely much harder. When you do a, a scary monster, a lot of times, all they have to do is just, you know, roar and bare his teeth and act menacingly. And usually they're shot in the dark with a character, like let's say ET, or, um, or Rick Baker is Harry and the Henderson's where it's in bright daylight. It requires the performance of an actor who also knows how to pantomime.

Because even if the creature as a voice, often the prosthetics are so heavy the voice needs to be dubbed later. But the biggest question with non-human characters is what to do about their eyes.

STEVE: I remember working on Tim Burton's Planet of the Apes. You know, we were shooting for pushing for contact lenses to make the eyes look more apelike. And so they have much bigger irises than, than humans. And, and there was a lot of pushback in the studio say, no, we have, we hired all these name actors. They were concerned that having, having animal style eyes would make it hard to see the performance.

I also talked with the creature designer Neill Gorton. He worked on the reboot of Doctor Who for 13 years. And he's had the same arguments about eyes with producers and directors over there.

NEILL: And sometimes I'm pushing to say, look, you, you really need to dehumanize this. There was a character which was a kind of a wooden girl. The director really wanted her to have human eyes. And it was like, look, she she's physically meant to be made of wood entirely of wood. It, as soon as you put flesh and blood allies in there, you've, you've lost that illusion.

I understand the counter argument. For actors, their eyes are important instruments to communicate with the audience and the other actors. But it's always bothered me whenever I see a character where every aspect of their face is redesigned but they have these very human eyes underneath that makeup.

Neill found ways around that. One of the most popular aliens he designed on Doctor Who were The Ood.

The Ood have bulbous heads and wrinkled eyes sort of like an octopus. And instead of mouths they have mess of squid-like tentacles hanging down to their chests. And they hold a glowing ball on a wire that communicate their thoughts. There were a lot of interesting storylines with The Ood because they were part of a servant class that were liberated by The Doctor and his companion Donna.

CLIP: We thank you Doctor Donna, friends of Ood kind, and what of you now? Will you stay? There is room for the song for you.

Another popular alien species that Neil designed for Doctor Who were the Judoon, an paramilitary force with huge animatronic rhino heads.

CLIP: Troop five, floor one, troop six, identify humans and find the transgressor. Find it!

When I asked Neill about The Ood and The Judoon, he credited the showrunner Russell T. Davies for giving him clear and simple directions in the script about what the aliens should look like. In fact, when Neill first read that The Judoon were supposed to have rhino heads, he was skeptical.

NEILL: And it's not an overly alien one. It's just basically a rhinoceros. And part of me kind of wanted to reject that go, no, well, that's just too simple, but he was right. You know, it even conveyed all these things we needed to convey about the character about this alien police officers who are relentless and strong and single-minded, and the rhino just kind of encompassed that really well.

Neill mentors a lot of young designers. His advice to them is to always keep their ideas clear and simple.

NEILL: A good design is something that you see and you get the story, you understand what it is without anyone telling you or needing lots more information. So I'll get a shoot and say, well, I've got this idea and it's an alien. And then he's, he's part robot. And he's an alien part robot. And he's on this planet, which has all water. So he's an aquatic alien part robot, but also he's part insects so he can fly. So he's in quite a ganglion port robot who can fly and you just go, you're never going to get all this information into one visual. So strip it back and keep it really simple.

It's it reminds me of too, you know, I tried taking screenwriting classes for a while and you always talked about like, what's your elevator pitch? Like if you were stuck in an elevator with an exec could you sum up your movie in two sentences. It sounds like it's the same thing with creature design, you should be able to describe your creature to someone, and they just get it.

NEILL: Well, this is it. I mean, The Ood. You just hang your hand in front of your face and you, you, you almost, even when I'm talking about it, I put my hand up and like, it's a bunch of tentacles, you know, you can't help that. And that's what, that's what good design is.

Another thing I've been wondering about is the difference between aliens in one universe versus another. In theory, there's no reason why The Ood could not have been on Star Trek or the Klingons could not have been on Doctor Who.

Neill says producers often wanted him to design something more humanoid, like Star Trek, but he argued that Doctor Who is inherently more adventurous with their designs. And that comes from the concept of the show. The main character is an eccentric explorer.

NEILL: You can have something really bizarre, just have to have faith in it, and faith in the scriptwriting and the story, all that kind of thing.

Star Wars is also more varied in its creature designs, but they've always had bigger budgets. And that comes from the concept as well because the original trilogy had more of a Wild West feel – or an alien Wild West being squashed by a human-centric Empire.

Steve Wang says a perfect example of a Star Wars alien is Babu Frick, the little puppeteered mechanic in Rise of Skywalker.

STEVE: You will not, they will find Babu Frick in, in Star Trek, but cause he's very whimsical.

CLIP: (Babu Frick gibberish)
Yes, it will cause a complete memory wipe
Wait, we translate it he won't remember anything
Droid memory go black, go black black!
Oh, there must be some other way!

STEVE: And I don't recall seeing much like whimsical style creatures and star Trek, Star Trek. Uh, there was a joke about Star Trek for many years where they call it the nose of the week, where it, you know, it, because it was very cheap and very fast to do them. Alien makeup is you just, you sculpt some kind of a weird nose bridge and you'll pop it on their nose. And now they're an alien.

Although I've never had an issue with Spock because the non-human elements are subtle and targeted. In fact, I think the most successful Star Trek aliens reimagine only a few human features with strong choices – like the pointy Vulcan ears or the ridged Klingon forehead. That leaves room for the actors to convey subtle emotions in close-ups, because Star Trek is more focused on how these different species can work together and try to find common ground. I think Star Trek is less successful when they go to the other extreme, and the actors have no room to emote under all the makeup.

But Steve says, the rules of creature design shift when you're working in different genres like horror. In 2004, he was brought in to work on Blade: Trinity, which is about a Marvel superhero who is part-vampire. The director was unhappy with the design that they already had for the villain, who's named was Drake.

STEVE: And, uh, what happened was they had originally hired a concert artist in Carlos Fuente. He's one of the great greats in our industry. And here came up with a design for this Drake character. Um, but it felt very safe. And the director wasn't sure, like he said, he didn't know why, but he felt something was off about it. So when I was brought in to, to create this monster for the film, they asked me to look at it and say, well, what do you think of this? You know, he says, I like the silhouette, but everything feels weird. And I said, well, because it doesn't feel like it belongs in this vampire world. You know, the vampire world feels more Gothic. You know, it has, it's a very earthbound sort of motifs and very classic, uh, and historical feeling.
Huh? Yeah. That's a really interesting example. I can see what you mean too, in terms of, if you're dealing with horror, there's something that's got to be earthier or fantasy, you know, earthier, earthbound, as opposed to sci-fi, which, which must feel like literally unearthly.
STEVE: Yeah. Like, like literally if you're, if you're doing a fairy, you don't want to put three eyes on the fairy, you know, or you don't want to put tentacles on the fairy or something. Cause then that starts to feel kind of alien-like.

But there's another important pitfall that designers need to be aware of -- avoiding real world stereotypes. The most infamous example was Jar Jar Binks who was heavily criticized for being a racist caricature. Also, in the Phantom

Menace, the Neimoidian aliens were disturbingly similar to Japanese stereotypes from World War II. And in Star Trek, there's been a long debate as to whether the money-grubbing Ferengi are based on anti-Semitic stereotypes.

Again, Neill Gorton.

NEILL: You know, we don't know what an alien looks like. So, it's only natural, I think for some designers and directors and people like that, trying to tell a certain story to tap into caricature, you know, stereotypes that go back hundreds of years will kind of almost get dredged up. And I'm not sure people who even know they're doing it.

Often, it's the directors, writers or actors who make those choices, but Steve Wang says designers are responsible too.

STEVE: I've gone to studios and I've seen certain designs. I mean, I've caught myself saying, well, looking at that like, Oh my God, this design is a complete racial slur. And I've seen that, you know, I've seen somebody do a prototype for a really famous cartoon character that they were considering making a movie of. So there's one studio did a, did a Lifesize bust prototype of this character and right away, you know, it's got a hat, it's got all this stuff, you know, it's like a, it's like an animal character. I don't want to say exactly what it is. I don't want to point fingers, but right away when we look at it, it looks like a racial slur. I don't want to get into like describing it too much.

Steve saw that design when he was visiting another studio, so he didn't say anything to anyone. But someone might have said something because that design never went forward. And it was for a CG character, not something he would've come across in practical effects, which is the term for non-computer animated prosthetics and animatronics.

After the break, we'll go deeper into the tension between CGI and practical effects and find out how computer animation almost put Steve out of a job.

BREAK

Steve Wang has been worried about competition from computer animation since 1993.

CLIP: T-REX ROAR

STEVE: Like when, when Jurassic park first came out and I saw that scene with the T-Rex. Um, I remember watching that film thinking to myself, oh my God, you know, our, our industry is going to die. CG is going to take over. And, and it did for quite a long time. Back in the eighties we were like rock stars, you know, back in those days when I went on set and you know, and they said, yeah, bring it, bring in the creature guys. And we'll walk on set with these, you know, animatronic creature heads or bodies. And literally I remember walking down the set and people would part like the red sea for us. And it was surreal. It was like that moment in the right stuff. You know, when they've landed and they're walking out and it's that beautiful, slow motion shot of us walking, and now we're just vendors.

Neill Gorton says the CGI bonanza that followed Jurassic Park sometimes ignored the reason why those dinosaurs were so convincing in the first place.

NEILL: All the movement was crew was done by real animators. Phil Tippet, who was a model animator, a guy who moved a puppet and photographed it one frame at a time supervise the animation. And so you've got something that felt much more real because it was grounded. It had a real physics involved in the way it moved. And the animators were trying to mimic that and it all went wrong later when someone just went, Hey, I can make this creature kind of leap, enormous distances and bounce off the ceiling. And at that point, you just go, well, nothing can do that. So, this is going to look ridiculous.

Since you can do anything in CGI the question is how to make it believable. And that is an interesting question to explore. So, let's go on a sidebar for a few minutes -- away from practical effects -- into the field of ecological worldbuilding.

Rosemary Chalmers teaches creature design and concept art at Leeds Arts University in the UK. She focuses on the types of creatures that could be done with animatronics, but more likely, they'd be done with CGI.

And she always asks her students is to imagine this creature they made up, didn't just pop out of their heads. It evolved through millions of years of adaptation.

ROSE: You want to think about what function you want your creature to have to, for example, do you want it to be resistant to fire or resistant to heat? And then what you do is you'd think about real world animals that have that adaptation. But the thing you've got to do when you're designing a creature is kind of think a bit wider than that. So, the key to making a creature believable is to use just more and pick very specific adaptations from lots of different real-world animals.

In other words, if you're designing a creature on a very hot planet then it needs to be heat resistant. So, it could have the skin of a lizard, with the giant ears of a Fennec Fox, and the hump of a camel.

But she always reminds her students that a lot of animals in real life have features that look beautiful or cool, but nature doesn't care what looks beautiful or what looks totally badass. If an animal has a feature that doesn't serve a function, evolution will get rid of it.

ROSE: I have, I'm a bit of a bugbear with creatures that they look like they've just come straight out of one iteration from a concept artist. And they haven't really thought about how it looks with the environment or anything.

CLIP: PACIFIC RIM

ROSE: Um, it's a, it's a very pretty film, but Pacific Rim, the creatures in that kind of bother me a bit because they're just so, so over the top.

Another one of her pet peeves: dragons.

CLIP: DROGON ROARS

ROSE: I was really excited about seeing the dragon in Game of Thrones, for example, and then, you know, it was better than most, but it was still just like, Oh, okay, they've just designed something quite lizard like, and it doesn't really look like it could carry the weight on its wings. And, and it is like, uh, it is a problem that no one seems to be able to solve because I think if you needed to carry that weight, you would have to have humongous swings. And then, you know, there's the problems of how large the chest muscles would need to be to support those.

And genre can affect those decisions. One of the things she liked about Fantastic Beasts and Where to Find Them, is that the fantastic beasts defied evolutionary logic and didn't have a sense of realistic weight.

ROSE: There's that bird that has like four wings and you kind of think would that really actually work, you know, as a being, because there's kind of magic involved, then you can kind of go, okay, that's fine.

CLIP: If he had got out, that could've been quite catastrophic. He's the real reason I came to America.

But her favorite ecosystem is the Star Wars universe, especially the creatures you see in the background.

ROSE: And it's quite a shame cause in the films, you often only see them for a split second and it, it's almost like there's a whole ecosystem that's been developed. So, there's prey and predators. And there's plants as well.

Personally, my favorite alien eco-system was Avatar. There was such a unity to the blue, green and purple design of all the creatures on the planet Pandora, I was totally convinced that they each evolved from the same common ancestor.

But when it comes to horror, Rosemary suspends her rule that you should mix lots of different elements from different real-world animals. In fact, she says the most effective horror designs blend a human with one other animal.

ROSE: It seems that when something is most horrific, it's when it's actually slightly hybridized. And it's that kind of uncanny valley thing where it's kind of more horrific because you recognize slight human qualities in it.

Horror has a long history of human-hybrid monsters – hence the so-called man in a suit. In fact, there was a backlash among horror fans when computer animation took over. That lead to a resurgence of practical effects in horror, and eventually sci-fi and fantasy.

Which brings me back to Neill Gorton. He was the special effects designer on a BBC show called Being Human. It was a great show about a ghost, a vampire and a werewolf that were flat mates together.

Neil got a lot of praise for the werewolf transformations. His approach was to focus on the pain the characters were going through because it would enhance the audience's sympathy for them. And he used practical effects.

CLIP: WEREWOLF TRANSFORMATION

NEILL: We were trying to avoid completely grotesque because you like these people. I think it was that that really made it work was the fact that they were real, tactile physical things in the real environment. Uh, and you have those changes and the stretching and all of that going on. And it's very real and physical. So you connect with it, whereas

somewhere in your psychology and your psyche, you know that as soon as it goes to a CGI thing, you go, Oh, expensive cartoon.

But the competition with CGI is still pretty fierce. And he understands why some producers or directions want to go with CGI.

NEILL: So producers can, you know, they, they've got to get everyone to agree on how things look, agree on budgets and give you money early before you even film. So the CGI thing is very, it's very skewed in that direction because it just means they can worry about it later. They can pay for it later. They can adjust the finances late. If the, if they want two of them or 200, it doesn't really make any difference. Whereas if they want that upfront, they've got to make a decision.
Ironically, it's more, it's more practical not to use practical effects for them.
NEILL: Yeah. Basically. But yeah, which I understand, but at the same time, there's a lot of people coming back to, going, look, I get it. Now I've grown up. Now I'm seeing a lot of, um, directors coming through who grew up with CGI, who were then looking at practical effects and going, you know, what that feels different and that looks different. And there's something I like about that, that, you know, I've grown up with all the CGI stuff. I know I'm attuned to that. And I'm now looking for something else.

Steve Wang also saw CGI reach a saturation point, which was a relief to him.

STEVE: We're at a point now where people are, are, I think CG has funny found its place, you know, like the studios and the filmmakers understand, you know, there are certain things that are great. CG is great for it. And there's certain things that you just should not CG so now I think we're, we're kind of at that point where sometimes you can even do practical effects that can be enhanced by CG.

Right now, the industry is at a standstill. Projects are being green lit, but no one knows for sure when filming will start. It would make sense to me if producers want to go with CGI more. You don't have to worry about social distancing if an actor is standing on a green screen talking to a ping-pong ball on a stick. But Steve and Neil have gotten calls from producers that are itching to get back to work with them. I hope so. I would hate for the tactile sensibility of creature make-up design to be lost.

Whenever I see a non-human character with a design I haven't seen before, as a viewer, I feel like I discovered a new species I never knew existed. It makes the universe feel bigger and more mysterious. At the same time, good designs reflect back on the questions that sci-fi and fantasy have always been about. What does

it mean to be human? Can we recognize a sense of humanity in someone or something that doesn't look like us? And how can we avoid becoming inhuman?

That's it for this week, thanks for listening. Special thanks to Rosemary Chalmers, Neill Gorton, and Steve Wang.

Steve may be a big deal in the special effects industry, but he had a hard time convincing his very traditional Chinese family.

STEVE: In that culture, they believe that in order to be successful in this world, you have to either be a lawyer, a doctor, an engineer, or you have to own a restaurant or something. So, when I was trying to learn how to make monsters on my own, they thought I was just playing. They thought, what is he doing? This is not a career. And one time, my mom, my mom's business was in trouble, this is was the mid '80s I basically sent her a check for like $16,000. And she was like, where did you get this money? And I said, from playing. (Laughs)

I put a slideshow of Steve and Neil's work on the Imaginary Worlds Instagram page, along with Rosemary's own creature designs.

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