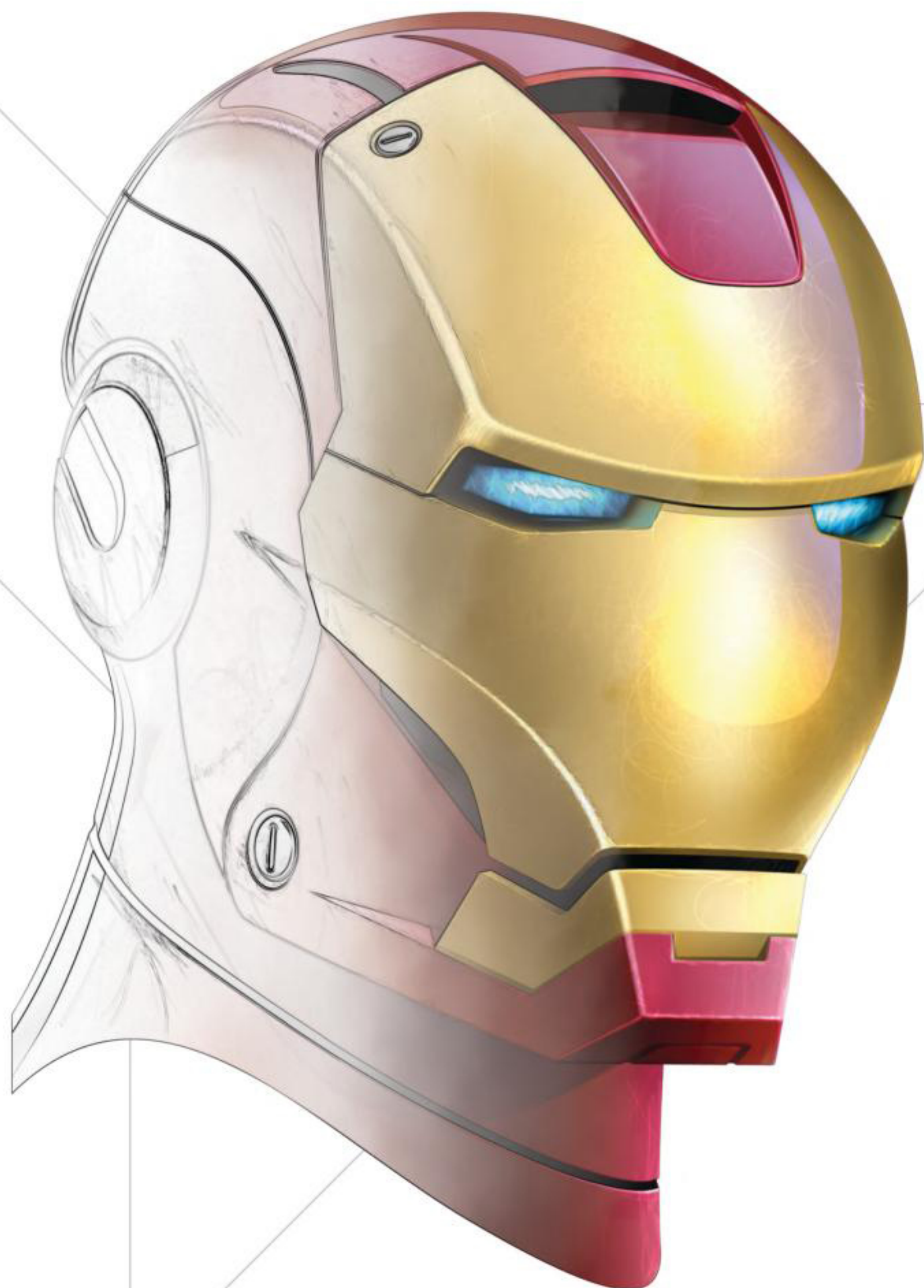


HOW TO ***PAINT CHARACTERS*** ***THE*** **MARVEL** **STUDIOS** ***WAY***

***BY THE ARTISTS OF MARVEL STUDIOS
VISUAL DEVELOPMENT
WITH TROY BENJAMIN***



HOW TO
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CHARACTERS
THE **MARVEL** ***STUDIOS***
WAY



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HOW TO ***PAIN*T** ***CHARACTERS*** ***THE*** **MARVEL** ***STUDIOS*** ***WAY***

The Artists of Marvel Studios
Visual Development

Ryan Meinerding | Charlie Wen | Andy Park
Phil Saunders | Jackson Sze | Rodney Fuentebella
Anthony Francisco | Karla Ortiz | Adi Granov

WITH
Troy Benjamin

BOOK DESIGN BY
Rodolfo Muraguchi



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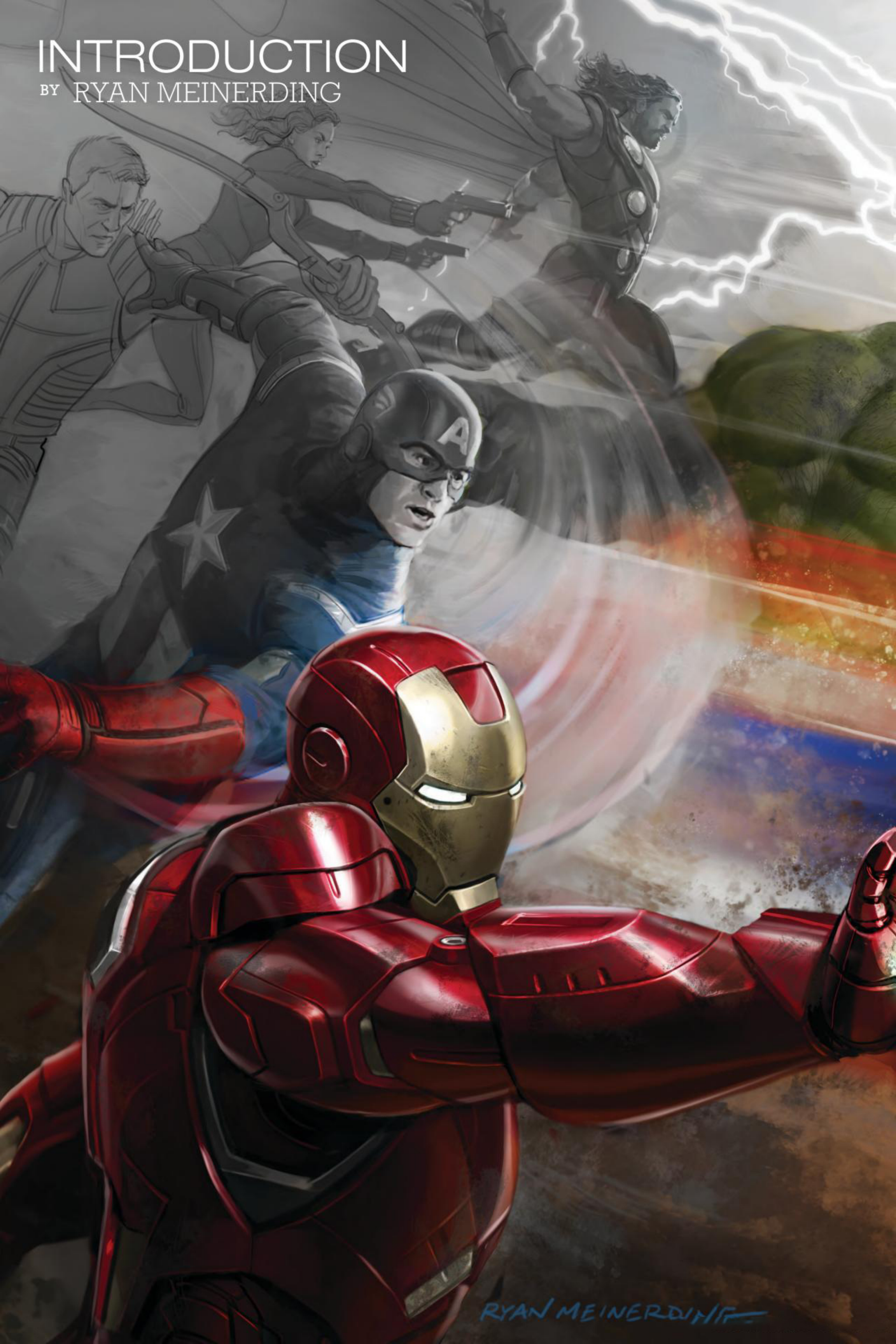
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INTRODUCTION

BY RYAN MEINERDING



RYAN MEINERDING



I GREW UP ON MARVEL. I grew up wearing Spider-Man Underoos, using a Spider-Man towel at the beach, and all-around living and breathing the Marvel characters we have all come to know and love.

The idea of being able to develop the more modern representations of those characters is incredible. That these characters have been part of the popular-culture fabric for 70-plus years, and we get to play in that world, is astonishing. I feel like I'm working on a part of the ever-evolving history of these characters. They have changed since they were first created. They'll continue to change. But to say that even for a brief moment our team was able to work on Captain America, Spider-Man, and Hulk — and help define those characters for a whole new generation — is pretty amazing.

I have a unique job, one that doesn't really exist at other places. It's something that I don't take for granted, and something I feel that I need to work extremely hard at each and every day. I want to be in the office every day and be passionate and invested in delivering for Marvel Studios the highest level of concept art possible — valuable for not just one film but an entire slate of films. Not only am I an artist for this wonderful, vast, fantastical world, but what our artists in Visual Development and I are creating represents the company. Cinema is a visual medium and lends itself incredibly well to the development of characters for our Cinematic Universe. We're an integral part of designing the Marvel Studios brand. And through that process, I'm very fortunate to work with some of the best collaborators in the business. We're all in this together. We all want to see these characters and these stories succeed because we love them. And we know that they'll continue to live on well past all of us.

That's why we here at Marvel Studios Visual Development wanted to create this book. Every day, I am astounded by the talent and the vision of artists that I am fortunate enough to work with. It is our hope that this book can be a guide to conceptualizing art worthy to be incorporated into the world of pop culture for any and all character development you want to pursue. Not necessarily just for Marvel Studios but for any and all character development you may want to pursue. Feature films, video games, action figure design, even your own characters in the pages of comics, it is our hope this book will help you along the way. I'm sorry to say this book will not be able to magically instill in you the ability to draw, sculpt, or paint detailed renderings overnight. But what we can do is impress upon you the Marvel Studios mind-set. Armed with that knowledge, and once you have the tools and the talent, you can step into the shoes of a Visual Development artist and be inspired by our process to achieve your goals.

MEET THE VISUAL DEVELOPMENT TEAM

These are your instructors on this journey into mystery. From this point forward, you will be a member of the Visual Development bullpen, learning from the best in the business. Let's let them introduce themselves:



I'm **RYAN MEINERDING**, VP OF VISUAL DEVELOPMENT AND CREATIVE DIRECTOR/HEAD OF VISUAL DEVELOPMENT.

I began my journey at Marvel Studios with designing the Mark 1 Iron Man suit. After working on *Iron Man 2*, I became full time leading movies on Phase 1 movies like *Thor*, *Captain America: The First Avenger*, and *Marvel's The Avengers*. I was promoted to Head of Visual Development on *Iron Man 3* and have been fortunate enough to lead the Visual Development team on 15 films altogether, contributing all of the designs for *Captain America* and *Spider-Man* along the way.



I'm **CHARLIE WEN**, FORMER CO-HEAD OF VISUAL DEVELOPMENT along with Ryan since *Iron Man 3*. After 10+ years of art directing and production designing in games and animation at Sony (including creating Kratos from *God of War*), at DigitalDomain, and on various films, I joined Marvel Studios on *Thor* in 2008 and led the VisDev team through 10 MCU movies, including *Marvel's The Avengers*, *Thor: The Dark World*, *Guardians of the Galaxy*, *Avengers: Age of Ultron*, and *Ant-Man*, until phase 3. I went on to art direct on *League of Legends* at Riot Games and start TenSky Entertainment.



I'm **ANDY PARK**, DIRECTOR OF VISUAL DEVELOPMENT.

I was an art/illustration student at UCLA and ArtCenter College of Design and started my career as a comic book artist, drawing titles such as *Tomb Raider* and *Uncanny X-Men*. I joined the VisDev team in 2010 as a concept artist and created character designs and keyframe illustrations for *Marvel's The Avengers* and almost every MCU film since then. I have since become the Director of Visual Development and have led the department on several films: *Guardians of the Galaxy Vol. 2*, *Thor: Ragnarok*, *Ant-Man and the Wasp*, and *Captain Marvel*.



I'm **RODNEY FUENTEBELLA, SENIOR VISUAL DEVELOPMENT ARTIST**, a Filipino American raised in San Francisco. I studied design at UCLA and product design at ArtCenter College of Design. I've worked for Electronic Arts, DreamWorks Animation, and *WIRED Magazine*, among other studios, and now create keyframe art and character designs with Marvel Studios. Some MCU projects include *Captain America: The First Avenger*, *Marvel's The Avengers*, and *Black Panther*.



I'm **JACKSON SZE, SENIOR VISUAL DEVELOPMENT ARTIST**. I've worked in advertising, video games, TV, and film for studios such as Lucasfilm Animation and Sony Computer Entertainment of America. I have also taught at Concept Design Academy and Gnomon School of Visual Effects. Some favorite credits include *Star Wars: The Clone Wars*, *Marvel's The Avengers*, *Guardians of the Galaxy*, and *Black Panther*.



I'm **ANTHONY FRANCISCO, SENIOR VISUAL DEVELOPMENT ARTIST**. I've been designing film and video games for the past 18 years, and I'm best known for designing one of Marvel's cutest characters, Baby Groot! I've also done character designs for Loki in *Thor: Ragnarok* and the *Dora Milaje* in *Black Panther*, as well as other MCU designs.



I'm **PHIL SAUNDERS, FREELANCE CONCEPT ARTIST**. I've been creating designs for characters, vehicles, environments, and props for feature films since 2001. My work with Marvel Studios has focused on Iron Man — I began with the first film and have worked on nearly every iteration of his suit since then.



I'm **KARLA ORTIZ, FREELANCE CONCEPT ARTIST**. I've contributed designs to many films, including *Jurassic World*, *Rogue One: A Star Wars Story*, *Thor: Ragnarok*, and *Black Panther*, and I'm particularly known for my design of Doctor Strange's costume in his titular film. I've also been recognized in the fine-art world, showcasing in Hashimoto Contemporary, Nucleus Gallery, Thinkspace, and Maxwell Alexander. I am Puerto Rican, live in San Francisco, and have a cat named Bady.



I'm **ADI GRANOV, FREELANCE CONCEPT ARTIST**. I'm an illustrator and designer working primarily for Marvel. Most notably, I worked on the *Iron Man: Extremis* comic series by Warren Ellis and worked as a conceptual designer and illustrator on the Iron Man films and *Marvel's The Avengers*. I am under contract with Marvel for comic art and produce covers for multiple series for them.



MARVEL STUDIOS HAS put together something that's highly unusual in the film industry – a full-time, on-site staff of concept artists and designers that work on each film from start to finish. Most concept artists are there at the start of the project, present their designs, and then are off to their next film project or studio, but Marvel likes to do things differently. Stan Lee famously idealized the Marvel Bullpen in the pages of the Marvel Comics beginning in the 1960s. Readers would hear tales in Lee's Bullpen Bulletins columns and imagine this mythical office where their heroes all interacted and worked together on a daily basis. While that romanticized Madison Avenue Bullpen may not quite have existed at the time, Visual Development has brought that concept to life within the walls of Marvel Studios. The artists all share a space in the Marvel Studios offices and are able to springboard off each other and work with one another to visualize concepts. And they're right down the hall from where the films are being developed, written, and edited. A film created by Marvel Studios can begin its life as an idea in the executive offices, be developed into beautiful paintings next door in VisDev, spun into a wonderful story on the page in

a writers room ten steps away, then be edited and completed right around the corner. Marvel Studios has become a modern think tank where, quite literally, dreams can come to life.

Since its beginnings in 2008, Marvel Studios has produced films that continue to leave a Hulk-sized mark on popular culture. In retrospect, Marvel Studios' grand ambitions may seem planned from the start. But the studio's initial objective wasn't to create a "cinematic universe." Instead, the studio sought to expand its storytelling into live action in a way that honored the publisher's long history, was true to the heart and soul of the characters, captured the spirit of what captivated kids of all ages, and most importantly, told wonderful stories one film at a time.

Visual design and conceptualization for the first Iron Man started well before the film had a formalized script. Not unlike the process in which George Lucas hired Ralph McQuarrie to conceptualize frames for *Star Wars* before preproduction had even begun, Jon Favreau brought in his most trusted artists and collaborators to assist him in exploring the film. Ryan Meinerding was among them.





RYAN MEINERDING: One of the great things about comic books and their characters is the heightened nature of the visuals involved. Every visual-design choice makes a huge difference in characters who are heroic or villainous. Every choice affects story. There are so many other types of stories where the visual aesthetic is subtle and meant to gently guide the audience. In comics, as it is in our movies, that's not the case. The visuals are directly used to tell the story. Whether it's a character's costume or a visual effect or the composition, we are actively searching for the best idea that tells the story the purest way possible. The first Iron Man film ordinarily would have followed traditional conceptual exploration. Ordinarily in the filmmaking process, an artist like me is part of an art department working under a production designer. The amount of time I would normally work one-on-one with a producer or a director in that scenario would be slim to none.

This was different. Phil Saunders and I had both previously worked for Jon Favreau developing an unproduced version of *John Carter of Mars*. We were working seven days a week directly with Jon at his house on a cohesive visual look for that film. Jon was awesome. He loves to work with artists. He is very collaborative. After that project, Jon told us he was working with Marvel on something new, and he brought several of us over to help. And what really came out of working on that first *Iron Man* film was the process that we still utilize to this day. Concept artists working directly for the directors and producers helping to visualize their ideas and pitching our own.

ANDY PARK: It's been a bit of a process to get to this space where we're all able to work together quickly and efficiently. When Charlie and Ryan started this department nine years ago, there were only three of us in Manhattan Beach. At that point, we were such an odd-duck department that doesn't really exist at other studios. Nobody knew where to put us. In fact, our first offices were literally actors' dressing rooms — Charlie and Ryan in one dressing room, and me, and eventually Rodney, in another- all of us using placeholder desks, with the stars on the outside of the doors with the huge studio stages where they film just adjacent to us. It was a little surreal but also the only place they could think to put a new department like ours.

PHIL SAUNDERS: I had worked with Jon Favreau on *Zathura*, and we had worked really well together. He and I had a great rapport and had a knack for finding solutions to design and development challenges. The minute that Jon told me that he was working on an Iron Man film, I was incredibly excited. We immediately started preliminary work on the film out of the Marvel offices, which was a small office located in Beverly Hills above a car dealership at that time.

The work on *Iron Man* didn't stop with those initial explorations. The art team continued to be involved from start to finish on the entirety of the film. What followed the ordinary preproduction process became the boilerplate for the artists' continued involvement throughout the production process on each and every Marvel Cinematic Universe film. Having the artists involved from early development through the film's release was vital in maintaining the consistency of Iron Man's armor from the original design to what ultimately ended up on-screen.

RYAN: The same artists that had been working with Jon Favreau every day would go up to Stan Winston Studios and help art direct the 3D modeling of the suits. And those models were the foundation from which the suits were fabricated for the film. What came out of *Iron Man* was never a be-all and end-all mandate of "Our art should always be in this style in order to get it approved." It was more of a workflow we found to be successful. Jon's collaboration with the conceptual artists and designers carries through to this day on all our films and with all our directors. *Iron Man*, in so many ways, was essentially the blueprint for every movie that came afterward.

As *Iron Man* and *Incredible Hulk* were on the verge of release, I was painting concepts for *Thor* and *Captain America*. It was very, very early. My paintings were immensely helpful to convey immediately from the Studios to potential writers and directors what type of film we were looking to make... They didn't have to describe what they were envisioning — they had my art right there to show what they had in mind. As we worked on *Captain America* concepts, Executive Producer and Marvel Studios Co-President Louis D'Esposito revealed that they had mapped out a large slate of films at Marvel Studios to release over the course of several years. If their plans came to fruition, Louis felt the studio could hire an art team onto their staff to conceptualize everything moving forward. It was an intriguing idea. Sure enough, *Iron Man 2* received a green light and needed to start a fast and furious preproduction process. The studio wanted us involved just as much as we'd been on the first film. Because of that, I wouldn't have time to keep exploring long-lead development on *Thor* and *Captain America*. Louis asked me to recommend somebody to continue that work, and I suggested Charlie Wen.





CHARLIE WEN: *Iron Man* had just been a massive success, and now it was time to talk about the future of Marvel. Ryan recommended that I have a meeting with Kevin Feige to talk about Kevin's vision of a Marvel Cinematic Universe, and how I could help. I was sold when he spoke to me about a long lead time where I could be developing super early work on *The Avengers* years before development or writing would actually start. I was sold. But when I came on board, the first agenda was to design the world of *Thor*. A director, casting, a script — none of those elements had been set yet. And at the time, I was trying to figure out how I could establish a design aesthetic for Thor and Asgard that would contrast well, yet fit cohesively, with the *Iron Man* world that Ryan and Phil had already done. More importantly, this cosmic realm needed to start defining the unseen aspects of the MCU. After leading Visual Development with Ryan on phases 1 and 2 at Marvel Studios, I made the difficult decision to leave and explore new challenges and worlds of my own. Looking back, one of the things I'm most proud of with my time at Marvel was defining the more intergalactic, cosmic, and micro-cosmic sides of the Marvel Cinematic Universe, as these worlds revealed a complex universe that would eventually collide with Thanos and his all-powerful Infinity Stones.

RYAN: After *Iron Man 2*, I took a month off and then went straight to helping Charlie. Those films were our trial by fire, and the process that came out of it created a sense of trust from Kevin and the whole Marvel Studios team. It showed just how valuable having heads of Visual Development on these films could be moving forward. Whatever Marvel Studios could throw at us, we could handle it. Then when *Thor* ended, Charlie and I went right into *Captain America: The First Avenger*. That was the first project Charlie and I worked on together from the very start. There was quite a bit of visual work that had to be developed for that film, and we had to find a way to divide it. We decided I would develop the heroes and Charlie would develop all the villains. That worked pretty well and was very successful.

Work ended on *Captain America: The First Avenger* and next up was the first *Avengers* film. *Captain America* had been challenging and pretty large in scope. And *Avengers*, at least at that point, was going to be bigger than anything we had done previously. We needed help. We needed to hire more people. That's when Andy Park, Rodney Fuentebella, and Jackson Sze came on board. With those talented artists available and willing to jump in to help, that's when the studio asked if we would formally start a group of staff members to work on *Avengers* and anything moving forward. And the Visual Development — or VisDev — team was born.

ART AVENGERS ASSEMBLE

The new team was quickly tested and had to sprint before learning to walk — getting to know each other personally and professionally, having to evaluate quickly one another's strengths and talents. Quite a bit of shuffling was required to assure that *Avengers* was moving forward but also that the films in early stages of development were getting the attention they deserved. Many of the new staff members thought they had been hired for one specific task or film only to find that they were unexpectedly juggling several different projects at the same time.

ANDY: I was hired in 2010 specifically to work on *Marvel's The Avengers*. Ryan, Charlie, and I spent every week tackling a new character for that film. There was a whole lot of pressure. But before we began that weekly grind of character designs for *The Avengers* there was still some design work to do on *Captain America: The First Avenger* and *Thor* due to additional photography and visual effects needs. For *Captain America*, I did design passes on the Hydra bikers and a visual effects paint-over of Red Skull holding the Tesseract. For *Thor*, I developed Odin's damaged-eye look for the flashback sequence.

RODNEY FUENTEBELLA: If you can believe it, I was hired originally to create initial concepts for *Ant-Man*, eight years before the film was ultimately released. But one of the first movies produced that I worked on was *Captain America: The First Avenger*. And then after that, much like everyone, I really got my feet wet on the first *Avengers* film.

JACKSON SZE: I joined Visual Development in January of 2011 to explore environment concepts of Wakanda, for an earlier version of *Black Panther*. During that time, I was also involved in exploring the visual language of *Ant-Man*. When it became clear that *Marvel's The Avengers* needed every artist's attention, I transitioned onto that film.



Marvel's The Avengers was a monster hit. Audiences applauded the team-up of Earth's Mightiest Heroes on the silver screen for the first time. From a practical standpoint, the epic film had proven that the work done both visually and through the storytelling to build the characters individually also resulted in them working in perfect concert with one another in the same film. Years of work, deemed "Phase One," had paid off, and the VisDev team – as well as the other teams at Marvel Studios – could be proud of their success. In reality, that's when the real work began. As had been the ambition, Marvel Studios set its sights on producing multiple movies in a single year and building the Marvel Cinematic Universe into a world as expansive as that in the comics. If the Visual Development artists thought their biggest challenges were in the rearview mirror, they quickly found they hadn't seen anything yet.

RYAN: After *Avengers*, the slate was so vast. Multiple projects in preproduction and production simultaneously meant it was going to be difficult to have all of us work on them together. It became clear that we'd have to find yet another way to split the work to keep up. Charlie and I ultimately decided that we would each head the Visual Department on separate films. I would take one movie, and Charlie would take the other. This allowed Charlie and me to focus and really own a project while not being spread too thin trying to do it all.

In turn, it also allowed our team of in-house artists to own characters through their development as well. Our in-house artists would be supplemented by freelancers to help with the workload where we needed them – which, at first, meant only adding a couple of artists. By the time we got to the third and fourth *Avengers* films, we had 25 artists working together.



ANTHONY FRANCISCO: I was only supposed to be here for three weeks. I had been hired to work on *Guardians of the Galaxy* as they were increasing the art crew to work on just that film. Little did I know I would be here all of these years later working on multiple films, creating marketing materials, aiding with theme park designs, and so much more. It can be really overwhelming — especially when we try to render all our art in such a fine-detail, finished form.

As Marvel Studios grew, so too did VisDev, bringing on more freelance artists with new expertise. But the spirit of VisDev never changed – it's a real team of artists and designers, inspiring one another with new ideas every day. The demands of the studio are more and more ambitious, but they always rise to the challenge, learn new skills, and build upon what came before in ways no other film studio allows for.

KARLA ORTIZ: *Doctor Strange* was my first Marvel Studios film. Since then, they've called on me to develop concepts for *Black Panther*, *Thor: Ragnarok*, *Avengers: Infinity War*, and much more. I always dreamed of working in the film industry, but as someone who grew up on an island, so far away from all the action, it felt like something unattainable. That my journey and art has led me to work on such iconic films, alongside such a talented team, has been an absolute dream and joy for me! Here's hoping this book inspires many more people, regardless of where they are from, to reach and attain their own dreams!

ANTHONY: The friendship we have on the team is very evident. We know each other so well that silly ideas may sometimes lead to inspiration for our character. For example, I was talking to Andy about something funny that my kids did and that gave inspiration for Baby Groot!

ANDY: On top of the artwork that we're creating for the productions, we're also designing book covers, magazine covers, marketing materials, concepts for theme parks, posters. I think that's what's so rewarding about our department. We get to see the whole project through from preproduction, production, post-production, to even the marketing stages of the filmmaking process.

And I think that's one of the cool things about our group: Each artist definitely has their own strengths.

— RYAN MEINERDING

JACKSON: Just one *Avengers* movie used to be our biggest challenge. Now, on any given day, we can be tackling multiple films, theme park work, posters, marketing materials, and so much more. All simultaneously.

ANTHONY: I tell art students all the time to really push themselves, really overload with work to be comfortable with being uncomfortable. Certain art schools will have a knack for assigning more homework than students should be able to handle. But that's intentional. The school is simulating a concept artist's everyday workload.





RYAN: It's a job that doesn't really ever let up. If there's a one-week period when I don't have something due, it's a miracle. Everyone in the department usually has at least five or six things on their plate, and two or three of those things are due every week. But with the team that we've put together, everybody is able to help with so many different things.

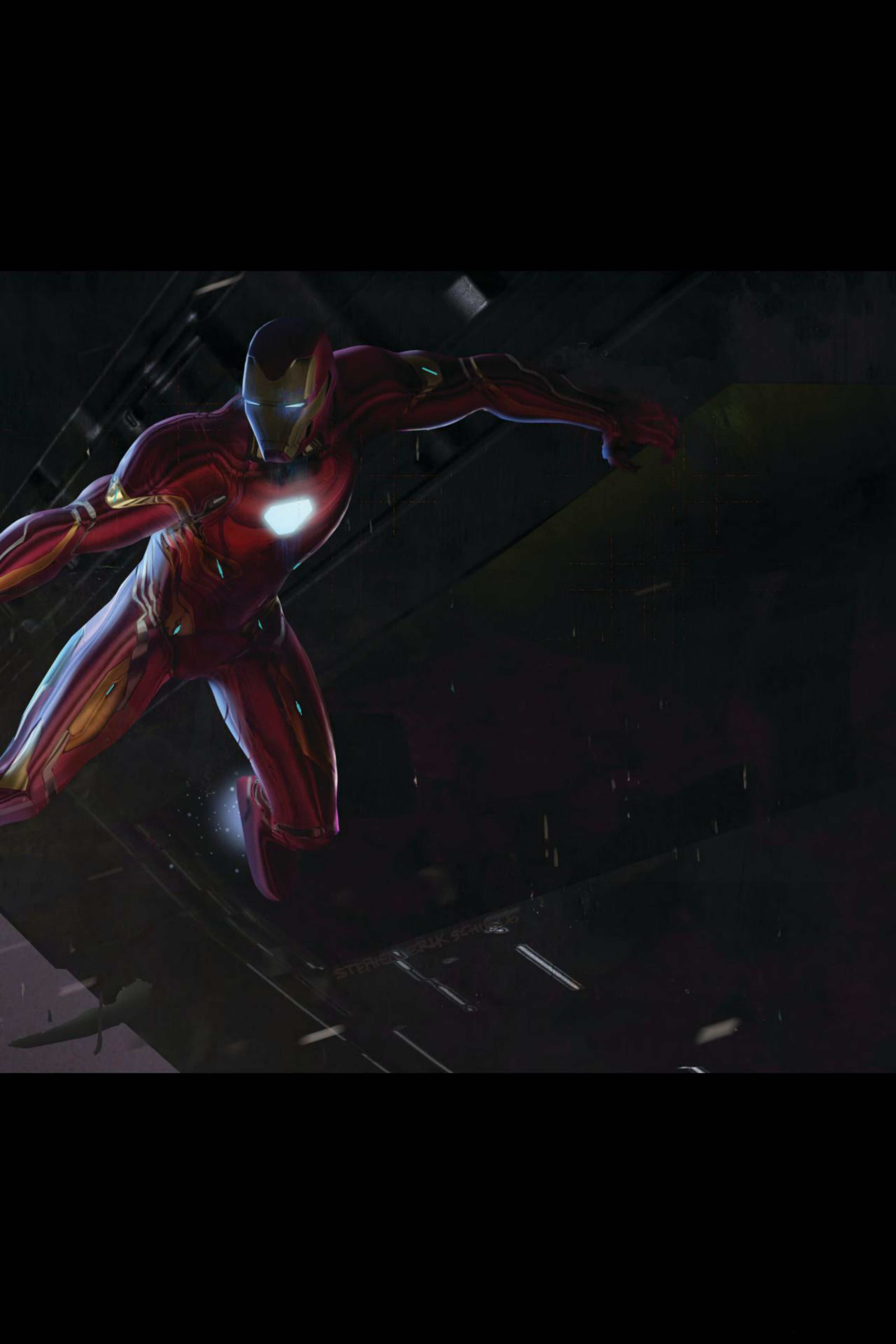
And I think that's one of the cool things about our group: Each artist definitely has their own strengths. And we try to delegate based on those strengths. But at the same time, there's a great sense that everyone in the group wants to become really good at everything. Our artists are hungry to grow and to learn. Rodney Fuentebella is a great example of that. He came in as one of our best keyframe artists. He wanted to get more into character development, and we were able to push him toward that work. Now he's an artist who can paint these beautiful keyframes, develop incredibly fun and dynamic animated sequences, *and* help design characters whole cloth.

RODNEY: There's always something that I've never done. I had to and still have to be humble and open to learning. There are things that we just have to learn on the job, which is often exciting and terrifying at the same time.

JACKSON: I came into the department predominately as an environmental designer. In order to stay productive, I had to hone my character design work and strengthen my ability to paint keyframes. I am grateful Ryan and Charlie pushed and helped me craft those skills.

ANTHONY: We all enjoy learning new techniques and processes of always being a student of art. That's my mind-set in life: Be open to new ideas and continue to improve your craft.

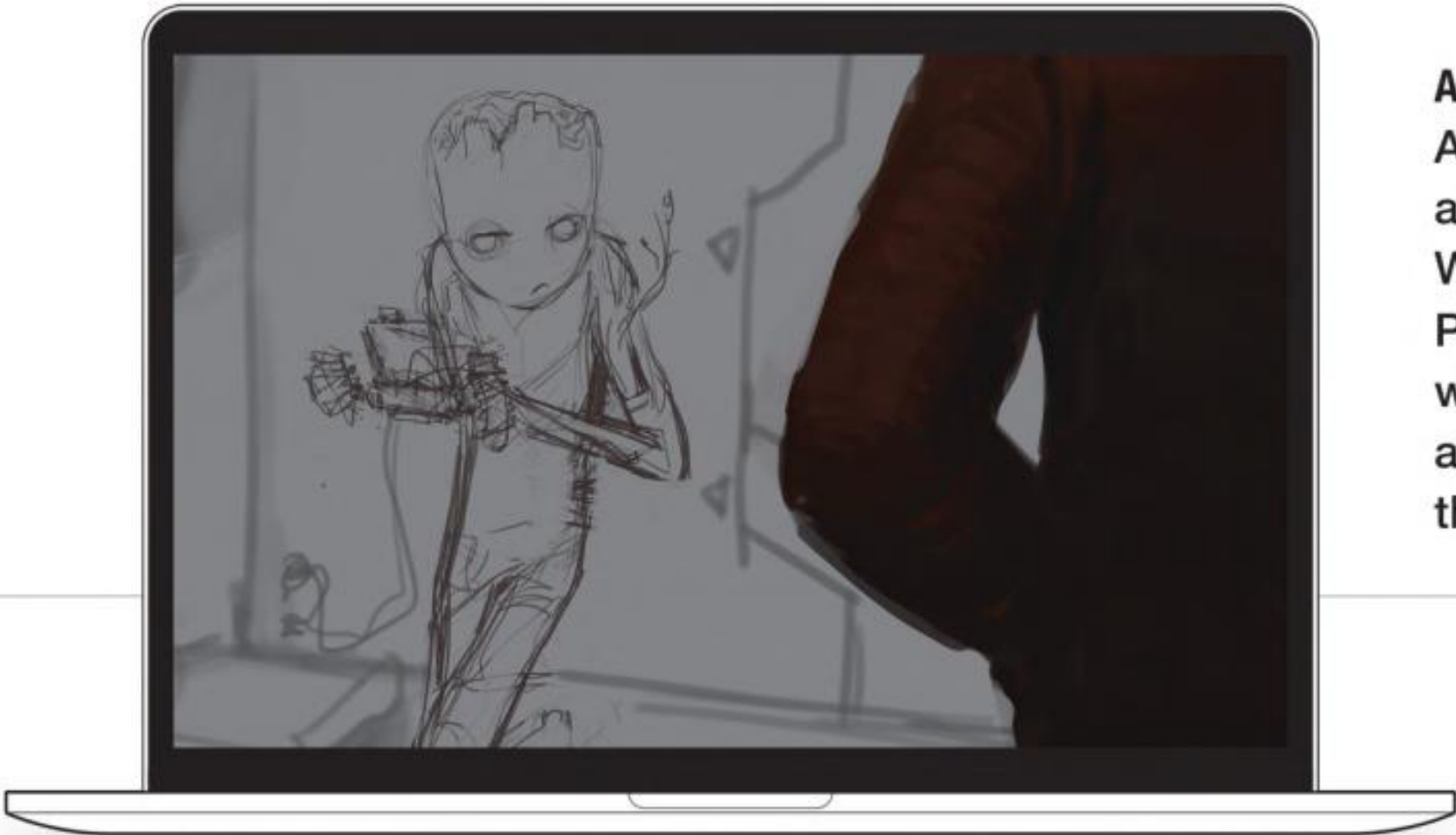




TOOLS OF THE TRADE

If you want to be an efficient artist for the Marvel Visual Development team, you'll need to spend tons of time at your workspace, developing incredible characters. You'll want your station to be both comfortable and functional. Choose your space wisely, and then make sure you have everything you need within arm's reach to assure you're at your most productive.

Here are some helpful hints for materials that should be nearby and at the ready.



ADOBE PHOTOSHOP

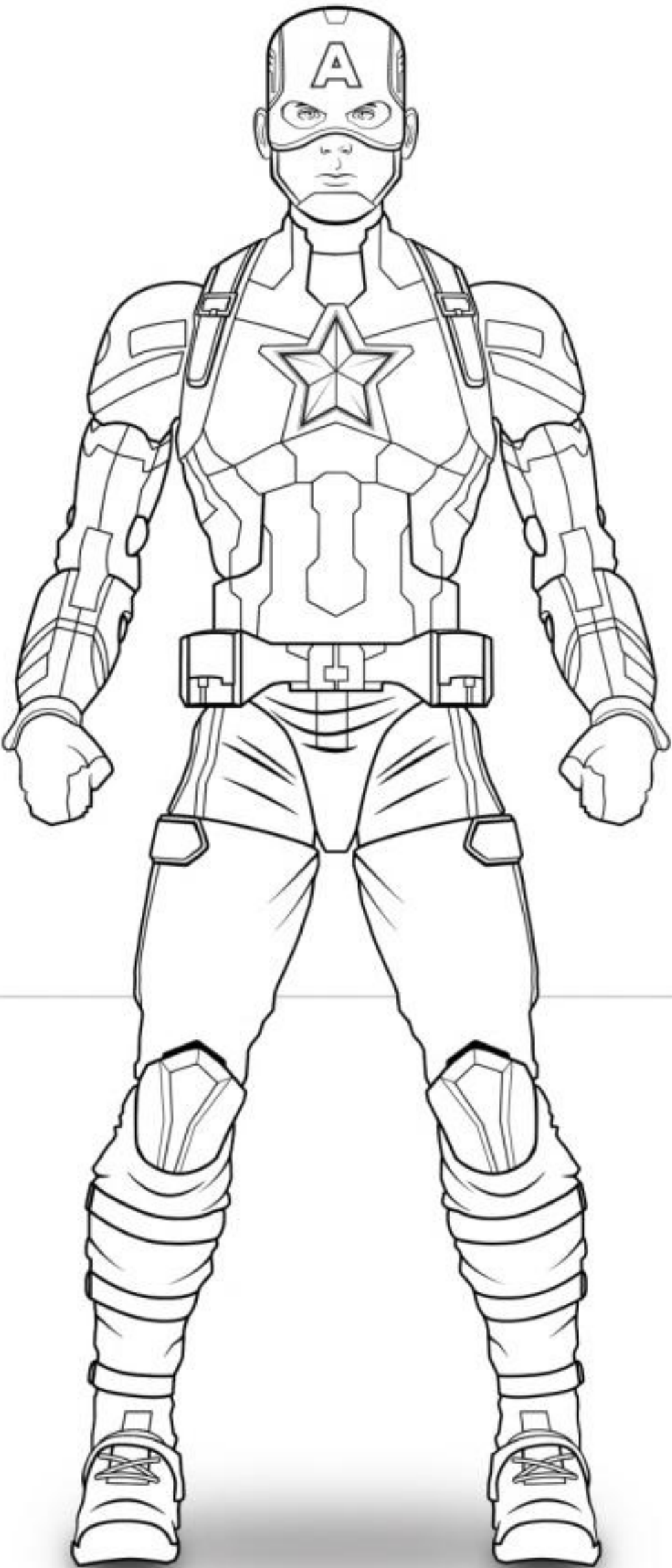
Adobe Photoshop is an industry standard and is VisDev's preferred painting program. We know what you're thinking: Isn't Photoshop for photos? It is, but it provides a wealth of tools, plug-ins, and functions that are essential to creating realistic paintings in the Marvel Studios style.

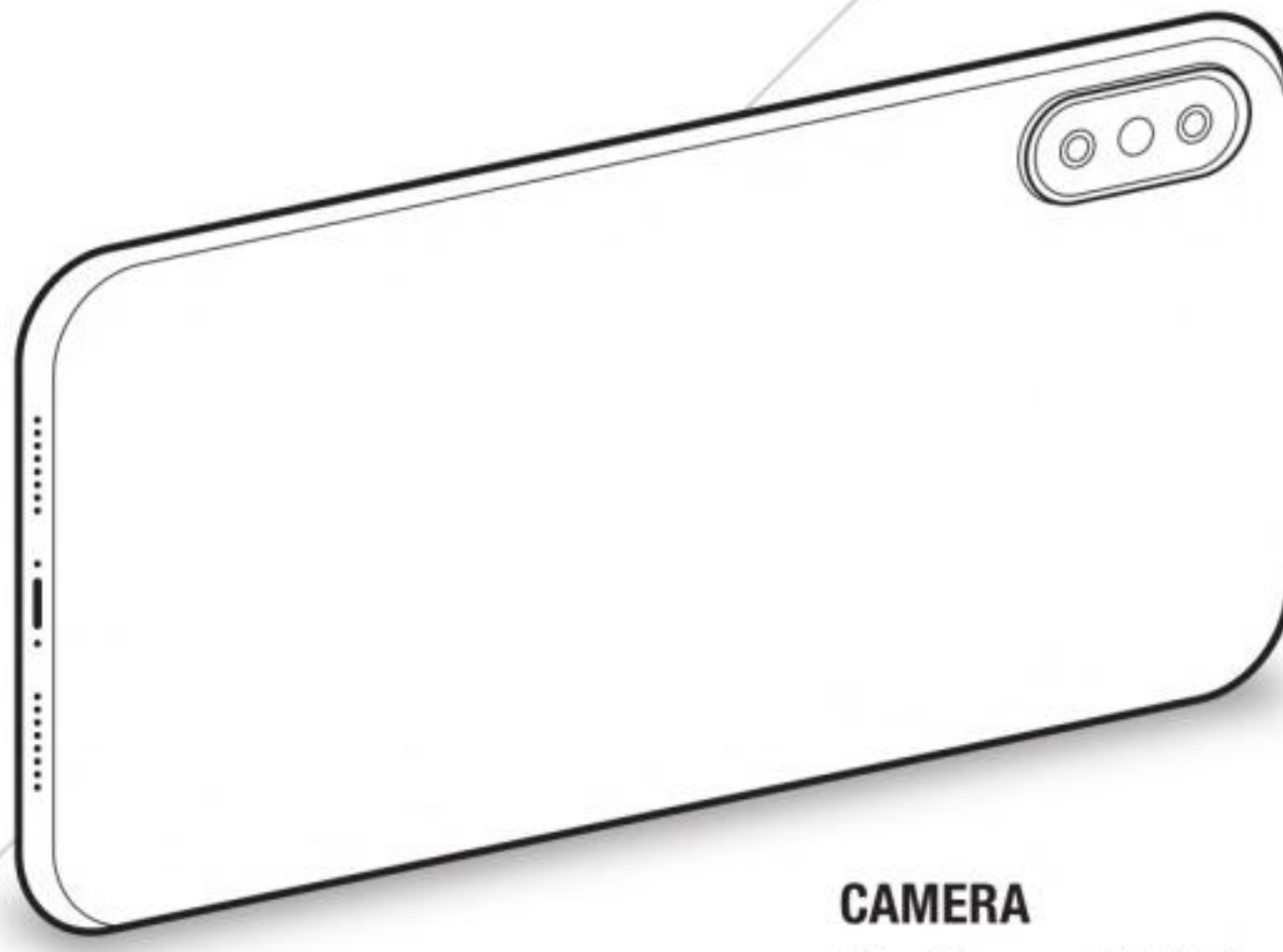
ANDY PARK: Adobe Photoshop is the absolute standard for our line of work. We're treating Photoshop as a painting tool with a tablet, and it works as if painting on a canvas with customized brushes. The options and the capabilities of Photoshop are outstanding. It gives us a level of control over our paintings that is unmatched by any other program.

Photoshop can be a costly application but is well worth the investment. Students should explore discounts from their institutions. If you're working on a budget, Adobe has several low-cost monthly subscription services that allow you to pay as you go, rather than having to pay in full for the program up front.

ANATOMY REFERENCE AND POSABLE MANNEQUINS

A lot of the artists have action figures on their desks with numerous points of articulation. And while they are fans of the Marvel characters and enjoy decorating their offices with collectibles, they're not just for show. Posable reference can assist you in visualizing poses quickly and effectively. Sets of posable mannequin figurines can be purchased at art-supply stores relatively inexpensively.





CAMERA

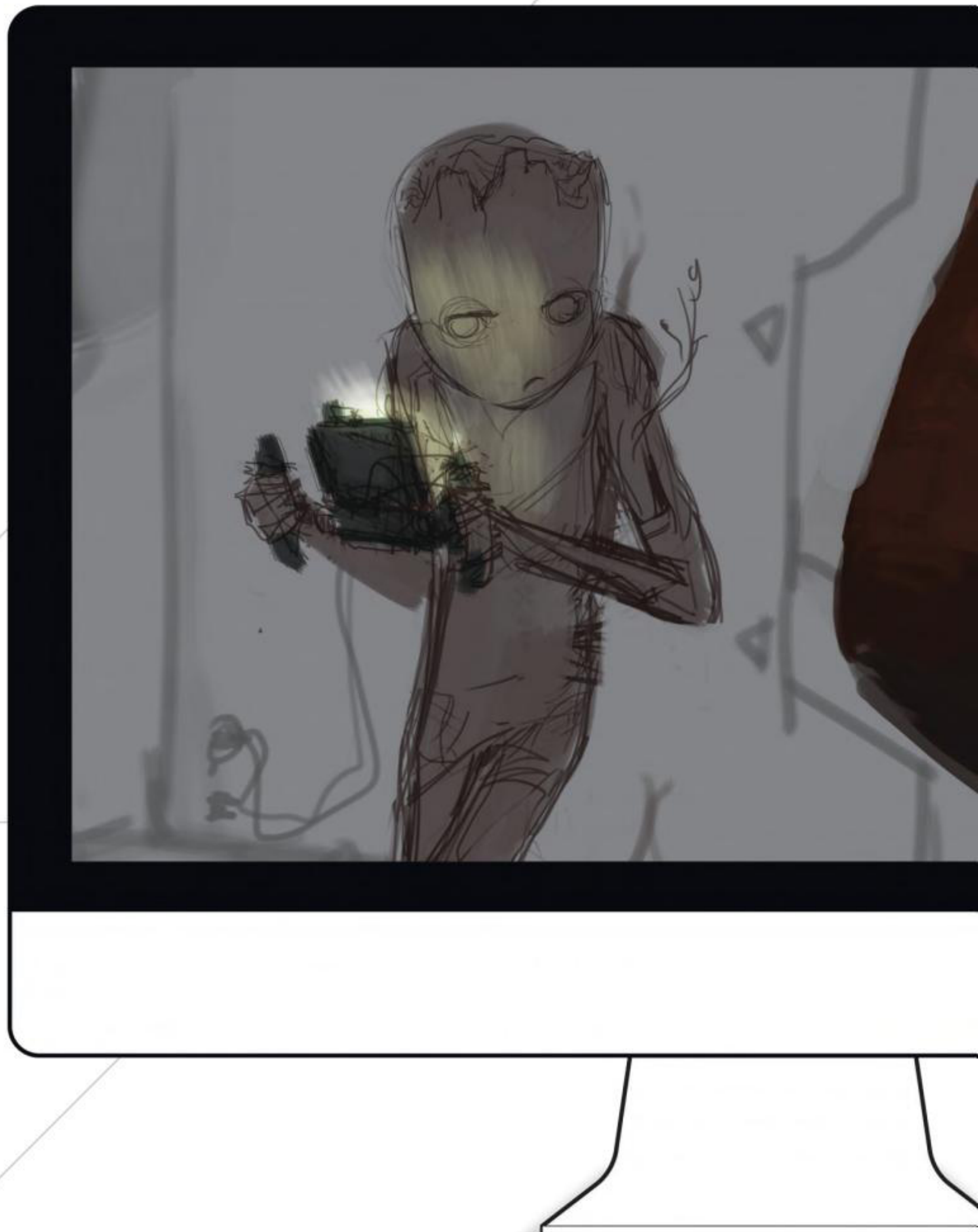
Having a digital camera, even a small point-and-shoot camera, can be helpful in collecting textures, lighting reference, facial details, and a whole lot more. With smartphones, having a digital camera on your person at all times has become commonplace. Make sure you're taking advantage by snapping photos any time there's something you believe will come in handy for a current or future project.

A CUP OF COFFEE

When asked what tool he could absolutely not live without each and every day, one artist answered immediately and with tenacity.

RODNEY FUENTEBELLA:

Coffee. Definitely coffee. Often, when wrapped up in your art, you can forget to stay hydrated — something that's essential not just for your health but also for your creative productivity.





ENTERTAINMENT

Artists have their own preferences for what keeps them focused, inspired, engaged, and sometimes entertained during some of the more tedious painting sessions. Music, TV shows, or white noise are sometimes a crucial part of an artist’s workflow. For others, absolute silence may be necessary. You’ll find your own preferences quickly.

JACKSON SZE: Variety of content is key for me. A piece of music can help me get into the right mind-set for a particular design. Sometimes a comedy rerun in the background helps when I’m rendering. My mind tends to wander, so side content can help me concentrate. But, in some instances, I need to work in silence.

ANTHONY FRANCISCO: When I’m designing, I feel like my mind needs to be still and quiet so that I can grab the ideas before they fly away. Music distracts me from that. Although sometimes music will get me into the right mood or frame of mind, especially when I’ve moved on to rendering and detail work. That’s when I’ll keep the music on.

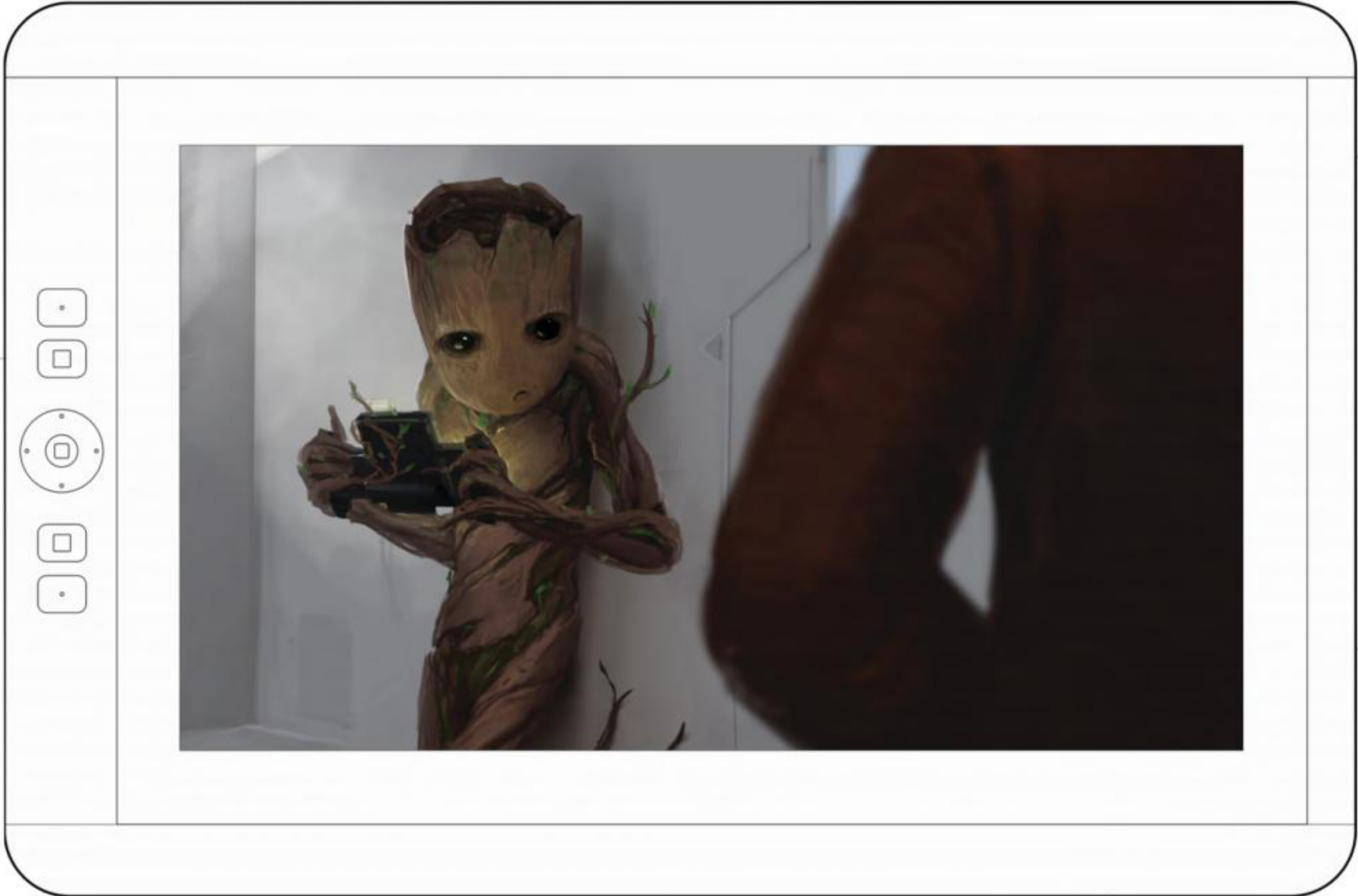
RODNEY: Music is great, but I’m more of a movie guy when it comes to what I call “work-watching.” I work for long periods of time, and I need something that’s going to be in the background while I’m working all day. I lean toward watching something with a great story and engaging characters. Moreover, there are so many great shows being done that I feel like having a chance to have them in the background not only entertains me but educates me in the various stories out there.

THE INTERNET

We live in a Renaissance age where a wealth of material is instantly accessible from anywhere in the world. Google Image Search can be a very quick and effective way to find photo reference or to deconstruct design. Combining image searches with a data-collecting tool like Pinterest can help you start cultivating several quick and easy resources to find inspiration.

ANTHONY: As a concept designer, a tool like Pinterest is extremely valuable because you can group visual references together from a variety of resources.

RODNEY: Streaming content is incredibly useful because there are a lot of things I have learned and found out. I love how I can look up information that is useful for the moment and project at hand.

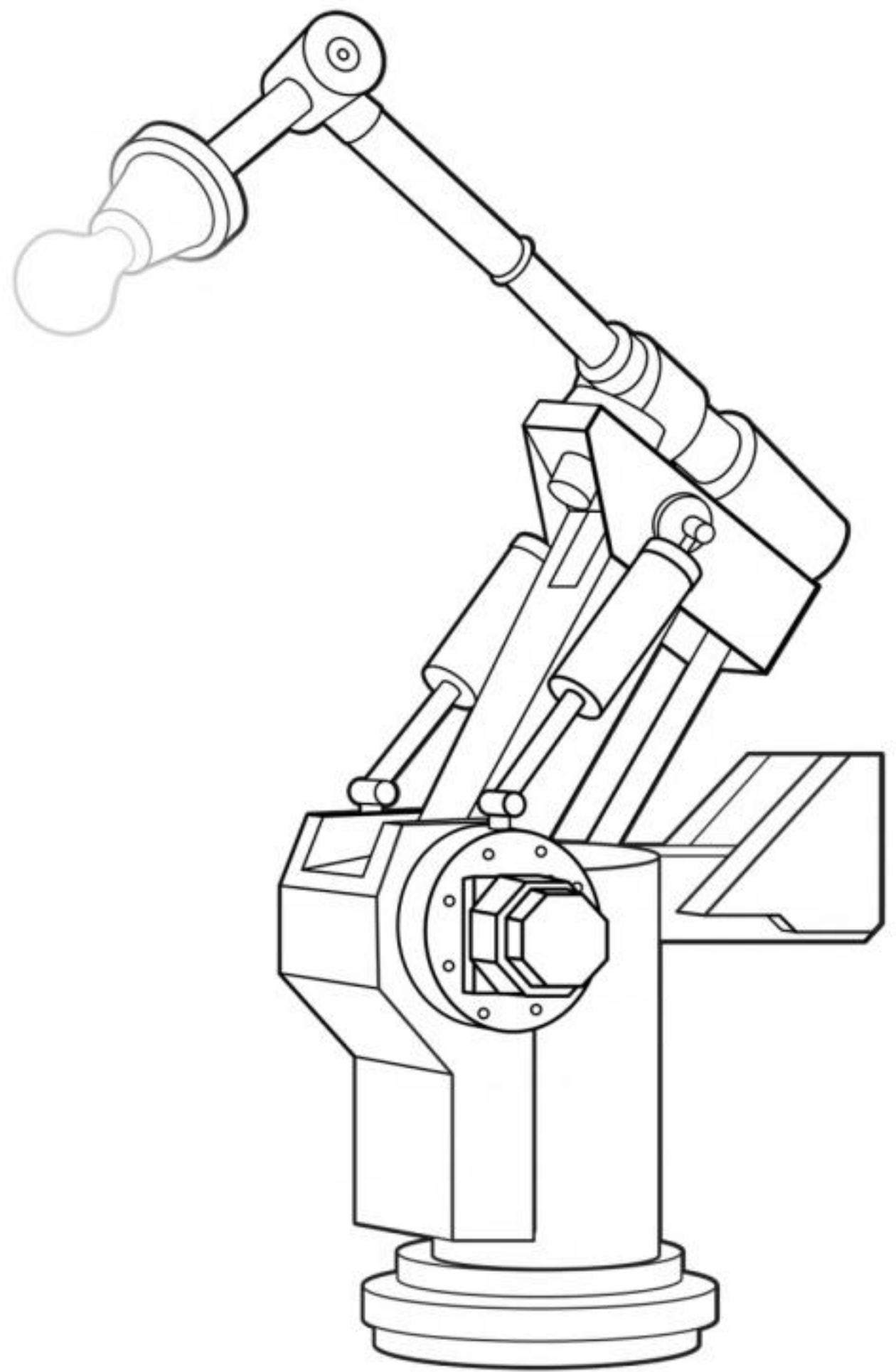


INPUT DEVICE

In traditional painting, a canvas and an easel are the only tried-and-true way to transfer an artist’s vision to an audience. With advancements in digital-painting tools, artists now have a variety of options from which to select the input device of their choice. Whether using a tablet in tandem with a large, high-resolution monitor — or a device that allows the artist to draw directly on the screen, like a Wacom Cintiq — your choice depends solely on your preferences as an artist. Both have their advantages and disadvantages. Using a tablet requires hand-eye coordination to draw on one surface and see the brushstrokes appear on another. However, the canvas will never be obscured by the artist’s hand or arm, allowing for a full view of the entire illustration at all times. Using an interactive pen display, such as a Cintiq, gives the artist a more tactile experience, similar to drawing or painting on a canvas. The majority of the VisDev artists use a tablet and a large, high-quality secondary monitor. Fuentesbella prefers an interactive pen display he has mounted to a swiveling/adjustable arm at his workstation. Lengthy lunchtime debates and entire blogs have been dedicated to the benefits of both options. Ultimately, the choice is yours.

LIGHTS

Your workspace should be well lit with lamps that are gentle on the eyes. Color temperature will also affect how you view your screen. Lighting that replicates daylight on a dimmer will give you the versatility you need for a variety of tasks. Having lights you can manipulate like a mock photo studio will assist you in those last rendering passes. Shining a desk lamp on your face or lighting your anatomy reference — even if it's an action figure on the desk — will help get the representative shadows and highlights needed to make a painting look realistic. Combining small lights with reference busts will be especially useful.



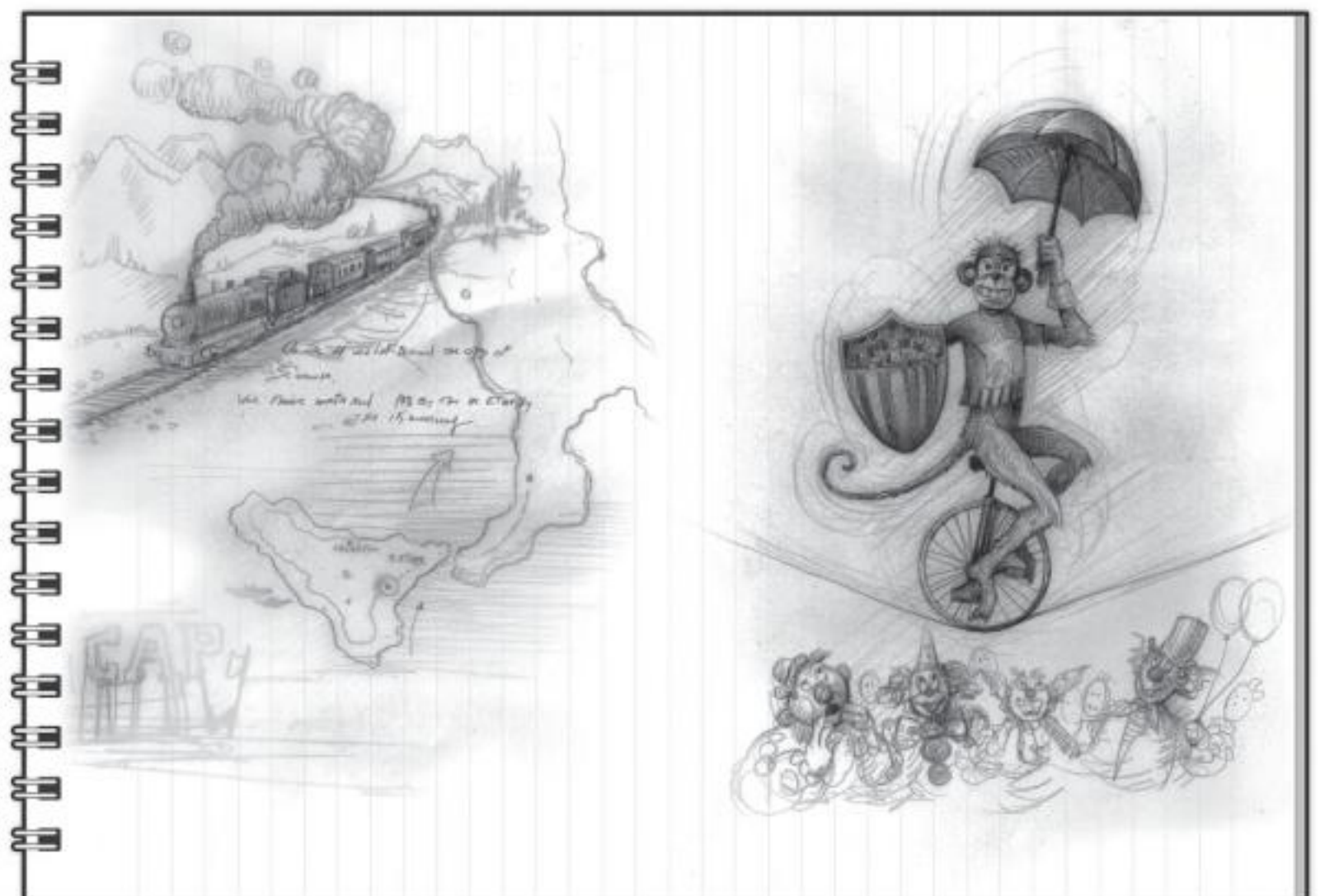
MIRROR

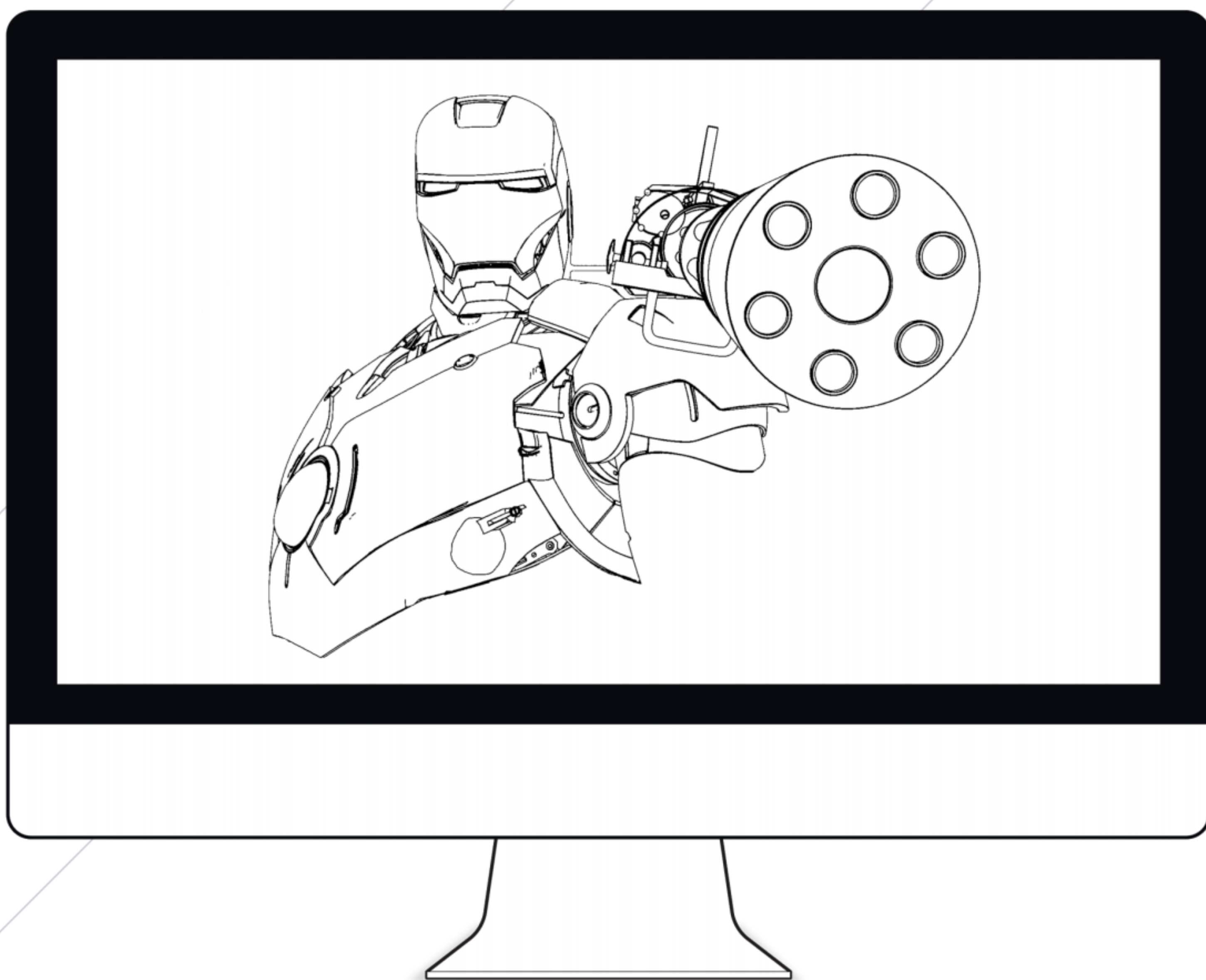
The best reference you have for facial expressions? Your own face. A small mirror — or, better yet, a mirror propped up like a framed photo for quick and easy glances while working — will be extremely helpful.

SKETCHBOOK/NOTEPAD

Inspiration can be found everywhere. It has a knack for striking when you least expect it. The way a tree branch casts a shadow onto a picket fence during a summer afternoon walk. The weathering on heavy equipment found at a nearby construction site as you eat lunch. The colorful cast of characters who surround you on a train ride home. Design details both great and small can quickly inspire or remedy a perplexing puzzle. While we all wish we had a photographic memory, you have to be ready to get ideas down before those fleeting moments can escape.

Additionally, in the entertainment industry, notes can come fast and furious and at any time. A presentation meeting could yield a variety of notes, feedback, and items for your to-do list that could quickly be forgotten. It's essential to have a small notebook or Moleskine sketchbook in hand at all times. Quick sketches, lists, notes, musings — this notebook can be used for a variety of purposes. Don't be caught scavenging for a piece of paper and a pencil — always have one on you. Portable tablets, such as the iPad Pro and Microsoft Surface Pro, can also be effective productivity tools (but quite a bit more expensive than a \$2 notebook found at the local grocery store).





3D SOFTWARE AND RENDERING TOOLS

At Marvel Studios, the ability to render characters into a three-dimensional space can be instrumental in advancing the production process. Taking a painting out of two dimensions and delivering a full turnaround to a costume designer or a visual effects artist, accentuating each and every aspect, can save time and ensure detail isn't sacrificed for expediency. Painting and working in 3D are two very different talents, but it's to your advantage to push your knowledge into the latter space. An assortment of industry-standard applications in 3D modeling can cater to an artist's strengths and help create a photo-realistic image quickly and effectively. The focus of this volume is digital painting, but many of the VisDev artists have already sharpened their 3D-sculpting talents or are in the process of doing so.

ANDY: My first love and passion was traditional drawing and painting. But for my job, the preferred method of working is painting digitally in Photoshop. I also will use ZBrush at times. It's something that's becoming more and more necessary for artists in our field to know and be comfortable with. After I do a painting, I'll often model the character in ZBrush to help me figure out the back and side views of the character.

THE MARVEL STUDIOS STYLE

What is the Marvel Studios style? Can it be defined? How has it remained consistent through ten years and twenty-plus movies? At Marvel Studios, three style and process elements are key in continued consistency: devotion to the character's rich history, photo-realistic realism, and establishing a tone and staying true to that feeling at all times.

RESPECT THE PAST

RYAN MEINERDING: At Marvel Studios, we always have reverence and respect for the source material. What we develop is always representative of the established icon of the character, which we will discuss later in the book. However, keeping in mind that we're trying to stay true to previously established designs, there are two ways that we can approach a character. The first is doing everything that we can to translate each and every element of a character one-to-one from the comics to the screen. The second is taking subtle design cues from the source material and having them inspire us to explore a new approach.

ANDY PARK: There's a deep love and care for what we're doing with these characters. We take enormous pride in keeping the characters true to the source material while also finding ways to elevate their design. These movies are so diverse, but simultaneously we're trying to create a cohesive universe. We have cosmic films; we have more grounded films. We have characters who are more tactical. We have characters who are more science fiction-based. Ant-Man's technology is totally different from Tony Stark's and Wakanda's technology. But they all exist in the same world. It helps to have a consistent group of artists who create the look for it all so that there's a through line to the design across the board.





RENDERING THE REAL

Viewing the work of Marvel Studios’ VisDev artists as a whole, one common trait materializes as abundantly clear: many of the final paintings cannot be distinguished apart from a final frame of the film. This is a conscious effort by all of the artists across all of their works. Photo-realism has become synonymous with every finely detailed piece created by the department.

RYAN: Even though some of the characters live in a more cosmic or a more realistic world, we strive for realism. From our very first concept paintings, we want to make sure we’re representing how these characters will appear on-screen as accurately and as close to final as possible. Each and every time. What this means is that there’s a greater amount of detail down to a granular level to make every painting feel like it could be a frame of film from what the audience will see on-screen.

CHARLIE WEN: If you go back to the golden age of American illustration, artists — Dean Cornwell, J.C. Leyendecker — had such a focus on painting. Norman Rockwell had a process where he deliberately spent time studying how lighting works and how to make his paintings look believable. That’s really important to Marvel Studios’ Visual Development department. When Ryan and I started the department, one of the things that we wanted to keep high on the priority list was painting in that tradition. We wanted to make sure that we maintained the importance of the art.

ANDY: I come from a video game design background. In that industry, the conceptual artist can turn in a rough sketch to initiate conversations with the director(s). We will then work up to a final, more detailed painting that gets approved. At Marvel Studios, every painting looks finished and polished in the very first pass. Any painting we do here, any design that is presented, has to be able to get approved from the get-go. It has to be ready to go immediately to the costume designer. It has to be ready for a visual effects artist to reference in their frames. Every single design has to be well thought-out.

JACKSON SZE: Because the team here in Visual Development has been together for so long, our design sensibilities are familiar to each of us individually. The designs have stayed cohesive and consistent. Perhaps that’s due to subconscious familiarity of previous design solutions. Certain properties require more grounded solutions, while other films are as fantastic as we can imagine them. Knowing how we handled the past can help us figure out how far to go in the future. What haven’t we tried yet? What is too far in terms of design? Have we even begun to go “too far”? The challenge comes from presenting the audience with something new while still staying true to the Cinematic Universe.

RODNEY FUENTEBELLA: Our style is more of a theory rather than rules. We don’t have a checklist that mandates “cheekbones should look a particular way for a villainous character” or “eyes should look a particular way for heroes.” Really what it comes down to is that we’re translating what’s been done in the comics and mixing that with a believable portrayal of what that should look like in film and encompassing the visions of the filmmakers. A focus on bringing characters to life and making the world fit the purpose of the film — that is our style.

ANTHONY FRANCISCO: In describing the style of the studio, the first thing that pops into my head is the way that Ryan paints. He has a very realistic way of painting. We all paint differently, of course. But I think the VisDev team has similar sensibilities. We push the boundaries of what is familiar to us in our everyday lives but in doing so are aware to keep the design believable and realistic. We try to imagine every image as far as a photo-real frame from the film while keeping a very “Marvel” quality to them. When you look at the imagery that we paint, it feels tangible. Like something that could be made practically.



TOTAL TONAL IMPORTANCE

Rendering paintings in a photo-realistic style can be a challenge. Attention to those details are extremely important, but keeping an eye on the larger image is also necessary. To adhere to the Marvel Studios style, an artist must make sure each additive design choice fits tonally within established parameters in order to avoid a contrast. An outlandish design may not be appropriate for a more realistic film, and vice versa. A light, comedic character amid a film intended to be seeped in the darkness might cause disparity.

RYAN: It’s important to remember that we aren’t just focused on the look of the costume and its design. We treat all of our designs in a more holistic approach, keeping in mind that we are establishing tone for the character and for the film as a whole. A character’s pose, facial expression, even the choices we’ve made in the lighting and coloration of an image help to define the overall tone of the entire film.



W.I.P.

CHARACTER DESIGN PROCESS

In the chapters that follow, we'll break down the process of character development into key steps to be taken when approaching a new project. But before moving forward, a quick assessment of the road ahead can be beneficial to help as a reference point for the design process. Like the building of any muscle, exercising the same repetition in a design process can build strength in an artist. That is why we suggest the repeated task of answering a quick questionnaire before even putting pencil to paper.



In a way, we as artists are breaking down the character to make sure we understand them before we try to convey them to others. Some artists prefer to answer these questions on a physical character sheet they keep near their desk at all times for quick reference. Having these parameters in place will help keep your task palatable, no matter how great or small the design challenge.

While you may find you prefer handling the creation of this information in a different way, or that it's beneficial to alter the information you're gathering and keeping in front of you at all times, it is our hope this exercise will inspire you. Each artist in Marvel Studios' Visual Development department has their own way of setting these parameters. This is merely a starting point for you to create your own methods.

The ultimate purpose is to have a biography of your character on hand that you can constantly reference through the design process.

WHAT IS THE MAIN DESIGN CHALLENGE AT HAND?

Usually this assignment is given to an artist by their client, be it one of the producers or a director. They'll walk into the VisDev department excited about the next big thing. In these instances, where a client is coming in with a particular need, you need to be ready to take direction and guidance based upon their instruction. Listen attentively. Collect as much detail as possible from the request. Sometimes things that may seem insignificant on the surface level are crucial details. This includes the attitude and tone of the person handing over the assignment, which can be just as important as the words they are saying.

Much like *Jeopardy!*, this first bullet point can also be answered in the form of a question: the questions you'll be asking yourself throughout the design process. Or the questions you'll have to answer with a particular character. It's okay not to have all the answers at first. In fact, having questions to answer will only add to the layered complexity of the character being created.

WHAT IS THE CHARACTER’S STORY, AND HOW WILL YOU TELL IT WITH VISUALS?

Characters externalize ideas about themselves through their clothing. Try to understand what a character expresses through the physical design choices they present in their wardrobe. Does their clothing symbolize their freedom? Are they trying to adhere to their father’s legacy or expectations and therefore look like that other character? Are they down on their luck but trying to look as if they’re prosperous? Are they royalty but attempting to appeal to the masses? Do they have something to hide? Every costume means something to the main character and therefore means something important to the story — this is why it is essential to understand what story you’re trying to tell.

RYAN MEINERDING: Characters externalize ideas about themselves through many different ways. Costume is one way; what does their costume mean to them? Does it symbolize their incredible technological mind, their dedication to their country, or something else? The character’s pose and posture also communicate a lot about the character; what information can you layer into those elements to show the audience who the character is? The Hulk’s body type determines a lot about his character, but his poses and posture communicate even more. Every visual can mean something to the character and therefore mean something to the story. This is why it is so important to know what story you’re trying to tell.

WHAT ARCHETYPE IS YOUR CHARACTER?

The most useful way to approach this question is to identify the defining traits of your character that make the audience have empathy for them. Once you have determined this, it will also influence and define their relationships with everyone else in the story. Oftentimes, assigning a category or a profession at a most basic level will assist in this process. This could also be as simple as establishing the environment in which the character must exist and operate within. Categories like “hero” or “villain” or “teacher” or “parent” are overly simplistic, and intentionally so – they exist to provide you with some base expectations to build your character up from.

RYAN: The most useful way to approach this question is to identify the defining traits of your character that makes the audience have empathy for them. What problems does the character have, and how can you use those to allow the audience to see the world through their eyes? Understanding the supporting cast through archetypes will also be useful in directing empathy back at the main character as well. Archetypes usually define an important relationship with the main character, and using that as a starting point for your design is a great idea. Your villain is meant to oppose your hero, so how can you visually and conceptually make the two of them contrast each other? Allies are meant to support the hero; how can you unify them with the main character in a compelling and interesting way?



**WHAT POWERS DOES YOUR CHARACTER HAVE,
AND WHAT DO THEY MEAN TO THEM?**

While “powers” are most associated with the Super Heroic, these can also be the abilities or the strengths of the character. Identifying what a character is (or is not) capable of doing, and how that might affect or create problems for them, can immediately influence their visual design. If a character excels at sleight of hand or misdirection, it may affect their choices in wardrobe. If a character can bend and contort their body into unnatural positions, they might want to only wear clothing that is pliable.

**WHAT IS AN IMPORTANT STORY MOMENT FOR THE CHARACTER,
AND HOW CAN YOU VISUALIZE IT IN A POWERFUL WAY?**

Often thinking about a scenario in which the character will need to function can assist in the design process. Finding a story moment, even if it has not been scripted for you, in which the character will be challenged or fundamentally changed and then predicting how the character would react can help in defining their character. Do they stand tall in the face of adversity? Has something in their life brought them to their knees in anguish? What are some of these vital moments in the character’s history, and how would they have reacted?





WHAT ARE THREE UNIQUE DESIGN DIRECTIONS YOU COULD TAKE THE CHARACTER THAT TELLS THE STORY?

Exploring potential alternatives from the start will not only get your mind thinking in new and different directions but will also assist in the notes and feedback process with the character. Having alternative avenues already in mind, if not already painted on the page, can keep you ahead of the curve later in the process. At the same time, forcing yourself to think of alternatives may send your creativity in a direction that you might not have immediately thought of and ultimately lead to a better design.

HOW DO YOU MAKE THE CHARACTER FEEL REAL?

This is achieved differently for every story, but mostly it's through asking questions. What tasks does the hero have to accomplish, and what do they need to wear to legitimately, believably complete them? Is there something in the environment that will dictate what they need to wear? Do they have a profession or a job that will define their look at a certain point in the story? Understanding how to answer some of these questions so that the audience can believe in the realism of your design is an important part of the process.

THE RESEARCH PHASE

You may not have access to the same vast library of comics art as the Marvel Studios Visual Development team. You also may not have a production staff that prepares detailed packages of reference material for you. The good news is that a wealth of reference material is still immediately accessible with one quick internet search.

It's important to keep in mind that the research phase is not just about pulling art from the storied history of Marvel Comics. When adapting characters for the real world, looking to the real world for reference is essential — even for aliens and other creatures. Enduring sources of reference like *National Geographic* magazines or TV series like *Cosmos* that encourage you to see the world — and the universe — from a different perspective can be valuable tools for the aspiring designer. There are several different types of references available to you — we'll detail a few of them for you here.

CHARACTER HISTORY

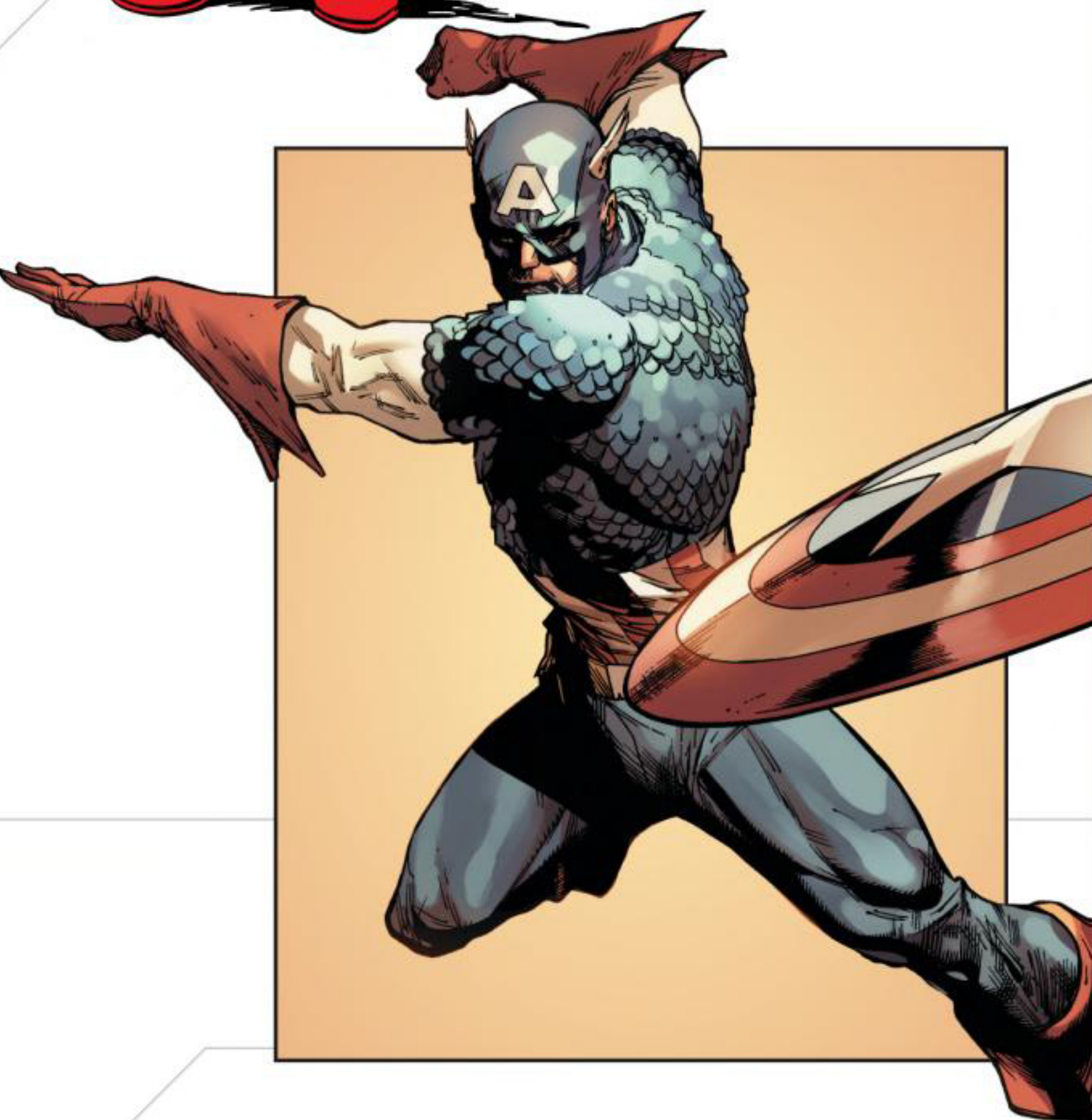
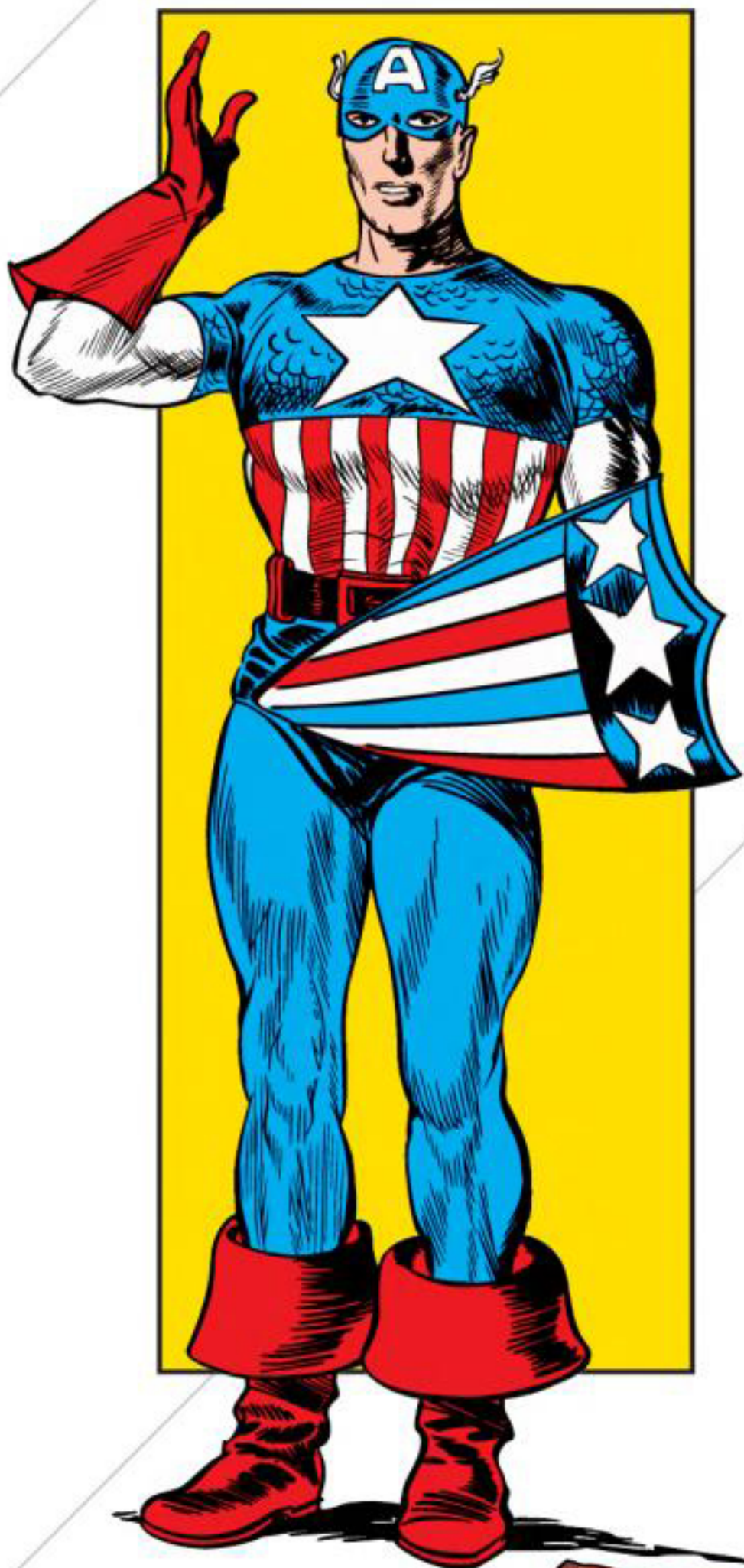
CHARLIE WEN: Research is among the most important parts of the character-development process. After you've gathered your thoughts and have a sheet in front of you with questions that need to be answered, that's when you can begin your research to find reference with a very focused direction. And when we say reference, that isn't just grabbing imagery from a Google Image Search or from Marvel Omnibuses. It's learning about characters. So much of the research process at Marvel Studios is focused upon that goal. You have to digest and process a long period of history as quickly as you can. Comics are known for change. It's important to look through the history of the characters and determine what changed, what necessitated that change, how long it took for that change to occur, and how the readers responded to the change. All these elements affect the fans' mental picture that has defined the character for generations.

It's important to look through the history of the characters and determine what changed, what necessitated that change, how long it took for that change to occur, and how the readers responded to the change.
— CHARLIE WEN

ANDY PARK: Often in meetings we'll bring some of those classic and iconic images from the comics and present them on-screen and discuss with the director and producers. We'll present images of various interpretations of the characters and ask which of those speak to them and what it is about that particular iteration that stands out to them. So the source material is the foundation, but based on the script (if there is any at that point) and the desires of the directors and producers, we will let that guide us in the design process.

CHARLIE: In some instances, I will start with a handful of sketches before I start pulling additional research. Just small little doodles on physical paper. This helps me get ideas down and quickly evaluate my gut reaction to a character. These sketches can sometimes be as simple as shapes or quick thoughts. For example, if I'm designing Mjolnir, I may start with quick shape sketches that might have nothing to do with a hammer at all. I'm just trying to find ways to figure out how something makes me feel. Sometimes if you rely too much on the research, the result can feel very mechanical.

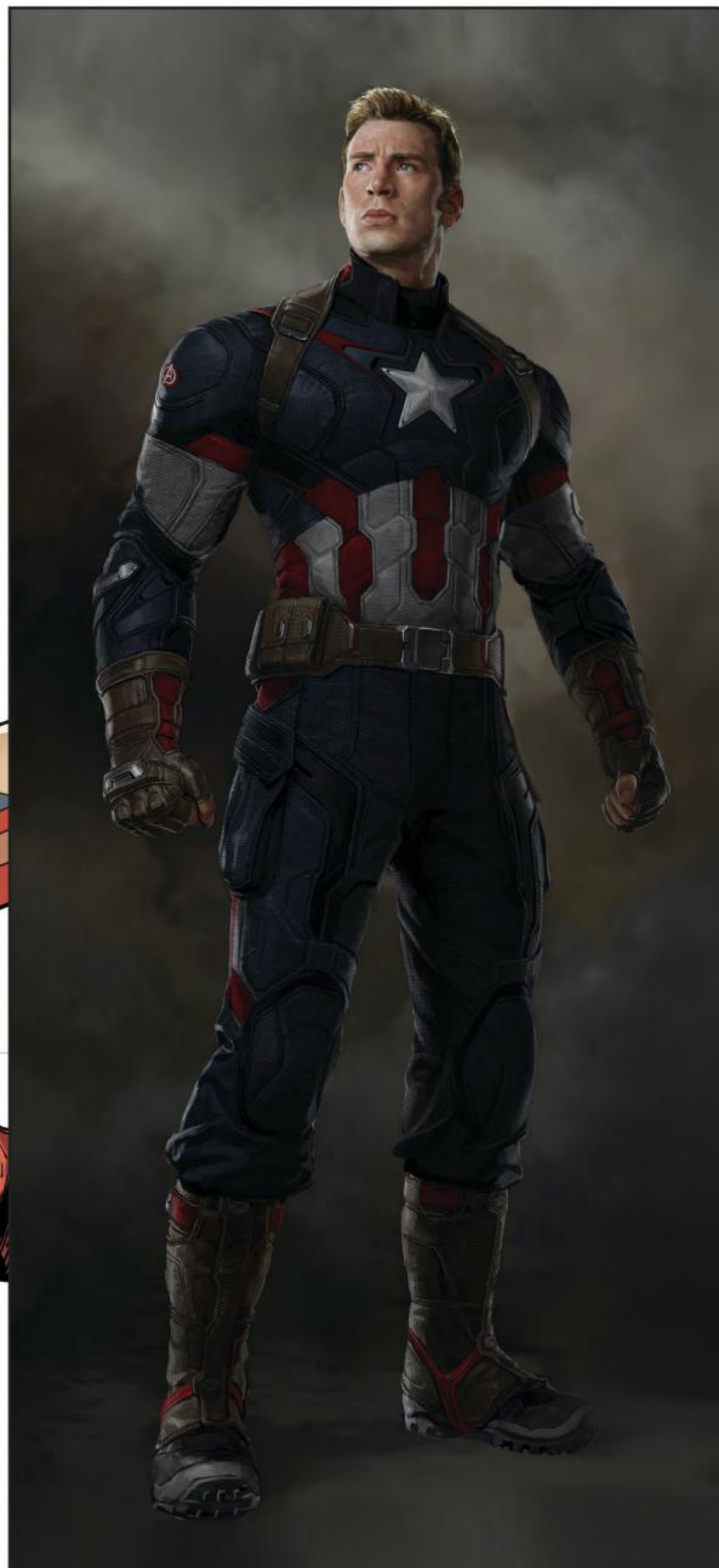
Often, while inspiration from the comics is helpful, a strict 1:1 translation of the costume won't work within Marvel Studios' devotion to realism. Here are a few examples of original and modern comic designs paired with their film counterparts. Then, think of a comic book character that hasn't been adapted for film yet (or one you'd like to try your own approach to). What would you take from the comic costume? What would you change, and why?



LEFT: Captain America's first comic book appearance in 1941.

CENTER: A modern comic version of Cap.

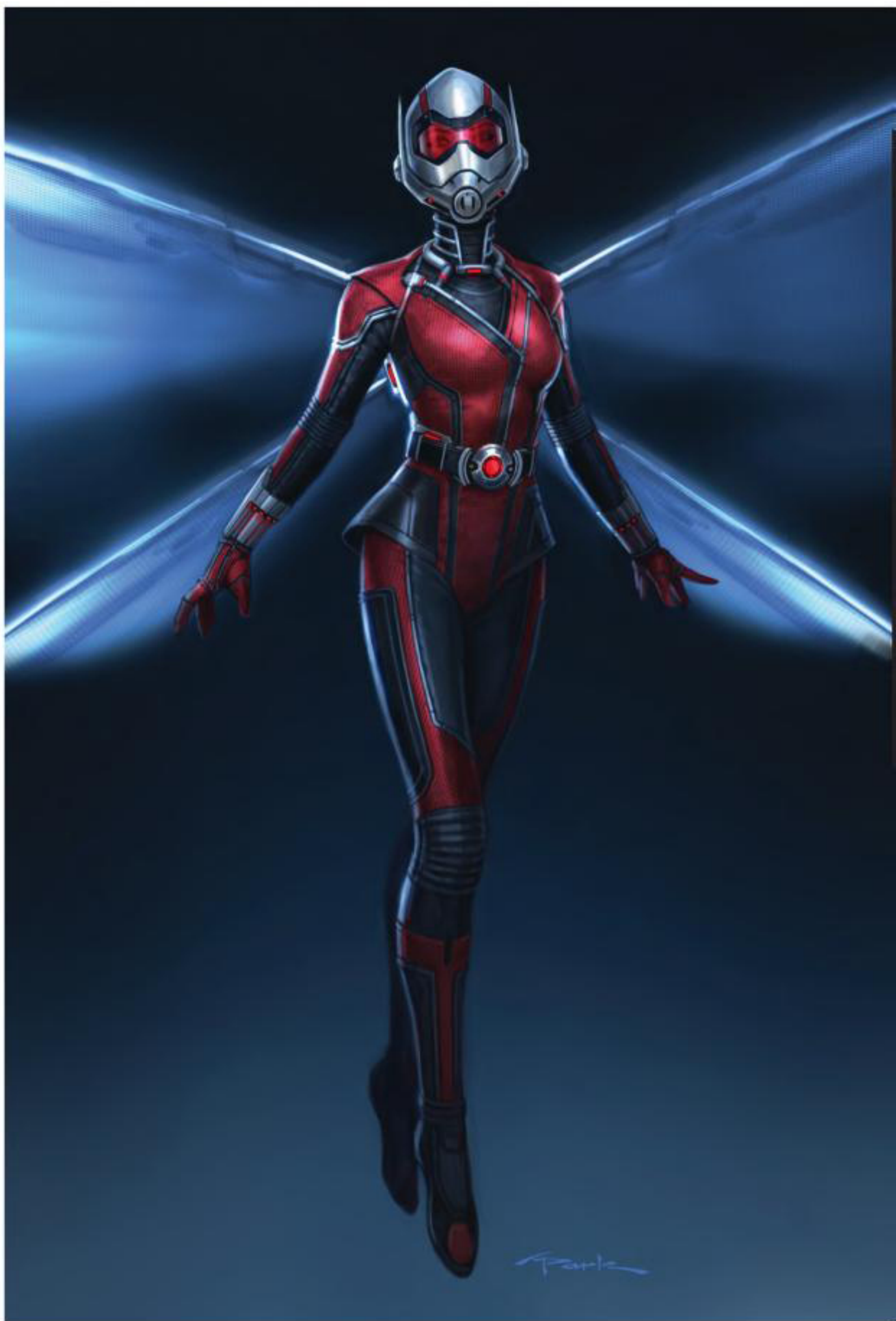
RIGHT: Cap's modern-day film uniform. The film adaptation takes the shape and color scheme present in the comics and brings them into more realistic battle armor.





LEFT: Janet Van Dyne's first appearance as the Wasp.

CENTER AND RIGHT: Janet (center, yellow) is joined by stepdaughter Nadia as the new Wasp. Nadia's costume has a similar silhouette and color scheme to Janet's first costume, a fitting homage.



Mother-and-daughter Wasps Hope (left) and Janet (right) Van Dyne again take color inspiration from the comics but adjust the shape of the suit to be more sleek and modern.



LEFT: Hank Pym's first comics appearance, complete with 1960s space-age helmet.

CENTER: Scott Lang's more modernized Ant-Man costume.

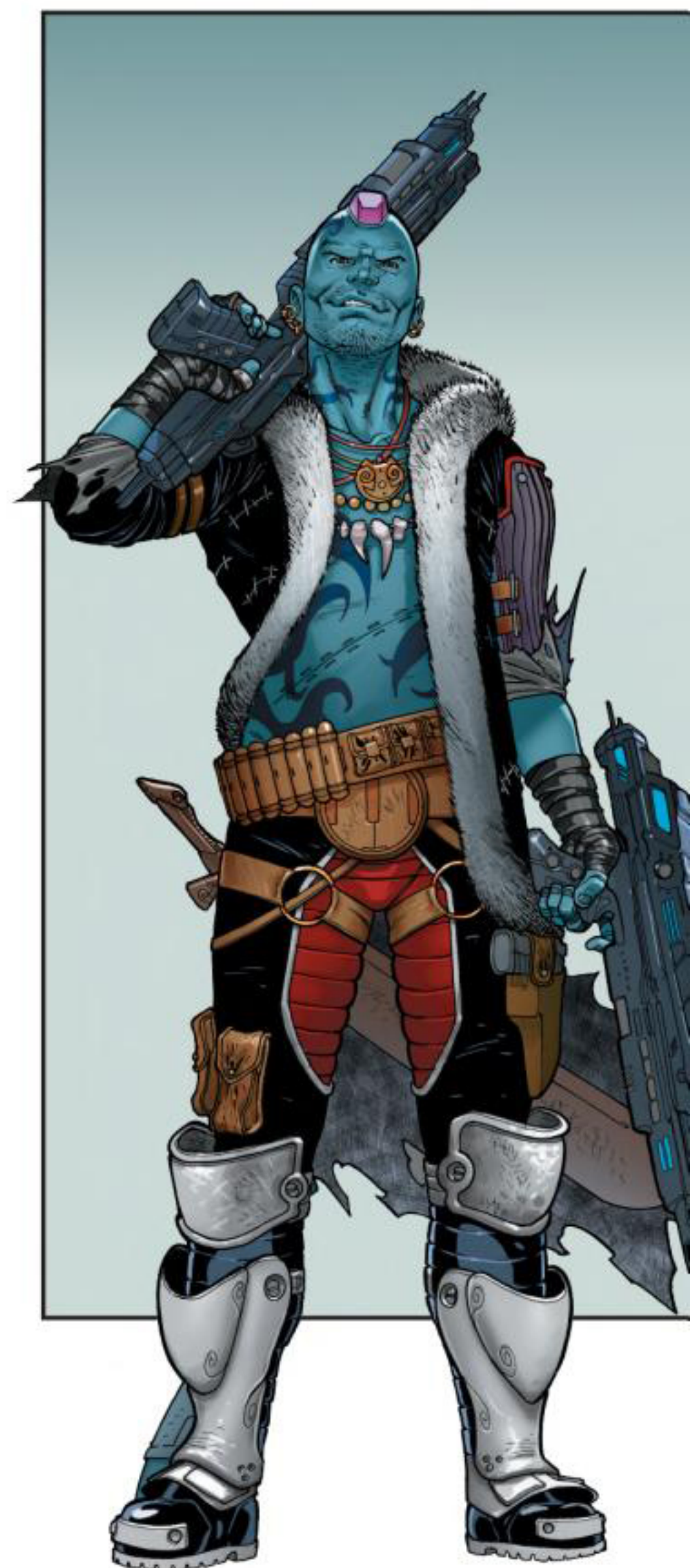
RIGHT: Hank Pym's Ant-Man suit from the film, taking the '60s aesthetic and making it plausibly functional.



LEFT: Yondu's first comic appearance from 1969 as a member of the original Guardians of the Galaxy from the year 3000.

CENTER: Yondu's first film appearance as a member of the Ravagers crew.

RIGHT: Sometimes the film design goes on to influence the comics in turn, as shown by this modern comics take on Yondu's character.



CONCEPTUAL DIRECTION

RYAN MEINERDING: We are constantly looking for new places to find conceptual direction. That can come from a new advance in science, a new fashion trend, a hairstyle from the past, or a texture on a piece of military equipment. We use these to concretely differentiate between the versions of a character we are going to design. For example, we could have an “armored version” of a character or a “sci-fi version,” and when we present these to the filmmakers, we pitch them using those names.

There are different ways of visualizing the concept direction. For example, if you are going to do a “sci-fi” version of a character, you need to have visual reference for what that means. Finding reference for different types of sci-fi from different eras and mediums is an invaluable tool. You will need to find lots of visual reference for all of your conceptual directions.

POSE AND LIGHTING

RYAN: We all need reference if we are going to try to paint photo-real images. Oftentimes, we will pose ourselves, sometimes using costumes that are close to what we will need to design and take as many photos as we can. It is also important to know how to portray different types of people. This means looking at and understanding anatomy and body types. Doing lots of figure drawing or finding photos online is invaluable.





UTILIZING ARCHETYPES

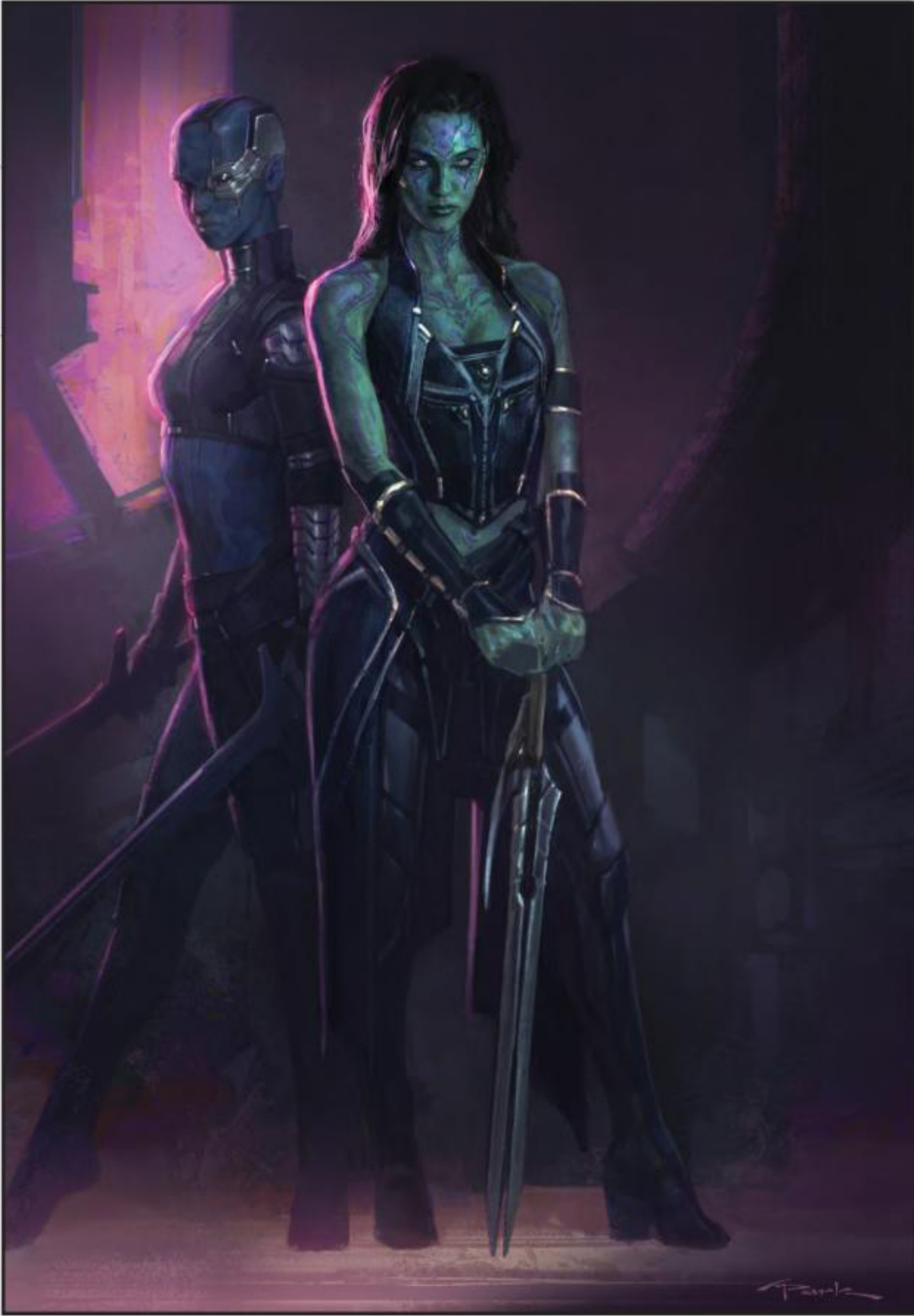
It can be easy to get bogged down in research material – when there’s so much available to take inspiration from, it can be hard to know where to start. This is where a focus on character comes back into play and where you can begin with the character’s archetype. Oftentimes, categorization of design will help define the work ahead. There may not be a real-world correlation to the Collector, but finding an equivalent in a larger-than-life pop-music star can help guide and inform focal points in that character’s design. It’s a technique that caricature artists have perfected over time: finding prominent elements or themes in a design and pushing them to the forefront.

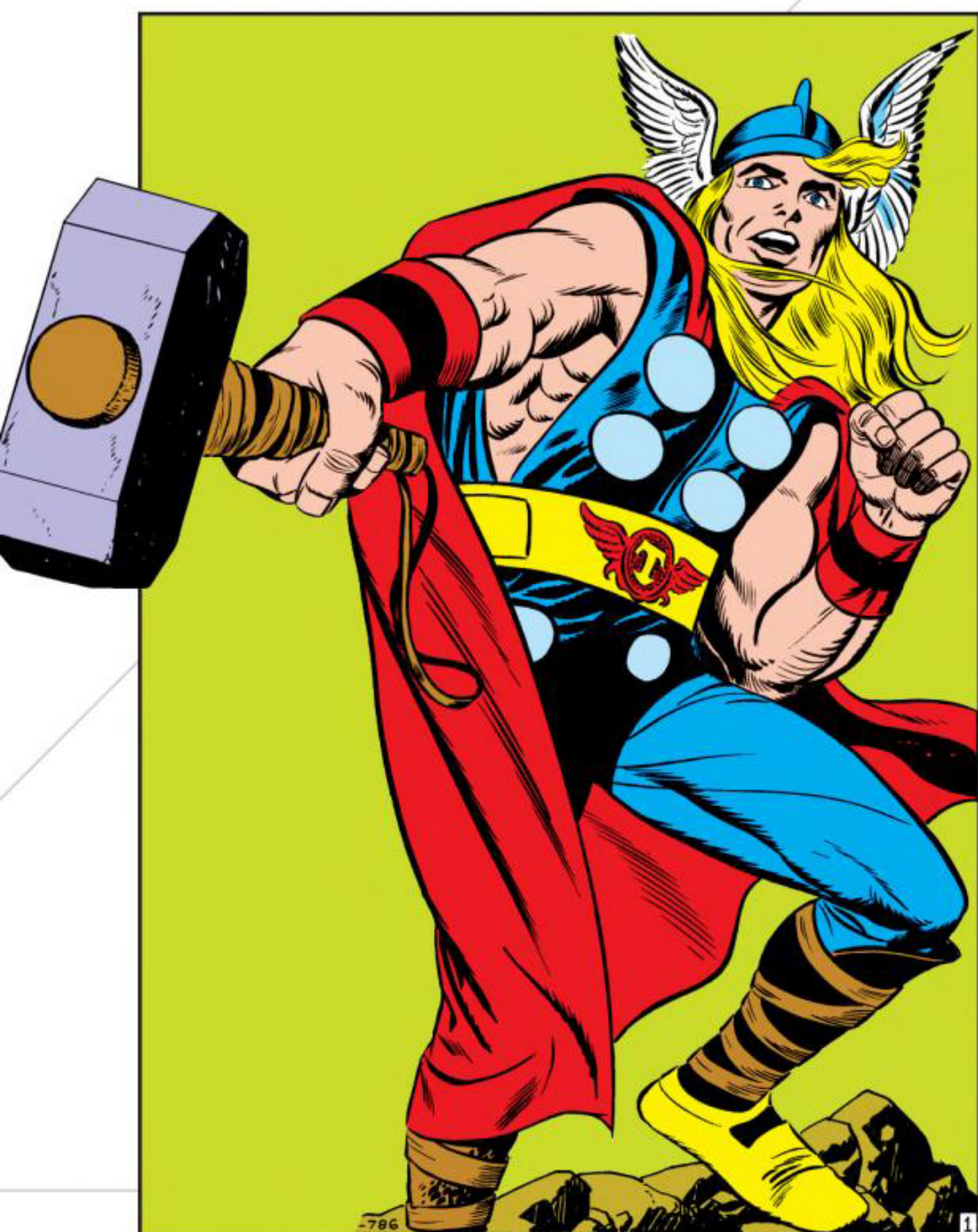
ANTHONY FRANCISCO: We have to know the stereotypes in order to break them. We as designers have to see categorizations as people perceive them to be. We use that in our art to make sure that the design translates. Certain types of people carry themselves in unique ways. Certain categorizations of people have certain postures. Law-enforcement officials or police all have an authoritative posture. Someone down on their luck will be slumped over with the weight of the world on their shoulders. Firefighters will always be wearing protective clothing from head to toe. An ice-cream man should have a certain warmth or friendliness to him. Captain America is a soldier. The *Dora Milaje* are warriors and bodyguards. There are very clear visual or graphic elements to defining those categorizations.

REFERENCES FROM NATURE

ANTHONY: It's beneficial to categorize an alien or a creature into species like a mammal or a reptile. We all love science; we all love biology. We look at things in nature that can be seen for reference. I love to watch the series *Cosmos*, and I always recommend it to artists. The microscopic images and concepts like quantum theory on the show are extremely beneficial for the world of Marvel. It helps your mind have a lot of that vocabulary to utilize in your designs. For *Avengers: Infinity War*, I had to develop a sequence between Doctor Strange and Thanos. The direction was to "do something that has never been seen before — but familiar and creative." And that's really when looking at a series like *Cosmos* came in handy to visualize fragments in time and space-time warping. If your knowledge of the world around you is limited, it will affect your work.

ANDY: Exploring nature is always a good thing to do. The best designs are already found in nature. It can be particularly helpful in creature design. Looking at reptilian or amphibian skin can help steer your mind in a direction of making something look alien. Experimentation with different types of textures, different types of translucency and luminosity found in nature, can have such an impact on design.





CHARLIE: For *Guardians of the Galaxy*, James Gunn wanted to bring in a live raccoon for us to study during the design process. I was a little skeptical that he was actually going to do it, but sure enough he did. But it was wonderful sitting and studying a real raccoon for a day. It was helpful to see how raccoons use their hands, and the way that they move around and exhibit different postures. That one day made it clear that with a character like Rocket, we had to give specific attention to his hands: the way he picked things up and carried them and the way he would gesture. I did a number of sketches that day that were focused on Rocket's hands. That was such a core part that spoke to who the character was, which may not have become as evident if we hadn't had that day with the real animal.

ANTHONY: Especially if the character that you are designing isn't human and more of a creature design, science and nature have already done a lot of the work for you. Look at birds, reptiles, mammals — ordinarily, it's not good to stereotype, but there are archetypes that naturally exist and that the human brain subconsciously picks up on. If you can categorize what you are designing as something comparable in nature, it will immediately be helpful to you as the designer and the audience as the viewer. I used to teach creature design, and I would tell my students to imagine a slider you can move back and forth. On one end of the slider is a wolf; on the other side is a man. If you move the slider between the two of them, you want to find the best mixture. Find what part of the wolf is dominant from the human. Sometimes it will help to draw that evolution down the slider to help visualize that progression.

FOOD FOR THOUGHT

Production has come to ask you to explore creature design for Thanos' subservient Outriders for *Avengers: Infinity War*. How do you convey the creature as being alien? Where would you start in gathering reference from the real world? What animal species would inspire you? Walk yourself through the research process in developing these creatures.

THE IMPORTANCE OF STORY

What the VisDev department does, in part, is use character design to help tell the story. Things like clothing and posture can tell you a lot about a person. Just think of your own wardrobe – what you wear to be comfortable on a Saturday afternoon likely isn't going to be the same thing you wear to a job interview or a party. Clothing is a clear and immediate way to get a sense of who someone is, and the same holds true for the characters of the Marvel Cinematic Universe. Let's take a look at one character in particular to see how changes in costume reflect changes in character – and vice versa.

THE EVOLUTION OF CAPTAIN AMERICA

Cap's first costume was exactly that – a costume. After Dr. Erskine was killed, leaving Steve Rogers the world's only Super-Soldier, he was deemed too valuable to risk in battle and instead began performing in touring shows meant to sell war bonds. This costume is meant to be flashy and over-the-top. He doesn't yet have his iconic vibranium shield, instead using a prop. This version of the costume is the closest the MCU comes to his first appearance look from the comics, and it suits the purpose here: It's exaggerated, meant to be seen from the back of an auditorium. Note also that the material of the costume is clearly flimsy – it's stitched together along the cowl, since stretch fabrics hadn't been invented yet in the 1940s, and there is no sense that Steve could really have worn this into battle and been protected by it. It's all for show.





That all changes, of course, when Steve is touring Europe – being laughed at by the “real” soldiers – and he discovers that his best friend, Bucky, has been captured by the Nazis. Recklessly and against orders, he mounts a rescue mission. He wears his symbolic uniform, but he hides it, burying it under as much army gear as he can get his hands on. By the time he comes back from that mission, the soldier gear is tattered, showing his Captain America costume beneath, proving it’s possible to be both symbol and soldier. This leads to his “hero” costume for the remainder of the film, as well as his iconic round shield.

After Steve is discovered in the ice and thawed out in the 21st century, he becomes a man out of his place and time. As part of S.H.I.E.L.D.’s Avengers Initiative, he is given a new costume – one he’s a little embarrassed about. It is designed, at least in part, by Phil Coulson, a S.H.I.E.L.D. agent and ultimate Captain America fanboy, who even has old trading cards of Steve. It’s a modernized, more practical version of his first costume – the shape is very similar, particularly in the chest piece and cowl, although this time, there’s clearly armor built in beneath the symbolic color scheme.





Now becoming more familiar with his new time, Steve upgrades his costume once again, this time to a “stealth” version for spy missions with S.H.I.E.L.D. The usual red, white, and blue color scheme has been muted – even his shield has been painted over here – to allow for a sneakier approach, and the iconography is less overt and more stylized. The armor details are more visible throughout. This is a modern costume for modern missions, but with it comes areas of gray morality Steve isn’t used to. Being a living symbol used to be simpler, at least from Steve’s perspective.

“If you’re going to fight a war, you’ve gotta wear a uniform.” S.H.I.E.L.D. has been compromised.

Steve, Natasha, and Sam are on the run and preparing to confront their own organization that’s been taken over by Hydra from within – and a brainwashed Bucky Barnes, Steve’s childhood best friend. To do that, Steve doesn’t try to grab his new stealth uniform – he sneaks into the museum and steals his old WWII uniform. He’s going to be a symbol again – a rallying point for any other S.H.I.E.L.D. agents willing to stand against Hydra’s machinations and do the right thing – and he hopes he can jog his old friend’s memory with the sight of the uniform he wore when they went to battle side-by-side instead of against each other.





This time, Cap's costume isn't just a symbol – it's a target. Tony Stark and Bruce Banner invent what they hope will be a peacekeeping tool – the A.I. Ultron – but it becomes a terrifying new threat the Avengers need to suit up to stop. In the wake of the destruction in Sokovia, the UN has moved to regulate – and control – the Avengers. Guilt-ridden Tony wants to sign; Steve, usually in favor of rules, refuses, insisting the Avengers should be above being used for political reasons. This version of the uniform melds the modernized armor of the stealth suit with the patriotic color scheme of his first costumes during the war, a clear visualization of everything Cap stands for – and everything he's trying to defend against.

When we meet Steve again at the beginning of *Infinity War*, he's been on the run, doing covert missions ever since the dissolution of the Avengers. His uniform is the same but stripped of its symbolism – it's dirty, its colors muted, its star and Avengers patch gone. Harkening back to Steve's "Nomad" costume from the comics, this rugged version of the uniform proves once and for all that Steve Rogers doesn't need to be wearing a symbol in order to fight for the right thing.



Now try this for yourself – think of a character you're developing, and put them through their paces. How do they express changes in themselves and their circumstances through the clothes they wear? What do they wear to feel comfortable, and what do they wear to project a certain idea about themselves?

THE PRODUCTION PROCESS

As an artist in Marvel Studios' Visual Development group, the job is not complete when cameras roll. Unlike creating conceptual artwork for other productions or studios, VisDev artists are involved in all aspects of the production. This ensures that the design vision for the characters is consistent for the film's entire journey from page to screen.

RYAN MEINERDING:

Filmmaking is a very collaborative medium. With the character designs that we do, we are trying to be as pragmatic about design as possible but still push the limits of what can be accomplished practically — either in a costume setting or in a visual effects setting. In talking with Alexandra Byrne — who was our costume designer on *Thor*, *Marvel's The Avengers*, *Guardians of the Galaxy*, *Avengers: Age of Ultron*, and *Doctor Strange* — she describes working with the Visual Development department as a process in which we work together to achieve something that neither of us could do on our own.

CHARLIE WEN: For me, any of the changes need to be elevating the design. There needs to be a good reasoning behind them. There's a relationship between Visual Development and the other departments on a film that makes it very collaborative. But at the beginning of Marvel Studios' run, that wasn't established. That was something we had to define and refine. There was a bit of a learning process. Even with industry veterans who came in to work on our films, we were used to workflows for art and costume departments being a very particular way. But because those two departments are especially integrated with the icons of the characters, we needed to spend more time and care with those particular areas of focus. And it took some time to figure out the best way to handle that. But after we got a few films under our belts, people throughout the industry started to recognize that's how Marvel Studios operates. When costume designers or production designers would sign on to a Marvel Studios film, there was an expectation that they'd be working in conjunction with the Visual Development department.

PHASE ONE: INITIAL ASSIGNMENT

The process of design begins with a conversation or a document from the filmmakers to the department describing in as much detail the character they want to conceptualize. Depending on how far along preproduction is on the character, the artists may only have a conversation, or they may receive a more detailed document. This document might be a bullet-pointed "beat sheet," an outline of the full story, or sometimes even a completed screenplay. VisDev absorbs this information provided with great care, as every detail can be vital. They ask as many questions as can be answered. With Marvel characters specifically, this is also the beginning of the conversation about what comic source material to seek out for inspiration and guidance.





PHASE TWO: BRAINSTORMING

VisDev takes the information gleaned from the initial assignment and returns to the bullpen. At this point, they will call in the right artists for the assignment and discuss all of the information that was provided by the filmmakers. Much like a writers room sits around a table, this is a creative meeting in which ideas and inspirational avenues are discussed among the group. The goal of this brainstorm meeting is to create a list of as many different art directions for the character (or sometimes multiple characters) as possible. The work is then divided up, and the artists start painting.

RYAN: We are working toward weekly meetings with the filmmakers. The goal for each of those meetings is to have between five to seven different conceptual directions ready to present. It's a relatively quick turnaround. Sometimes for the meetings, we will present rough sketches in order to communicate ideas early on in the process. But for the most part, we strive to have finished and detailed paintings ready to present to the filmmakers every week.

ANDY PARK: Ryan and I alternate the leadership of our movies. While Ryan was leading *Black Panther* and *Avengers: Infinity War*, I was leading *Ant-Man and the Wasp* and *Captain Marvel*. After we split up who leads the films, we'll decide which artists are best suited to each. Usually, there's a lot of sharing. And then, depending on the needs of the film, we'll hire freelance artists. Some of them are local, and they'll come into the office and work in the bullpen. Others are remote — working out of Berlin, Paris, and San Francisco — and we'll talk via Skype. But on a daily basis, we're painting. We're designing.

PHASE THREE: WEEKLY FILMMAKER PRESENTATION MEETINGS

Once a week, the heads of VisDev (and sometimes the individual artists themselves) meet with the filmmakers to present new concepts, or to show revisions based upon previous notes. High-quality prints or digital copies of paintings are shown to the filmmakers for their feedback. This can be a very fluid process, as film production is always changing and evolving. A change in story direction, casting, or even plans for the future can all have an effect on design feedback. With some characters, important elements of their design may be presented on their own (for example: Ant-Man’s helmet or Wasp’s wings), and though the entirety of the costume may be finalized, revisions on a particular piece of the puzzle may continue.

The notes from these meetings are collected and taken back to the larger group to find new directions or ways of implementing the notes that have been received. In some instances, a design may have been rejected outright, and the team will have to return to brainstorming to explore a new direction. This back-and-forth with the filmmakers and VisDev continues with each and every design until a final approval from all stakeholders is received.

RYAN: Receiving notes and feedback is an important part of the process and the best way for us to address the wants and needs of the filmmakers. It is in this progression that we are able to achieve such a high level of quality in both the visual design of a film and the storytelling as a whole.

ANDY: Right from the start in the preproduction phase, we are all integrally involved in the decision-making of nuances and details of what these characters are going to look like. The filmmakers suggest changes based upon the story and their preferences and give us feedback. We artists often get attached to our designs, so receiving critiques (or criticisms) requires a thick skin. It’s a challenging job, because people can judge a work of art in a second — faster than you can snap a finger. Instantly you can love or hate something that we’ve been working on for days — sometimes weeks or even months.

ANTHONY FRANCISCO: You have to have a growth mind-set. In jujitsu we always say that you never lose, you only learn. You win or you learn. If you put yourself in that mind-set, you are always gaining something in the process. These mistakes have to be made to learn from them. But some of the best advice I’ve ever received was from Alec Gillis, who works in special effects. He would always say that just because your art isn’t approved doesn’t mean it didn’t help in the process. It helped the production to know what they didn’t want or where they didn’t want to go. They had to see it to know, and you still helped in that way.

PHASE FOUR: PREPARATION FOR PRODUCTION

With all of the stakeholders on board for a character’s direction, VisDev hands off the assets needed to bring the character to life to other departments, including the Costume Department, Specialty Costume Department, or Visual Effects. VisDev presents their imagery to each department and begins a conversation between the groups where questions are answered, concerns are voiced, and a game plan is formulated.



RYAN MEINERDING

PHASE FIVE: FABRICATION

Those individual departments of the production then get to work building the costume or the character. Throughout the process of physical fabrication of a costume, or the digital sculpting for a computer-generated character, VisDev is integral to the process. Each iterative version is reviewed by the VisDev artists responsible for painting the approved design, and they will provide feedback and notes as necessary.

When physical costumes are fabricated, actors will report to the costume department for fittings. The artists of the VisDev team are on hand for those fittings to continue the collaborative process.



CHARLIE: I love going to the costume department and working with them through the process. You're actually in the room with these incredible costume designers and fabricators, choosing fabrics, choosing materials — because we know why we made certain decisions when we were painting the original concepts. That's something we've been mulling over through the process and playing with how it would look under certain conditions.

ANDY: It helps us focus on the minutiae. Once we start fittings with the actors, Ryan or I will go to a costume fitting with an actor and during those sessions we'll take photographs, assess how the costume is coming along, take and give notes as needed, and then come back to our computers where we can do paint-overs to further help out how to solve certain problems. It's all a collaboration in order to achieve the best costumes as possible. It's a monumental task, especially for the costume department, because it's one thing to paint a character design, but once an actor tries on the costume, it also has to be practical. Some costumes are easier than others. Actors have to move in them. It takes some pushing and prodding to find ways to get the original design to work in a way that will also be functional and comfortable for the actor. A lot of times, we're all able to solve those problems, but it's not an easy task.

PHASE SIX: REFINEMENT

A costume may be finished and fitted to perfection. A computer-generated character may have a rigged model that looks and moves as everyone has intended. Don't open the champagne quite yet; VisDev's work is still not complete. Much like the crafting of a beautiful poem in rewrites and revisions, changes and enhancements continue even after the production has wrapped and the film has moved into editorial.

RYAN: With the costume department, we'll continue to refine and hone the design until it's done. Or in some instances when we have hit a deadline and a character needs to be in front of camera. But our work doesn't stop there. The refinement process continues all the way until the film is released. The visual effects artists will send us renderings and motion tests where we'll do paint-overs and suggest any changes that we in VisDev feel are really important to the character. It's a crucial evolution of the character's design that has made the quality of our work flourish and given each and every one of our characters a fine-grain level of sophistication and detail.



CHARACTER DEVELOPMENT: STEP-BY-STEP

Pop quiz: A filmmaker steps into the Visual Development bullpen looking for help visualizing a new character to be included in the Marvel Cinematic Universe. What do you do? It can be overwhelming to think of all the work needed for that design. In such a case, it's best to break down the process into smaller steps.

It's key to remember that you are not just a conceptual artist — you are part of the storytelling process. As we have learned in previous chapters, story is at the heart of everything the Visual Development department creates.

So far you've created your character sheet, you've collected your research from a variety of sources, and you've spoken with the filmmakers and received clear direction.

Now what?

It's time to design — to put pencil/brush/pen/sculpting knife to “paper.” Every artist has their own way of working, and you may find that your preferred methods vary from those of the VisDev team. For every design, there can be a particular challenge or unique set of variables.

These step-by-step walk-throughs will present a variety of scenarios for character design and how the Visual Development department approached them. It is our hope that these case studies will help you when problem-solving through designs of your own.



IRON MAN

BY PHIL SAUNDERS AND ADI GRANOV

In the pages of the Marvel Comics, the technology and design of Iron Man has constantly evolved since the character's first appearance in *Tales of Suspense* #39. Analogously, the first Marvel Cinematic Universe character introduced to audiences has enduringly evolved since his debut in 2008. For over ten years (and fifty-plus iterations of the armor), the Visual Development team constantly pushes themselves with each new redesign. Learning and evolving from each just as any esteemed industrial designer would.



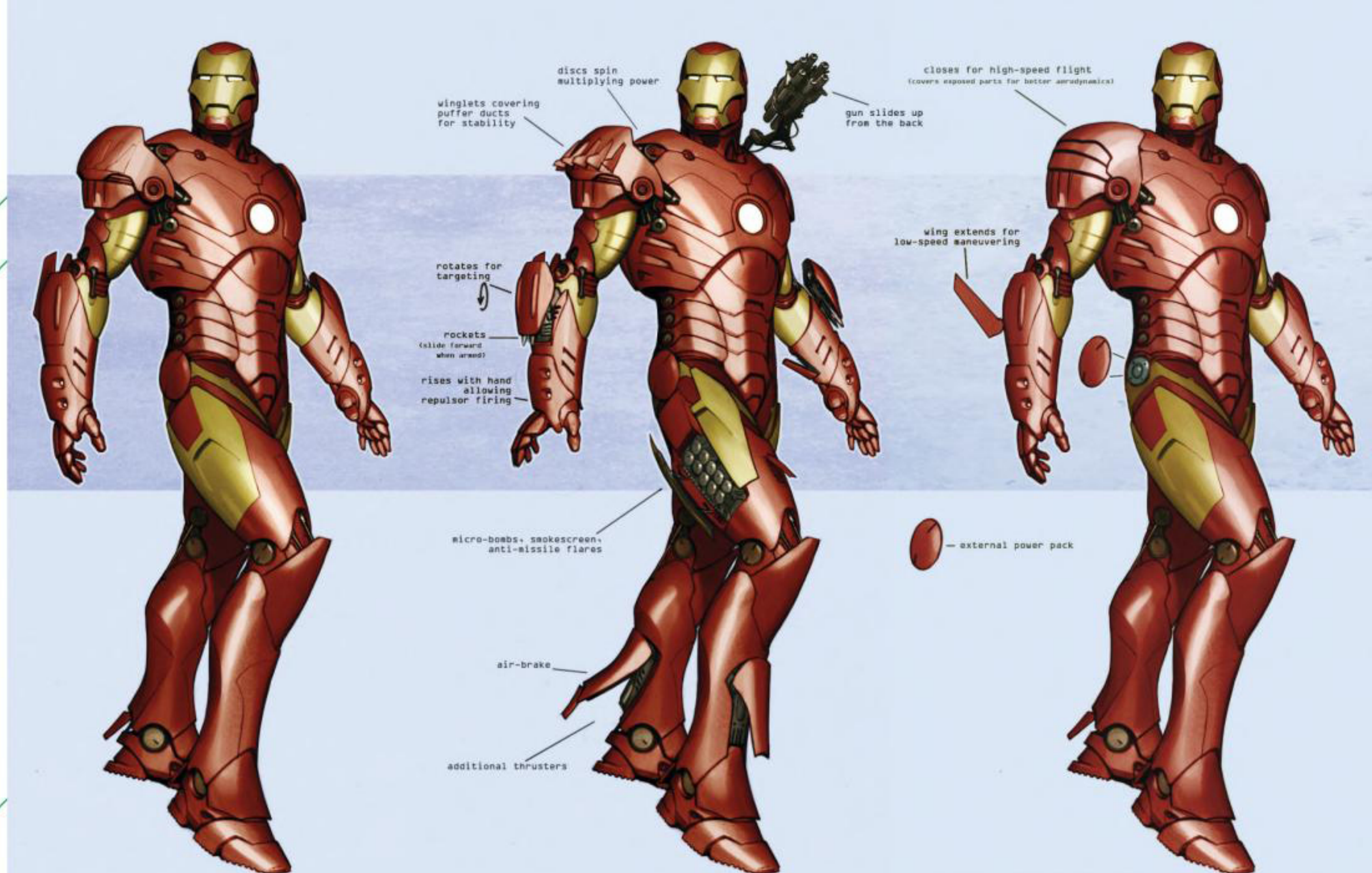
#1 APPROACH

ADI GRANOV: In live-action adaptations, there is a tendency to take pre-existing characters and completely reinvent them. The reality is that if you can pick out a few of those key elements in each of the characters and carry those over, everything else will fall into place. What we tried to do at Marvel Studios, was stay true to the characters and how they looked and felt in the comics. For example, on the original *Iron Man*, we strove to blur the lines between the armored character we saw onscreen, and the character that I had illustrated in the *Extremis* miniseries. His face, his broad shoulders, the RT on his chest, the strong gauntlets — keeping that silhouette established in the comics was important. The idea being that, if we squinted, both the comics and the film versions would have a very similar silhouette. There would be an immediate visual correlation between the two. To me, that set the tone for Marvel Studios moving forward and all the characters that followed.

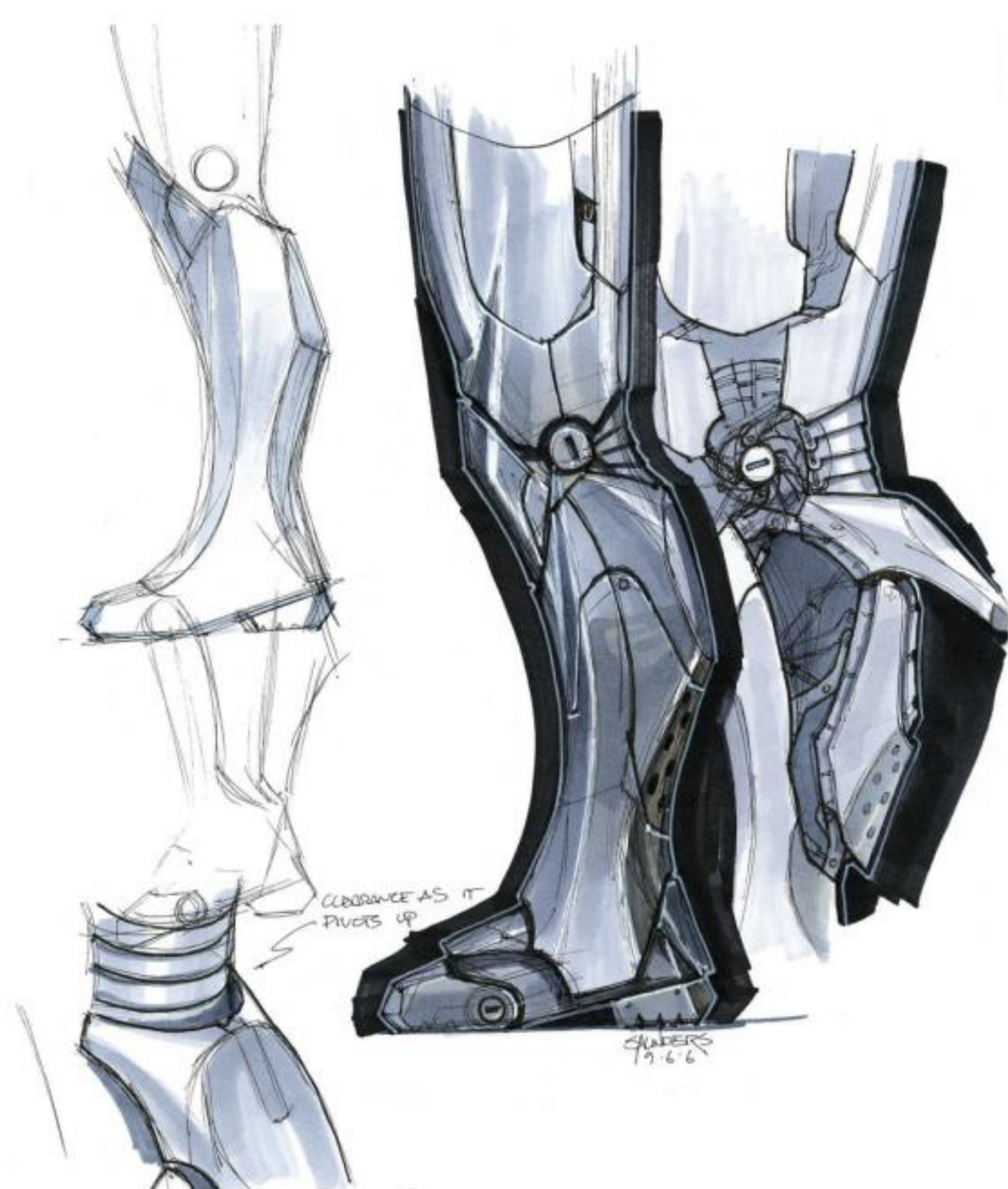


#2 ORIGINS

PHIL SAUNDERS: *Extremis* was the first comic book to really transform the Iron Man suit into practical and functioning machinery. The suit design in *Extremis* became the initial template for us in terms of design and aesthetic in developing concepts for the film. Adi painted a fantastic poster for San Diego Comic-Con. He designed armor that was a slight variation of his work on *Extremis* that was so focused, so well-conceptualized, and really demonstrated that the suit could be a tangible and practical element translated to live-action. As result, Adi was brought on to help develop concept art for the film.



ADI: For *Extremis*, I wanted to do a believable and three-dimensional suit of armor where it looked like a live human being could be inside. Coincidentally, that is the same challenge that Jon Favreau and his creative team faced in approaching a live-action movie. It's funny — I actually found the process of designing for the film easier than illustrating for the comics. In comics, we have to simplify our designs knowing that it has to be practical enough to draw page after page, panel after panel. In designing for the comics, I had all these ideas for functionality of the suit, but I had to really pare it back. In designing for the film, I was able to do all those things I wished I could have done in the comics.



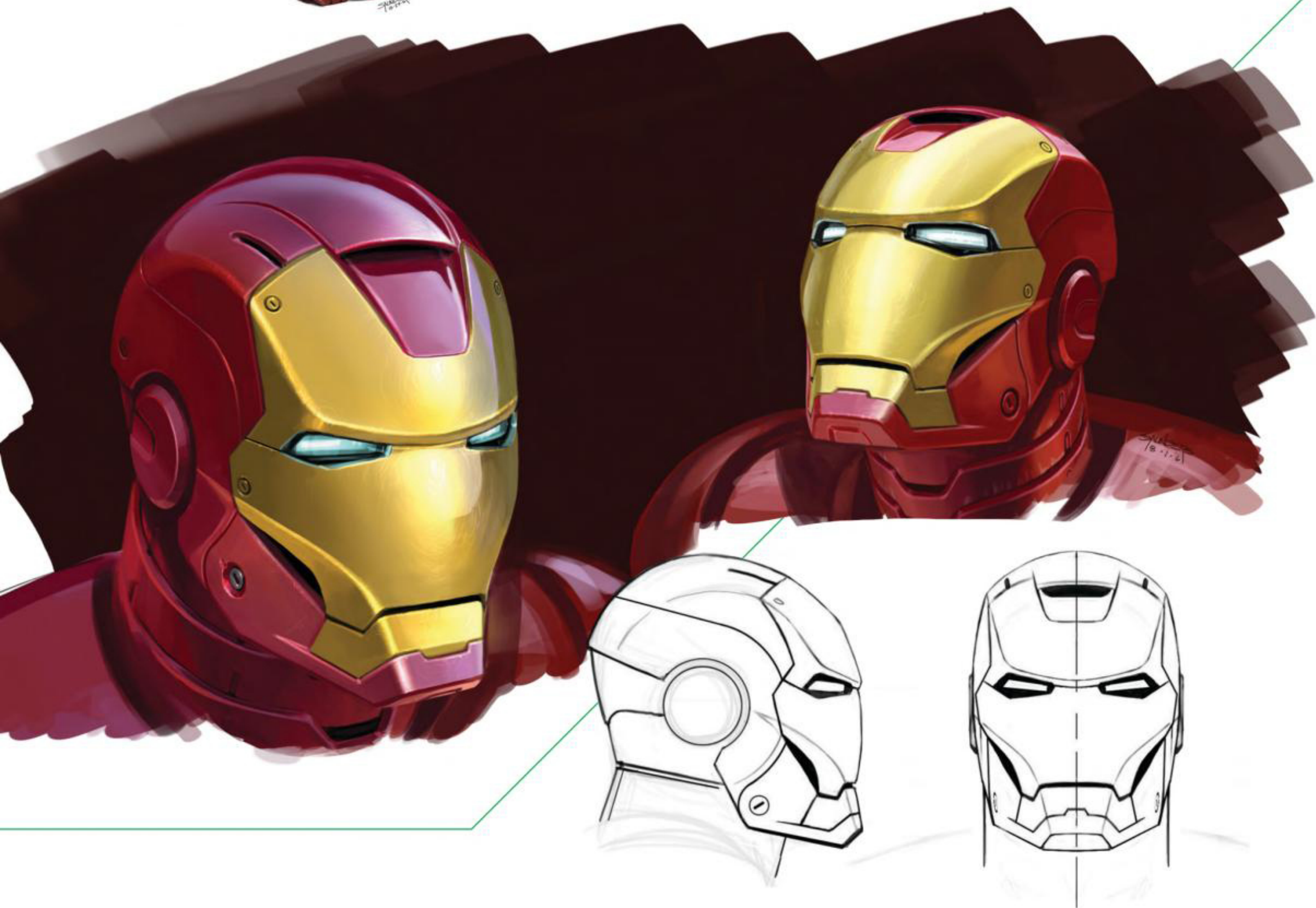
#3 PROPORTION AND FUNCTIONALITY

PHIL: Adi created an aerodynamic and believable, wearable aircraft. But proportionally and in form development, it still fit in a more comic book-centric world. We then needed to adapt Adi's concept to the screen. It required a great deal of problem-solving for practical issues. It required balancing forms that felt lightweight enough to get airborne but tough enough to take a mortar hit. At the same time the lines and the joints in the cut lines had to add reinforcement to the armor but also still allow the actor in the suit a range of movement. When designing a masculine Super Hero, there are often times we as artists find ourselves trying to idealize the male anatomical form. With Iron Man, that has to be done without telegraphing that we're attempting to bolster the natural proportions of Tony Stark. Pectoral muscles, quads, abs, shoulder blades — all those elements have to be interpreted by the machinery in some way that makes them feel natural to the machine, not that they're specifically designed to be musculature. They have to feel functional. For example, in enhancing Iron Man's scapula, we found it could resemble the ailerons or flaps of an aircraft. It serves two purposes: we're enhancing the clavicle and scapula area, which immediately gives us a sense of proportion, while also integrating flight systems that would make sense for the suit. That mode of thinking applied across the board to designing the anatomy. We looked to aeronautical or automotive forms that people would instinctively look at and immediately associate with the mechanics of flight or speed. Once we figured out that practical engineering, that's when we streamlined it all like a Ferrari. That made it believable and also projected a heroic rock star of a character.

ADI: In the end, it is still a fantasy. But this school of thought and the incorporation of elements of engineering and industrial design into the suit added to its believability. We would add flaps on his back or in his calf muscles that we surmised were his air brakes. The audience will never be sitting in the theater wondering where Stark had installed air brakes in his suit, but it adds that level of detail that have been thought through. Everything has a purpose. In Tony Stark's world, he had to incorporate these components into the design to make the suit fly. The functionality is sound from a storytelling point of view.



PHIL: This process of problem solving, along with the fabrication of the first suit at Stan Winston Studio was really where we got a sense for how a real suit worn by an actor would move. It was a necessary process to problem-solve the areas we had designed in a painting that then needed to move and flex and how plates and pieces of the suit overlapped. There were several problem areas, like how and where the shoulder and collarbone would articulate. We had to create supplemental sketches incorporating additional panel breakups where Stan Winston Studio needed the additional articulation to engineer real moving joints.



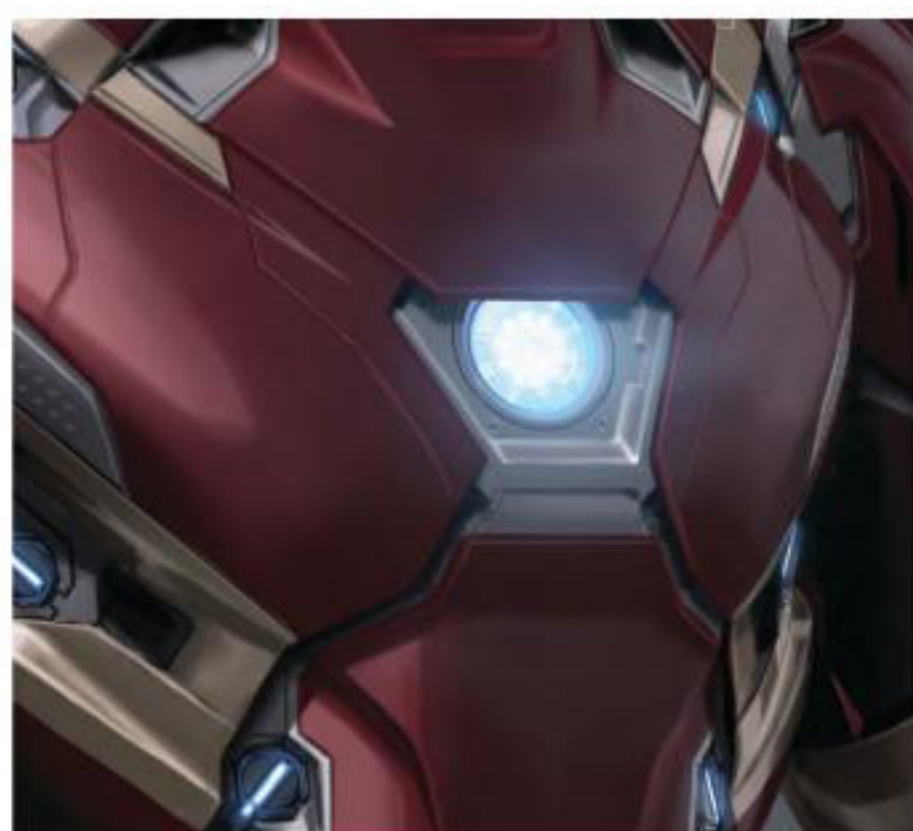


#4 PROGRESSION

PHIL: The progression from the Mark I to the Mark II and ultimately the Mark III was very true to the character's origins in the comics. Seeing that progression was absolutely necessary onscreen. It's symbolic since the original movie and even those that have followed have really been about Tony Stark's evolution as a human being. For the Mark II, Jon Favreau was inspired by Howard Hughes. Tony Stark was really the equivalent of a modern Hughes. Hughes developed a racing plane, the H-1, which was unpainted and constructed of bare aluminum. Most aircraft at the time had exposed rivets connecting all the panels. Hughes ordered all the rivets shaved down to make the plane more aerodynamic. That pristine, aluminum skin with round, flush rivets became so iconic over the years. We wanted to do the exact same thing with Stark's Mark II suit. We sought similar inspiration for each design after that through real-world equivalents.



ADI: I compare the evolution and continuation of the Iron Man armor to car design. What makes a new car feel exciting and fresh? How do cars that are only a few years old suddenly feel dated? That really fascinates me. We wanted to apply the same logic of automotive design, thinking of the new model of an iconic automobile in redesigning the Iron Man armor. What do we do to keep people excited and keep the design feeling up-to-date? At the time of *Iron Man 2*, automotive design trends shifted from strong Bauhaus-like geometric shapes with minimal ornamentation toward sharp crease lines and hard edges. More angular lines. But certain visual cues continue to make us identify the car design as being recognizable as an Audi or BMW. The cars have evolved so much over the years, but those visual cues are still there. With Iron Man, we tried to move the design of the armor with the times in a similar way. Iron Man will always have the RT at the front and center of his design, just as a BMW will always have the double-kidney-shaped grill. The Mk. VI followed a trend of sharp lines that was more angular in design. The roundness in the features of the Mk. III slowly started to disappear. And, to me, I can put the two suits side-by-side and I know which came first and which came later. My favorite suit we designed is still the Mk. III, but I feel like its design has a more "retro" feeling compared to what followed.



#5 RT

PHIL: When we've done 25 or more versions of these suits, it gets challenging to find a way to outdo ourselves each and every time. How do we do things differently? That's the challenge. Luckily, we've set up these landmarks that we can continue to evolve and change throughout all the iterations of the suits. In the initial stages of Iron Man design, we identified several landmarks on the suit that really characterized him. At the forefront of that is his noseless face, the red-and-gold color breakup, the RTs, and his shoulder pauldrons. Those were key elements that we knew had to be prominent and catch the eye of the audience. Changing and progressing the RT and how it integrates into the chest has been a lot of fun to design. And of course, putting variations on the red-and-gold color breakup is a huge change throughout the character's arc. It's probably one of the only things most people notice aside from the RT. The average moviegoer may not notice the difference from the Mark III to the Mark IV in *Iron Man 2*. They may not even know that's a different suit — the RT is still round, the face construction is the same, the red-and-gold breakup is the same. But the minute we make the RT triangular or redistribute the colors, it's recognized as a whole new suit.

ADI: In the *Extremis* books, Stark has a triangular RT. But I made a case for the Mk. III armor to have a rounded RT. That's more Iron Man to me. It harkens back to the classic design of the character and it's iconic. That was why I had also made the RT round in the San Diego Comic-Con poster as well.



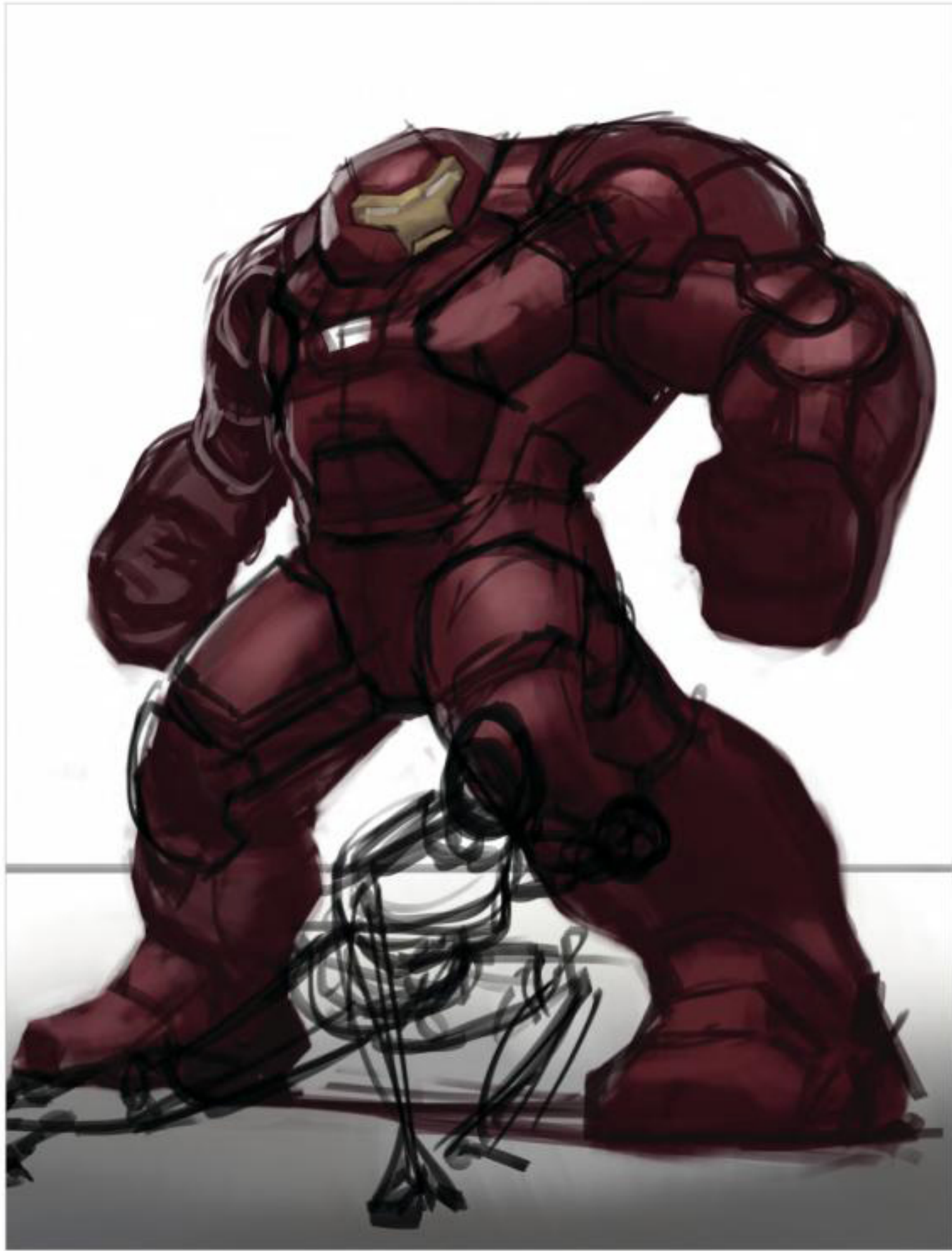
PHIL: Changing just the basic geometric shape of the RT makes a strong statement. Circular, triangular — that shape is what the audience notices and recognizes first. Because of that, every design we do starts from that RT. It's the first thing we design, even though redesigning the helmet and the facial construction of the suit would be the first aspect you'd think would need to be the focus. Even though the helmet goes through nuanced changes, it's effectively always the same design. It's his face. We can't deviate too far from what has been established or the character no longer resembles himself. The chest plate, on the other hand, sets the graphic and surface theme of the suit design. The RT is the center point of that design, and how we present that element dictates how everything integrates into the chest of the suit. Ultimately everything radiates from the RT. After we've designed the RT and established the design theme of the front torso, those form elements are translated to the arms, legs, hips, and back. By the time the armor evolved and advanced to the Mark 50 in later films, all mechanics are out the window. The design has outrun the engineering. He's using liquid metal for the suit, of which I have no practical frame of reference. But just as Tony Stark has earned that advanced technology through his hard work, we had to earn that by showing the functionality in the earlier iterations.

#6 CONTINUED EVOLUTION

PHIL: With each new film, we have to show an advancement in the technology through the passage of time, as it is constantly being improved upon by Stark. In that process, the complexity of the break-ups and the detailing increases, which telegraphs an advancement in engineering. Simultaneously, we take great care that those new lines and details are primarily driven by the requirements of the story. For example, the autonomous RT propulsion segments of the Mk. XLII, seen in *Iron Man 3*, had to have seams that split apart and reassembled. For that reason, the density of the cut lines in that suit increased. In *Avengers: Age of Ultron*, the Mk. XLV armor had to have a more organic-feeling musculature that felt similar to Ultron's technology, while at the same time incorporating the complex cut lines and detailing we'd introduced in previous versions. In *Captain America: Civil War*, we introduced additional RT lights into the design for the Mk. XLVI, which were meant to convey an advancement in the RT technology throughout the suit, while also were incorporated by a story point that ultimately did not appear onscreen in which the suit would have cloaking capabilities. Each of these advancements work us toward the Mk. L seen in *Avengers: Infinity War* that is the ultimate culmination of all these technologies coming together with the addition of nanotech.









CAPTAIN AMERICA

BY RYAN MEINERDING

There is no greater example of how story has affected design than Steve Rogers. The iconic Captain America look originated as an army propaganda costume. Over the course of the films, Cap's design changed dramatically as he became a man out of time — and even dropped his shield after *Civil War*. Cap's heroic journey is exemplified through these design choices. Ryan Meinerding has tracked the character's evolution from his onscreen inception to his current look more than ten years later.



#1 EXPLORATION

I started working on Cap back at a time when there wasn't a director and there wasn't a script let alone writers hired. I had been tasked with putting together a pitch that showed Captain America grounded within the context of a World War II-period movie. There was a great deal of concern both with fans and with us at the studio that if we did a one-to-one adaptation of the Captain America costume that most people are familiar with, it wouldn't be taken seriously. How do you take something that's so iconic and so clear and bring it into a realistic world? And how do you make that transition inspiring rather than detrimental? The first challenge was to find a way to have something within WWII-period wardrobe inspire the iconic Captain America costume. That way, Captain America was being inspired by the real world in addition to being informed by the comics.

#2 REFERENCE

I always really enjoyed the *Adventures of Captain America* series that was drawn by Kevin Maguire — in fact, that's really where my love for the character began. I love the way that Maguire illustrates faces, but also the aesthetic that he brought to Captain America gave him a new level of realism that I felt hadn't been achieved until that point. It was his classic-looking costume, but one of the other things I loved that he had done was an iteration of Cap right after he had undergone the experiment giving him superhuman strength and he throws on a leather jacket, goggles, and a cap.

The first pass that I had done for Marvel Studios on Captain America was based on that concept. The first images that I had done in the long lead time in development were of Cap in a black leather jacket and a helmet with a sense of inspiration by the Kevin Maguire look. And that worked really well with the preliminary story concepts that the studio had been discussing in having a moment when Cap didn't necessarily have his suit but had grabbed pieces that he'd kludged together to go out and help people.

#3 MATERIALS

The next step was finding a way to then back these real elements that would have been available to soldiers during WWII into the familiar Captain America icon. I actually went on eBay and to Army/Navy surplus stores and purchased a variety of helmets, goggles, webbing/strapping, canteens, boots, and gators to go over them. Interestingly enough, I couldn't find any WWII-period pants to use as reference — which is a shame because there's such a specificity to how GIs' pants were during the time, the bagginess and how they were fitted. And if you get the pants wrong, it throws off the whole design and doesn't make it look authentic to the period.

I was pulling all these tangible references to see how they were constructed and what lines they could create when pieced together onto a form. The straps ended up being a very natural way to create the stripes on Captain America's costume that we're all familiar with. That was one of the main elements that I brought to the suit that hadn't really been referenced in previous comic iterations. The stripes on most of the costumes were decorative. But in this instance, they were straps that were serving a purpose for him as a soldier.



#5 VARIATIONS

That was about as far as I was able to get during the initial phase of Captain America explorations. When the production officially started, the actual design needs for the film were very clear: there needed to be a costume that would act as an onstage symbolic costume (and could actually act as a very close interpretation of the comic book suit); a leather-jacket-and-helmet, soldier-fatigue costume for when he went out to save Bucky; and then a final costume where Steve has found the value in being both a soldier and a symbol. This would lead to the emotional and conceptual buy-in from the audience of why this character would be in a red-white-and-blue costume while fighting as a soldier moving forward.

#4 FORM

The next step was figuring out the form of the helmet, which was tricky. In Maguire's *Adventures of Captain America* art, when he had drawn Cap with his helmet on, it felt like there was an actual shell to it. Like it was a helmet fitted over the top of Steve Rogers' head. Other takes on the character would show him in a cowl or other devices that weren't necessarily protective but more decorative. There were some real-world corollaries during WWII to the cowls. In *The Ultimates* comics, there's a flashback sequence where we see Cap during the war and he has this very beaky leather mask with goggles on it. I thought that was interesting, but it didn't feel quite right for what we were doing. When something is placed over a character's face, it really has to allow the actor to come through, and something like that may have inhibited an actor's performance. So I searched high and low for a helmet that would be molded to the shape of the actor's head. Then I added a chinstrap just like the helmets during WWII.





#6 CLASSIC COSTUME

The interesting thing about the classic costume was that, oftentimes, we're really trying to take the costumes very seriously, and we're trying many different options and detail distributions to get each and every thing on the costume to land for an audience. But this particular costume we knew had to be a little on the goofy side of things. It's a little easier because you're focused on the big details, and you're focused mainly on trying to figure out how and why it feels goofy.

For the classic costume, I had done a lot of research trying to figure out what types of materials in the 1940s period could have constructed the original costume that comics fans were familiar with from the character's origins. I had landed on, and originally pitched, a more wool-based, heathered blue costume that had some ribbing texture to it that would have felt more hand-knitted. The star on his chest and the A on his helmet would have been embroidered. And the wings on his helmet would have popped out more because they're more costume-based and had to read for an audience seeing him on a stage. But I liked the idea that he was extremely uncomfortable in this suit. And that meant making it as showy as possible. The final version that ended up onscreen was a little darker and more saturated than I initially had pitched, but I think it worked out well. The darkness of the blue plays off of the era. They might not have used a really bright blue during that period of time. The red would have been the most vibrant and saturated color.



#7 SOLDIER

The director, Joe Johnston, is perhaps best known by fans for directing *The Rocketeer*. That character has such an iconic and distinctive look, so it was a challenge to have another hero character in Captain America be defined by a brown leather jacket. The first step was finding period leather jackets that looked nothing like the side-panel-closure jacket in *The Rocketeer*. There were quite a few explorations of this particular costume, trying out different jackets that I had found and a few that were suggested by the costume designer. At one point we explored having him find a blue leather jacket and a silver helmet. But there are ideas like that that work for the icon but don't necessarily work for the practicality of the story. Even though all the elements he was pulling from were from the propaganda show, why would he be wearing silver-and-blue clothing if he's going on a stealth mission to save his friend? We have to demonstrate him letting go of the showmanship of the classic costume, letting go of the symbol, and becoming a soldier.

#8 GOGGLES

The next question was how much webbing and how much gear would he be wearing on this particular mission. The goggles that I suggested he wear for the stealth mission, which I had purchased during my eBay shopping spree, were authentic to the period. They were a little too big by design — they're very deep and stand proud about two inches off the actor's face — so he doesn't end up wearing them much in the film.

#9 SHIELD

The shield is the next part of the soldier costume that was extremely important. That's part of the Captain America icon. In fact, with Cap, if he's holding a shield, you can get away with quite a bit of changes to the costume because that element of the icon is so strong. That's why it also works so well in *Captain America: The Winter Soldier*, when he's wearing this Stealth Suit but holding the shield.

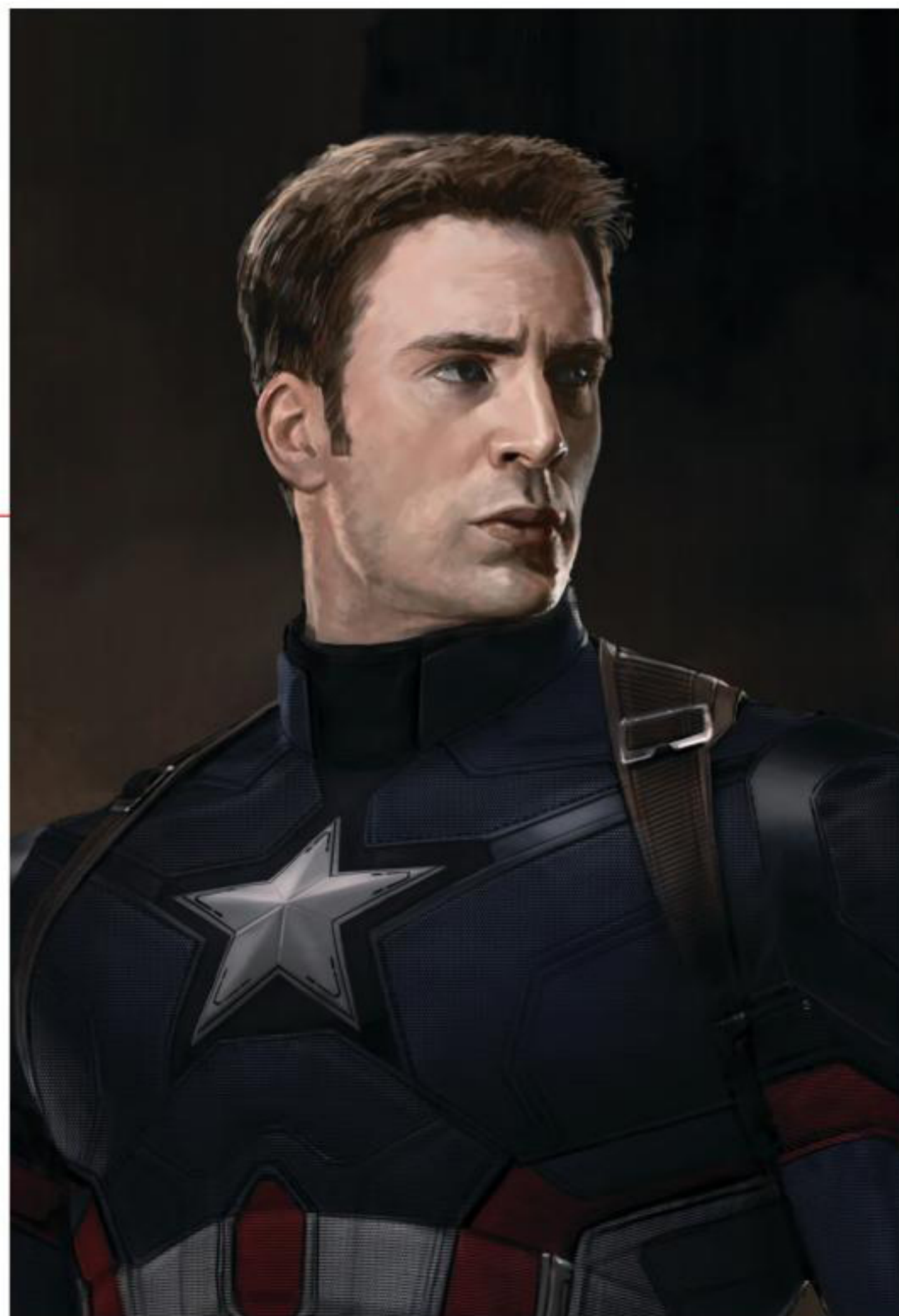
#10 HELMET

As it had been during the first early explorations, the helmet ended up being one of the most challenging aspects to Cap's design. For the first film — at Joe Johnston's request — I started by exploring Captain America wearing a leather cowl with an M100 helmet and versions of a multiple-piece helmet that may not have been what a WWII soldier would have worn but still had that shape. Then later, on *Marvel's The Avengers*, Joss Whedon's direction with Captain America was to make him the most super-heroic-looking of the group. Phil Coulson designed this costume based on an icon. It was as "pure" of a version of the character as could exist. The bulky soldier costume we had designed for *Captain America: The First Avenger* needed to be slimmed down, the stripes needed to be decorative, and the helmet needed to feel like it was more pliable, more formfitting. That necessitated changes in the helmet as well.



#11 ICON

Sometimes what you'll find is that the icons from the comics exist because they work. Captain America being a chisel-jawed man with a mask that you see in silhouette and profile is a hallmark of the character. Some comics purists would also say that the wings protruding from the helmet are a part of that icon as well. In looking at *Captain America: The First Avenger* and *Marvel's The Avengers*, we were trying to create a perfect surface with Cap's helmet. What we learned after those two films was that the perfectly round surface of the helmet was causing issues with the character. When he would tilt his head forward, backward, or to the side, there were no lines or boundaries to read the geometry of his head. It created an optical illusion that almost felt like his head was growing rather than shifting position. We, as humans, need certain visual cues to understand perspective. Another issue with the helmet seen in *Marvel's The Avengers* was that it was covering the ears. Not only is that uncomfortable for Chris Evans to wear for a lengthy period of time, but it also necessitates the helmet getting larger and bulkier.



#12 WINGS

Going back to the comics, one of the icons that works so well is that Cap has a perfectly round head in the art. The wings are the things that create a square shape that visually help him. We found that getting the helmet as close to his head as possible allowed us to create ridges that became corners — much like how the wings do in the comics. There's a round hemisphere that hits an edge. That lesson of looking at the main icon of the wings on Captain America's helmet was a key learning experience that we later applied to his stealth helmet in *Captain America: The Winter Soldier*. It's not just that the wings on the helmet are identifiable; it's also what the wings on the helmet do visually.

#13 EVOLUTION

If you look at the story arc of Captain America, he's constantly trying to define himself. In *Captain America: The First Avenger*, we visually see him start as a symbolic icon, shy away from it to become a soldier, then embrace a mixture of the two. In *Marvel's The Avengers*, he's a man out of time, a fish out of water, and is almost forced into taking on the mantle of an icon once again. Then, in *Captain America: The Winter Soldier*, he's gone back to being a more tactical soldier. He's ready to be a contemporary soldier who has become part of S.H.I.E.L.D., and he lets that militaristic, tactical necessity overwhelm him, resulting in his Stealth Suit.

#14 STEALTH SUIT

The Stealth Suit is based on the Super-Soldier costume, which appeared in the comics relatively recently. Something that we've found in the process of adapting characters from the comics is that the more contemporary the design is, the easier it transitions to film. Functionally, the suit worked really well. And from a design perspective, making it monotone and taking the red and the white out of it made it a very effective costume.

#15 STRAPS

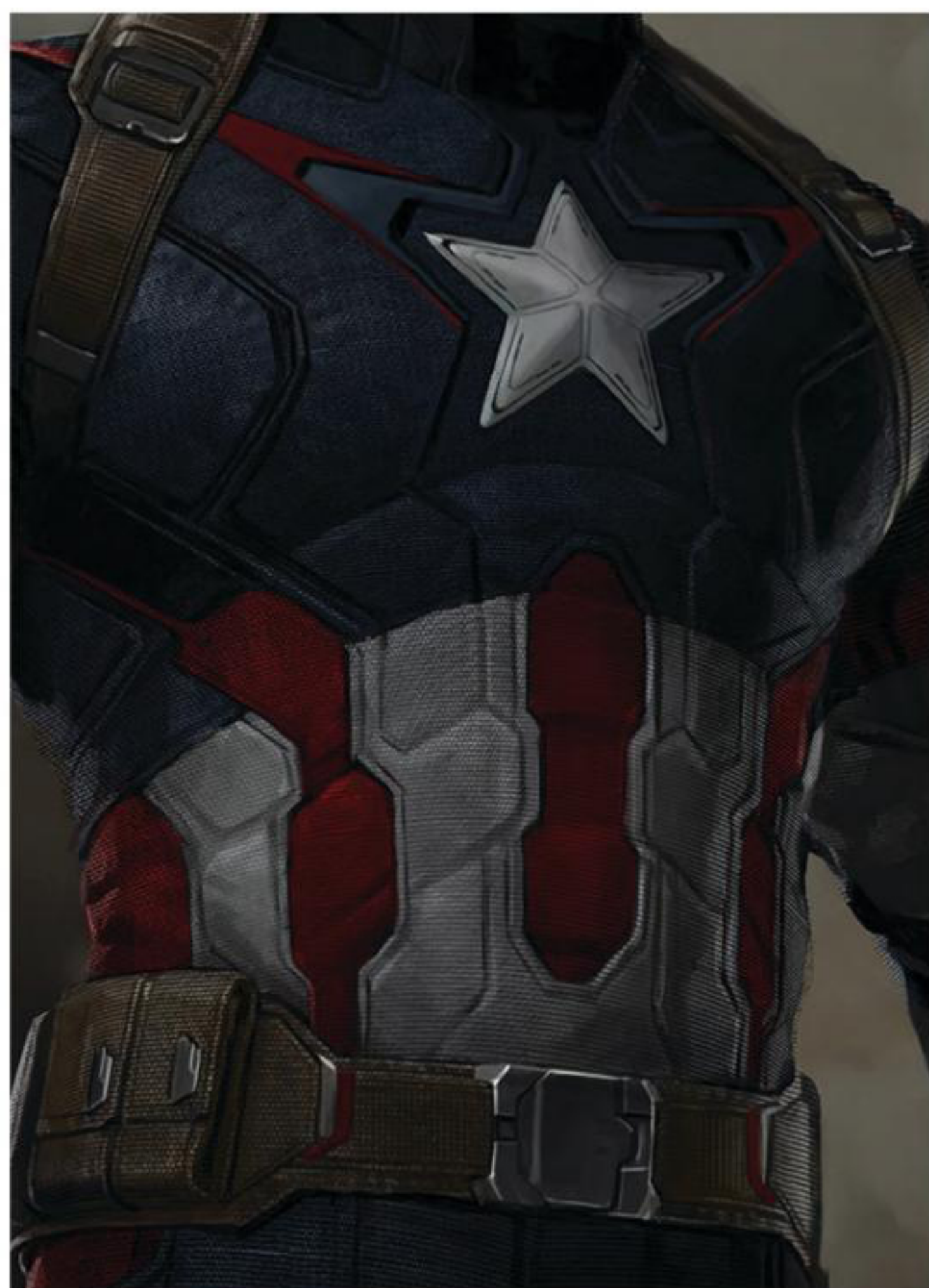
One thing that the Stealth Suit did really well, which may have been a bit unexpected, was move the placement and the sizing of the straps around his shoulders, causing it to make Cap look like he's standing so heroically. The straps forced Chris Evans' shoulders back, causing him to flex his latissimus dorsi muscles, which naturally reads as a very heroic posture.



#16 SEPARATION

I had worked very hard on the hero costume from *Captain America: The First Avenger*, but working to get the strap that went from his waist up to his chest was fundamentally challenging for bunching. And what I was attempting to get out of the shoulder pads never really came to fruition. With the Museum version of the suit, we worked really hard with the costume department to give the straps a bowed look — to make it appear as if Steve Rogers' muscles are spreading the straps apart. Finding ways to merge bulky shoulder armor and padding with a chest piece has always been tricky. Part of what we also learned with the Stealth Suit was that if we created a vest and had the straps hide the division between the vest and the shoulder pads, we could make the shoulders and the arms out of a completely flexible material.

That became the model for how all these Super Hero costumes were fabricated. If you look at the Museum suit compared to the *First Avenger* suit, it still has the straps that carry the same design lines, but the fabrication of the suit is cut at the vest. Allowing there to be that division or separation between the chest and the shoulder solved so many problems from a design perspective and from a practical perspective. If you had told me we would be doing that separation back when we were working on *Captain America: The First Avenger*, I wouldn't have believed you. I was convinced that the separation would make the suit feel segmented. And now, if you look at all our costumes past the Museum suit — excepting Spider-Man — we've followed that same paradigm.



#17 CUTOFF POINTS

When we got to *Avengers: Age of Ultron*, I worked to take those same lines from the Stealth Suit and make them red, white, and blue. One of the things that was really great about the Stealth Suit was that it allowed me to find a way to have the vertical stripes around his abdomen but figure out shapes that would work. For some reason having a pure vertical stripe all the way down Captain America's torso to the belt visually caused problems. You're trying to create lines that are heroic but also direct the eye down a body. That's what all fashion design is, in some way. The termination point at the belt needed more integration into the lines of the character. No matter what lines we would work into the pants to try to catch that line, it never felt like enough to justify such a harsh horizontal cutoff at his belt. For the *Age of Ultron* suit, we took the stripes away from being pure vertical stripes and added some curves to them. We added notches to the stripes and made the center stripe fall just short of going all the way to the belt line, so that they felt more contemporary and high tech.



9.
RM

SPIDER-MAN

BY RYAN MEINERDING

Spider-Man is one of Marvel Comics' most popular characters, having been adapted across multiple mediums over a span of decades. No Marvel hero or villain has been reinterpreted nearly as often. However, that history of adaptation has led to preconceived notions of what Spider-Man should and shouldn't be. How can you make this icon feel fresh and unique? That was the formidable challenge facing the Visual Development team as Spider-Man made his Marvel Cinematic Universe debut in *Captain America: Civil War*. Ryan Meinerding was tasked with redesigning and reconceptualizing the character based on the needs of the story while also highlighting those elements and touchstones familiar to the broader audience.



#1 PREVIOUS ITERATIONS

It can be challenging to reimagine a character that has previously been adapted into the live-action space. But at the same time, it can be helpful. The challenge with Spider-Man was that there had been so many costumes and suits that had come previously in the comics and films, and many of them were extremely popular and successful. Having the ability to see the direction that other designers and filmmakers have taken the character can have its advantages. And in fact, seeing the journey of this character and having been a huge fan of previous adaptations has been an integral part of my understanding of the character. Tonally, the character has been presented in so many different ways. There were the animated-series iterations, where the character was very bright and fun. In contrast, there were darker and more gothic interpretations of the character in the comics and films. That's one of the fascinating aspects of Spider-Man: He can go in either of those directions, and it's still believable and likable.

#2 COLOR HISTORY

I was trying to figure out things that I loved about the character from the comics that hadn't necessarily been presented in live action before. I really pushed to have the character be the bright and vibrant Spider-Man I had grown up with. I grew up with a lot of merchandise, things like Underoos and beach towels, and those interpretations of Spider-Man in the products were based on John Romita Sr.'s artwork. To me, that design is classic Spidey. I loved the classic red and blue, so I really pushed for bright colors. Ditko drew Spider-Man with a ton of webbing lines all over the character. Romita didn't really do that. He drew the character with fewer webs and thinner lines. I loved the external web-shooter design. And one of the things that always drew me to Romita's design of the character were his eyes.



#3 STARTING POINT

The first designs I did for Spider-Man started with his head. That icon of his face acts in many ways as the actual logo of the character. You'll recall there was a time that the Romita Spider-Man head was printed in the top-left corner of each and every Marvel book sold. People are so familiar with Spider-Man's face. It was only fitting that that's where I started designing.

#4 ADOLESCENCE

In many of the adaptations, Spider-Man feels mature. He is a man. But we wanted to try to create a Spider-Man who was still very much a teenager. He's not quite *Spider-Man* — he's a young, aspiring hero. That character decision really justified giving him the bright and vibrant color palette. It also justified giving him big and expressive eyes, which made him feel more childlike.



#5 EYES

The relationship of Spider-Man's webbing and eyes has never really been congruent in the comics. His eyes were always set apart as their own thing. The webbing lines surrounding them have always felt as if they're put on last in the illustration process. In previous live-action adaptations, it felt like the way designers had treated the correlation between the eyes and the webbing was to make them interconnect. They would find ways to integrate the webbing with the eyes. Everything felt seamless and designed together. Because of that, previous iterations of the costumes had eyes that were very angular, with black outlines around them that were relatively small. More emphasis on his eyes was extremely important to me, so that's where I started. I started by giving him emotive and very expressive eyes.

The way that several artists have drawn Spider-Man, having his eyes be communicative, was very important. I looked back to Ditko and Romita, the different head tilts and angles, and the variation on the thickness in the lines around his eyes implied expression. It made it look like he was squinting or excited or surprised — his eyes opened up, and the whites in his eyes were larger. Later, artists like Humberto Ramos specifically created expressions with Spidey's eyes. Ramos thought of Spider-Man's eyes as malleable things.



#6 OUTLINING

I think, in the past, designers were hesitant to embrace having the eyes surrounded by the thick border. Once you add a calligraphy to the eyes, there's an impression of a masquerade mask — which, understandably, is a direction not many costume designers would want to explore. There's a risk of the eyes feeling slightly more decorative than functional. We came up with a very good reason for his eyes to have the thick black border they have in the comics. By mechanizing the eyes and making them part of the Stark technology that encompasses the entire suit, we found a functional way that we have the thicker black border that felt like the Romita Sr. eyes.

Having that element mechanically adjust and focus like a camera lens made the character's mask work really well. It also allowed the filmmakers to have the flexibility to alter the expression of the eyes on the fly. Depending on a shot or a scene, we gave the filmmakers more control and power over the visual of Spider-Man's eyes. They wouldn't be locked into one look. He could be wide-eyed and stay wide-eyed. He could squint and struggle to see, and that black line would get a lot thicker. His eyes didn't have to be constant and static objects.

#7 EXPRESSION

I feel like watching our Spider-Man, you really know exactly what he's thinking and how he's reacting at every moment in every scene. The head we designed is so expressive. His acting and his motions don't have to be overemphasized, because of the flexibility we've given him in his expressive face. Spider-Man, by nature, has a very expressive body. But being able to have something that was subtler allowed Tom Holland to act with his head being expressive. That opened several fun possibilities for the character.



#8 IDENTITY

The Russo brothers and Kevin Feige had their favorite iterations of the suit that they wanted to use as touchstones in designing the rest of the suit. In cultivating all those different iterations of the suit over the years, what we found was that a lot of those design choices that were distinctive were used for a very specific story purpose. Design aspects of the Ben Reilly/Scarlet Spider suit evoked memories of that particular story arc. Making the suit look like the Superior Spider-Man design brought an assumption Otto Octavius was under the mask. Similarly, Miles Morales' suit has a really cool design and would have been great to use. But this character wasn't Miles. It wasn't Ben. If we were going to use design aspects from those suits, but we weren't prepared to make the character in our films Ben Reilly or Miles Morales, we wouldn't be representing the character correctly. If we weren't going to tell those stories, it became clear that we probably shouldn't try to touch upon those visuals in our design. But that exploration was necessary to come to that conclusion.

#9 WEBBING

I started by trying to do a totally red-and-black costume. When I look at Ditko’s original illustrations, the majority of the blue in the costume is actually black with a blue outline. I thought if we could do something like that, where the suit was primarily red and black with blue highlights or outlines, it would make the suit feel edgier. I experimented with different texture breakups between the red and the black areas. I tried different types of line breakups. We decreased the amount of web lines on the costume to about half of what had been seen in previous films and really made them deliberate. We landed on what I proclaimed “tech webbing.” The webbing has a purpose, just like everything in our designs. I had pitched the webbing lines as a part-line with a seam or a hard piece in the middle. That way, the lines felt like they could be popped open or replaced. Maintenance of the technology in the costume could take place using these panels.



#10 TECHNOLOGICAL

Having the suit designed using Stark technology existed as a concept from the very start of development. We knew that Spider-Man was going to have his homemade suit that was fairly rudimentary. Tony Stark would show up to recruit him for *Civil War* and bring with him a newer suit that was extremely high tech. It was essentially a cloth version of the Iron Man suit. That idea is a pretty unique spin that thankfully didn’t make it feel too much like an Iron Man suit. It still feels like Spider-Man. But it allowed so many new things to play with. Peter Parker as Spider-Man has all this technology at his disposal now, which allowed us to go to interesting and fun places.

#11 PANELING

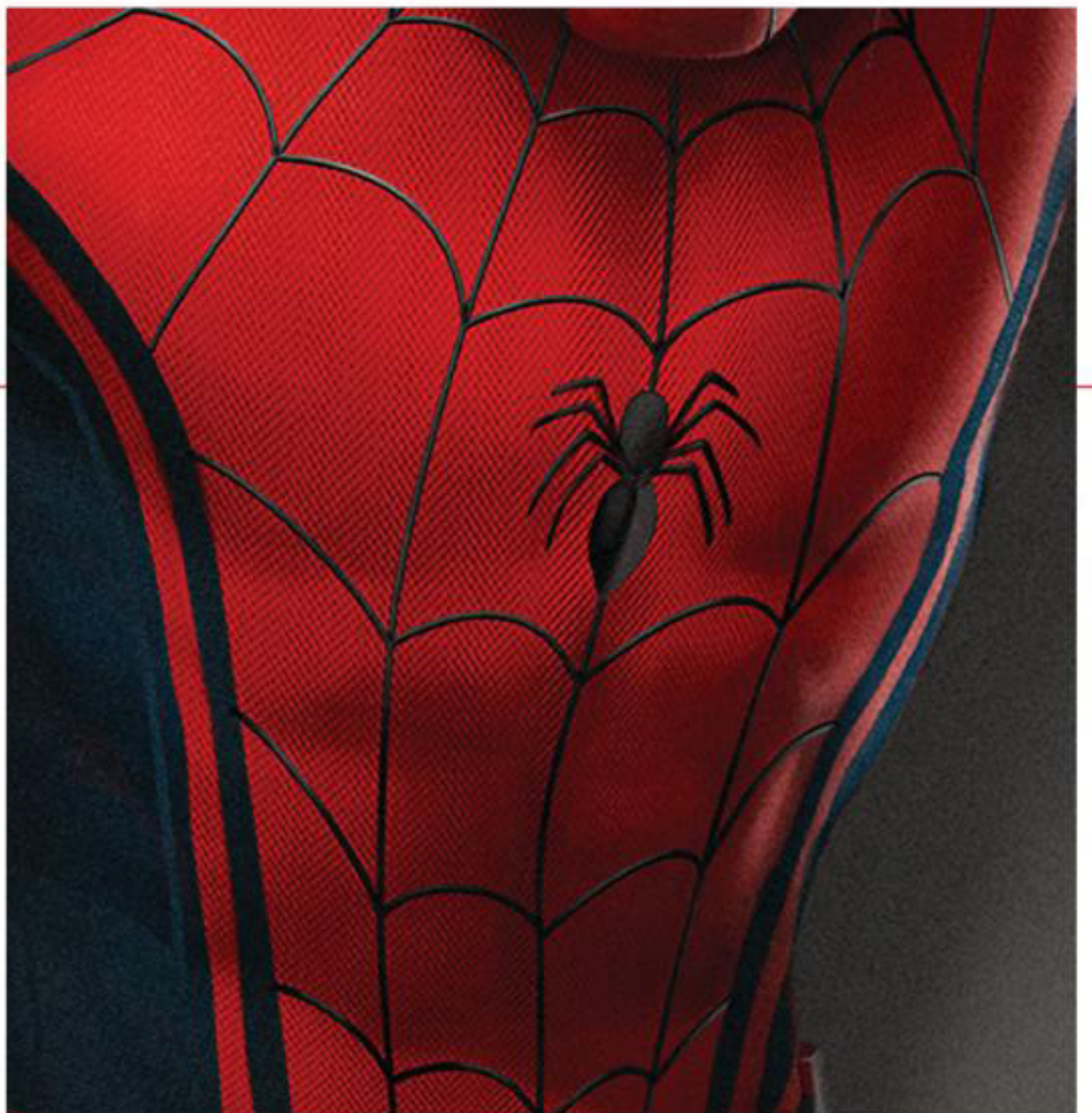
The technological lines were meant to act as paneling on the costume, and I had incorporated them very early in the process. And in fabricating the physical costume for filming, we wanted the Spider-Man suit to be in line with the tactical costumes we’ve designed for most of our characters. Because of that, we used a thicker fabric for the physical costume that has a screen-printed texture on top of it. The fabric has a thicker, harder feeling. It doesn’t look or feel like Spandex. What that allowed me to do with the texture in the blue areas was to find ways to make it feel different from everything that had come before.

I made the decision to keep the web lines on the red portions of the costume and utilize technological lines on the blue portions of the costume, integrating them both into each other. In my mind, this abstractly harkened to the breakups in the black and the blue lines that would have been in the drawings from the comics. It was a complex process that required silk-screening the design onto the fabric in four or five different passes — but I think, if nothing else, it made the suit feel like it had such a higher level of detail. It feels like the high-tech component and the precision of what it actually takes to fabricate this costume in real life make him feel like a heightened new version of the character we’ve never seen before.



#12 CHEST LINES

Then in the lines around the shoulders and the chest, I wanted the angles to echo the design of Spider-Man’s eyes, allowing the shape of those eyes to inform the lines for the rest of the suit. If you look at the line going out from the chest and around the shoulders, it mimics the same silhouette as his eyes. That was my attempt to bring some of the more decorative swooping quality from the eyes into the rest of the costume, merging that with the complete visual.



#13 CREST

The Russo brothers liked the idea of a large spider crest across Spider-Man’s chest. I explored several iterations of the character with these huge spiders spanning the entirety of his chest. Several of the iterations looked a lot like the famous black costume from the comics with this large spider front and center. But at the very end of that exploration, I took a step back and felt like I was concerned the character evoked too much of Ben Reilly. I thought maybe the alternative was to find more of a technological approach to the spider on his chest. I subtly changed the graphic quality to hint toward the very specific textural quality of the hard-edged pieces on Captain America’s costumes that Tony Stark built. The armor that comes off Cap’s chest and around his shoulders has a very distinctive look. I played with that — baking in more of a Stark-tech feel to the spider, making it feel more like technology and giving the outlines of the spider icon a purpose. Adding these panel breaks made the spider feel like it was something that could detach from the costume. It also implied that there was something else going on with that section of the suit that could be utilized in the storytelling.



#14 SCALING

As that development occurred, the spider reduced in size, which took that crest toward how it traditionally appeared in the comics. Rather than this big and bold emblem on his chest, it was more subdued and a subtle nod to how this character received his powers. And, as mentioned earlier, reducing the size of the spider on his chest drew more focus toward the character’s face, which is instrumental in its success.



#15 ACCESSORIES

One of the coolest things about the character of Peter Parker over the years is how he’s cleverly utilized technology. He enjoys building and creating things. That was one of the most relatable parts of the character to me. Because of that, I knew that I had to design the web-shooters to be an external part of the costume, and they had to look as if Peter had constructed them himself.



#16 TACTICAL ELEMENTS

An added benefit of choosing to utilize external web-shooters was that it also allowed us to create web-fluid cartridges. It was a new visual that hadn’t been explored before. The cartridges were also a fun addition to action sequences, giving Spider-Man something dynamic to do mid-battle, having to hurriedly reload his web-shooters. One design element that these cartridges helped address was the tactical nature of our heroes in the MCU. So many of our characters have very tactical design elements. That means belts, pouches, and gear. There are a lot of militaristic elements incorporated into the costumes, which isn’t really necessarily Spider-Man’s style. However, adding these web cartridges to Spider-Man’s suit immediately gave his belt purpose. There was now a tactical reason for him to be wearing a belt to house these refills for his web-shooters.



#17 EVOLUTION

The Iron Spider was a huge part of *Avengers: Infinity War*. For the film, the Russo brothers wanted Spider-Man to have a different costume that would act as his Avengers costume. But originally, our mandate with Spider-Man was to make the character feel as classic and familiar as possible. At the start of preproduction, I explored a few costume designs to update what had been seen in the previous two films, using what we had done previously as a base and not deviating too far. But the Russo brothers wanted to push it further. They suggested we look toward the Iron Spider armor design from the comics. It's a drastically different design from the classic suit we had just constructed. The armor has big, bulbous gold eyes and creepy legs. It has a huge gold spider logo that went in the opposite direction of what we had done.



#19 ACCESSORIES

Initially, I had designed the suit without the mechanical legs. But as the script developed, it was clear that they would be necessary. I explored several options for how the legs would attach and emerge from the suit and how they would function.



#18 RESEARCH

I started by designing a literal interpretation of the Iron Spider from the comics. Then I created a few versions of the suit we'd already designed with elements of the Iron Spider technology incorporated. I was trying to find my way through it, doing iterations where there was a mixture of both. Keeping in mind that Peter's initial suits were representations of the technological abilities of the character, I wanted to have this suit then say that there was a whole other world of capabilities that he could participate in if he were sophisticated and trained enough.





BLACK WIDOW BY ANDY PARK

Since her original appearance in the comics in 1964, Natasha has been a force to be reckoned with. But times have changed since the 1960s, and her design needed to suggest a tactical, efficient, and purposeful spy.



#1 CONCEIT

Going immediately to her namesake, Natasha is fully aware that her visual aesthetic is as important as the functionality of the suit. She uses her appeal to her advantage, disarming her opponents much like a spider would its prey. She's a master tactician and one of the best operatives in S.H.I.E.L.D. She and Hawkeye are the human balance to the godlike powers of their Avengers counterparts.



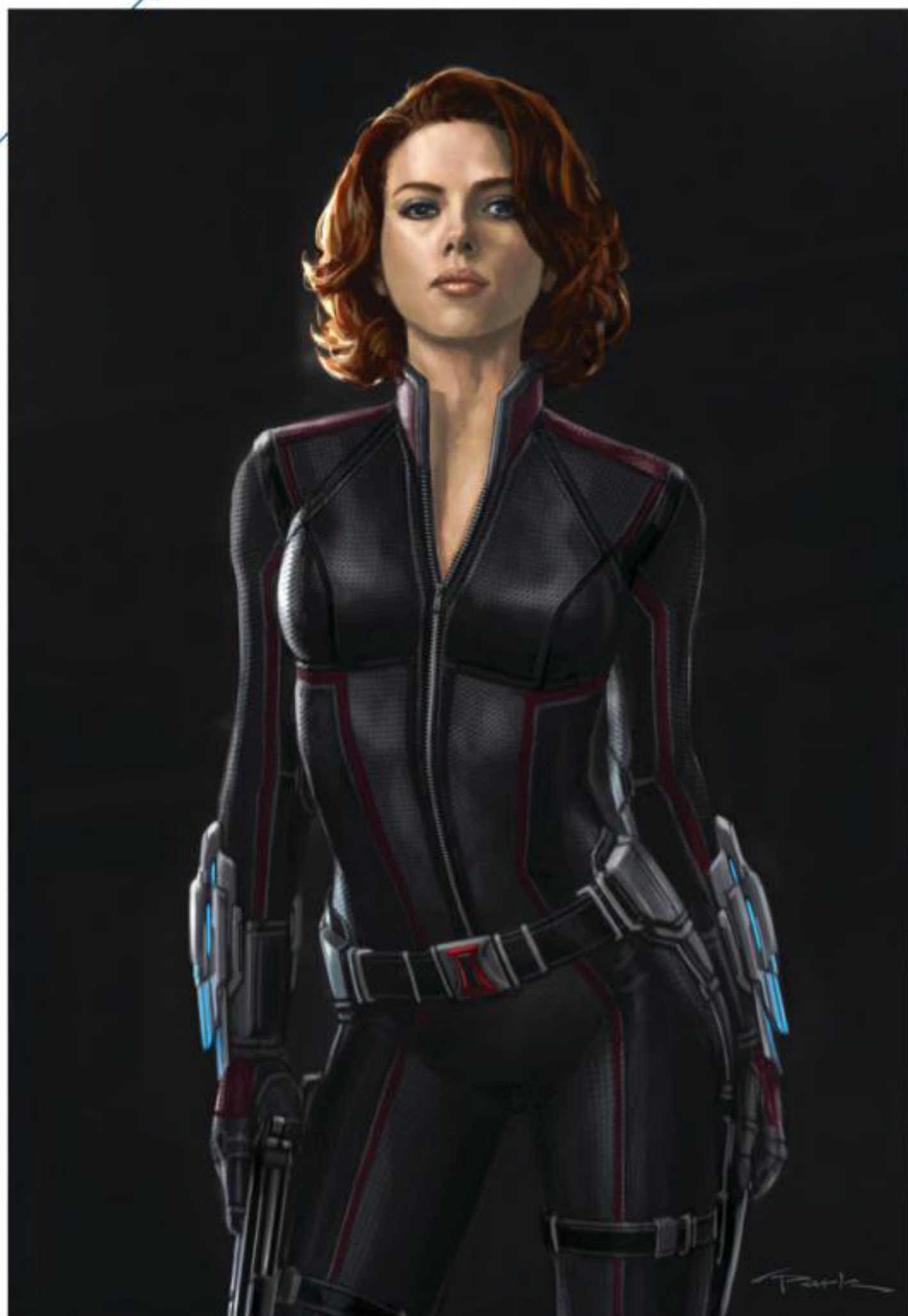
#2 REIMAGINING

In designing Black Widow for *Marvel's The Avengers*, I looked to design motifs from real black widow spiders. Black widows are fully black with very distinctive highlights, very sleek and shiny, with that red hourglass element on their abdomen. And that's what I wanted to replicate with her design. If you look at the lines that I've created with the Black Widow design, they're almost like the spindly legs of the insect emanating from her central core pointing toward the red hourglass symbol on her belt, which provided a nice centering point to the design. Joss also wanted to create a look that was more utilitarian, military, and practical than her first appearance in *Iron Man 2*. I maintained the sleekness and minimalist quality of the suit while trying to add a combative component to it. Joss liked the idea of the suit having energy coursing through it and being able to have "hit points" where she could cause damage to her opponents at points such as her fists, elbows, knees, and feet.



#3 MATERIALS AND COLOR

Black Widow's design has maintained an overall consistency due to the directors liking the simplicity of her core design. So the challenge on each subsequent film is to figure out ways to create a new suit, while not looking outright different, that has secondary elements of the design that are new. One way to do that is to play with the materials of the costume as well as playing with colors. So on *Captain America: The Winter Soldier* I played with the idea that the outer elements of her suit would have a different sheen to it than the inner parts. In this case, the outer sections would be either shinier or a tone lighter and that the inner parts would be more matte and flatter in sheen. In a film, this creates visual interest due to the lighting and cinematography as the character moves around any given space. Highlights, the lack of highlight, and playing with contrast of materials help bring not only visual interest but even a believability to a costume. I also tried introducing a deep dark red into the suit for even more visual interest, but the Russo brothers opted not to go in that direction. You gotta try!



#4 SUPER EMBELLISHMENTS

Around the time of *Avengers: Age of Ultron*, we leaned very much into the comic book embellishments of the character's secondary designs. The idea came back from Joss to give her "widow bites" with energy coursing through her suit, upping her ability to damage her opponents. So, unlike the Russo brother's sensibilities to ground the characters, Joss wanted to push it to be more "comic booky." So I made the energy coursing through her suit very obvious. I was fully aware that this goes against everything about her that is "stealth," but I figured that by this time she is out and about fighting alongside the Avengers. She wasn't sneaking around at night on different missions. Now she's fighting aliens, super-powered Hydra soldiers, and killer robots, all during the day. She can easily turn off the lights, but in this case, she wants her energy signatures to intimidate her enemies. Again, I did play with the idea that the glow would be a red color since red is darker in value than a light blue, but Joss liked the blue.



#5 WEAPONS OF CHOICE

You can't go into a war without any weapons. Well, Natasha might be able to. But even she knows she needs to carry an array of weapons to get out of any sticky situation. Her main weapon of choice is, of course, her fists and feet. But after that, it would be her handy guns, always at the ready in her holsters attached to her legs. The other weapon she seems to be quite fond of is the baton. She's had a couple in the films, but the first ones I designed were the energy batons she briefly wielded in *Avengers: Age of Ultron*. I love extendable batons. It's just a really cool visual when you swing out your arms to extend the baton to its full length. It's very lightsaber-like. I did upgrade her gauntlet as well in *Age of Ultron* to give her extra-powerful "widow stings" if she needed to use them. And, of course, the other weapon I've designed on her throughout these movies are the "hit points" energy coursing throughout her suit. At the end of the day they really downplayed that aspect to her character, which in a lot of ways makes her that much cooler. She's one of the only real humans in the Marvel Cinematic Universe, and yet she is so capable to take down her opponents. Now, that's a real Super Hero.



#6 BACK TO BASICS

In *Captain America: Civil War*, the Russo brothers wanted to simplify Black Widow's look to her basics. No more of the bells and whistles that Joss brought into her costume. So I went back to what made Black Widow Black Widow — a sleek, simple, utilitarian combat suit. I brought back a little bit of her *Winter Soldier* suit sensibility with the material variations and simplicity of design. And then in *Avengers: Infinity War* the idea was to take that suit and bring some additions to it, to basically accessorize the suit. So I played with adding a vest, jacket, scarf, and straps, and giving her different military pants and other variations to adjust her look. The idea was that she was now a fugitive and therefore not able to create a whole new suit. But she could adjust what she currently has.







#7 DESIGNING FOR YOUR CLIENT

In this case, I'm designing for the director. The fun part, and often the challenging part, of our job is to create designs based on the sensibilities of all our different directors. We might be designing the same character, like Black Widow. But each director has a different vision for that same character. Joss tended to push the comic book sensibility, while the Russo brothers tend to want things to be more grounded and less flashy. It's all part of the fun of being a character designer. Regardless of who the director is, my job is to still get into the head of Natasha and flesh out what she would be wearing and why she would make those decisions. I love the subtlety of her character. She can be so gentle and caring to her friends in one scene and then absolutely have no mercy for her enemies the very next. I guess that's the nature of a Black Widow.

HULK

BY RYAN MEINERDING

The Hulk is the horrific result of Bruce Banner's exposure to gamma radiation. For *Marvel's The Avengers*, Mark Ruffalo acted as the Hulk on set, with performance-capture technology marking his facial details, movements, and expressions. This process allowed the character to maintain some humanity when making his monstrous transformation.

#1 PREVIOUS ITERATIONS

There's been a striking amount of variation of design of the character over the years. I grew up watching the Lou Ferrigno Hulk on television. But as a kid, I was aware that there was a large difference between that portrayal of the character and how he was in the comics. He's one of those characters that don't feel like he has enough iconic elements to be iconic. But he is. Maybe it's just as simple as his green skin? But then when he becomes the Gray Hulk, he still looks and feels like the Hulk. There are enough details about the character that tie 50-odd years of the character's history together. We're always looking for the iconic elements of our characters to adapt to the screen and how we can use them to the best effect.

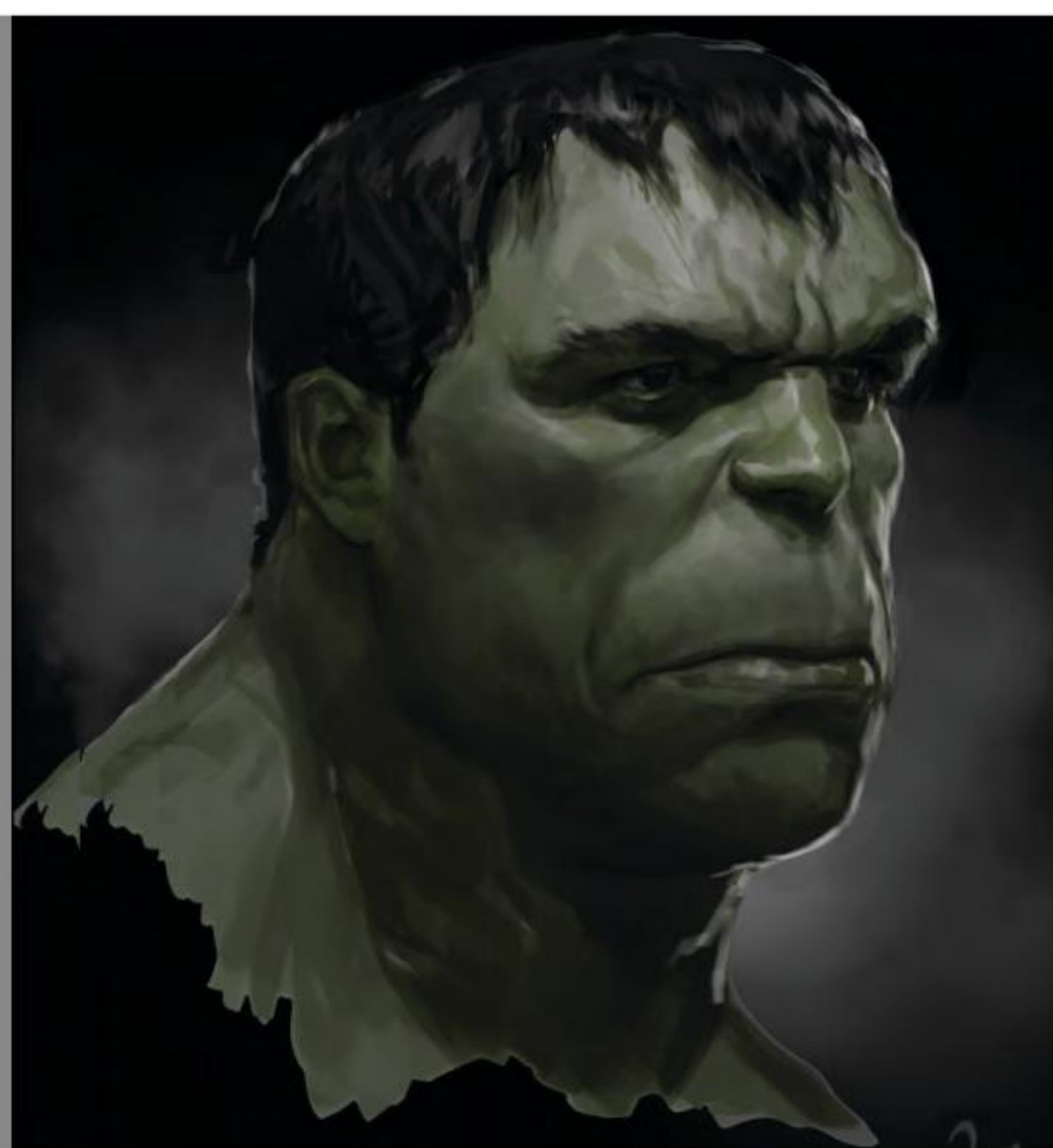
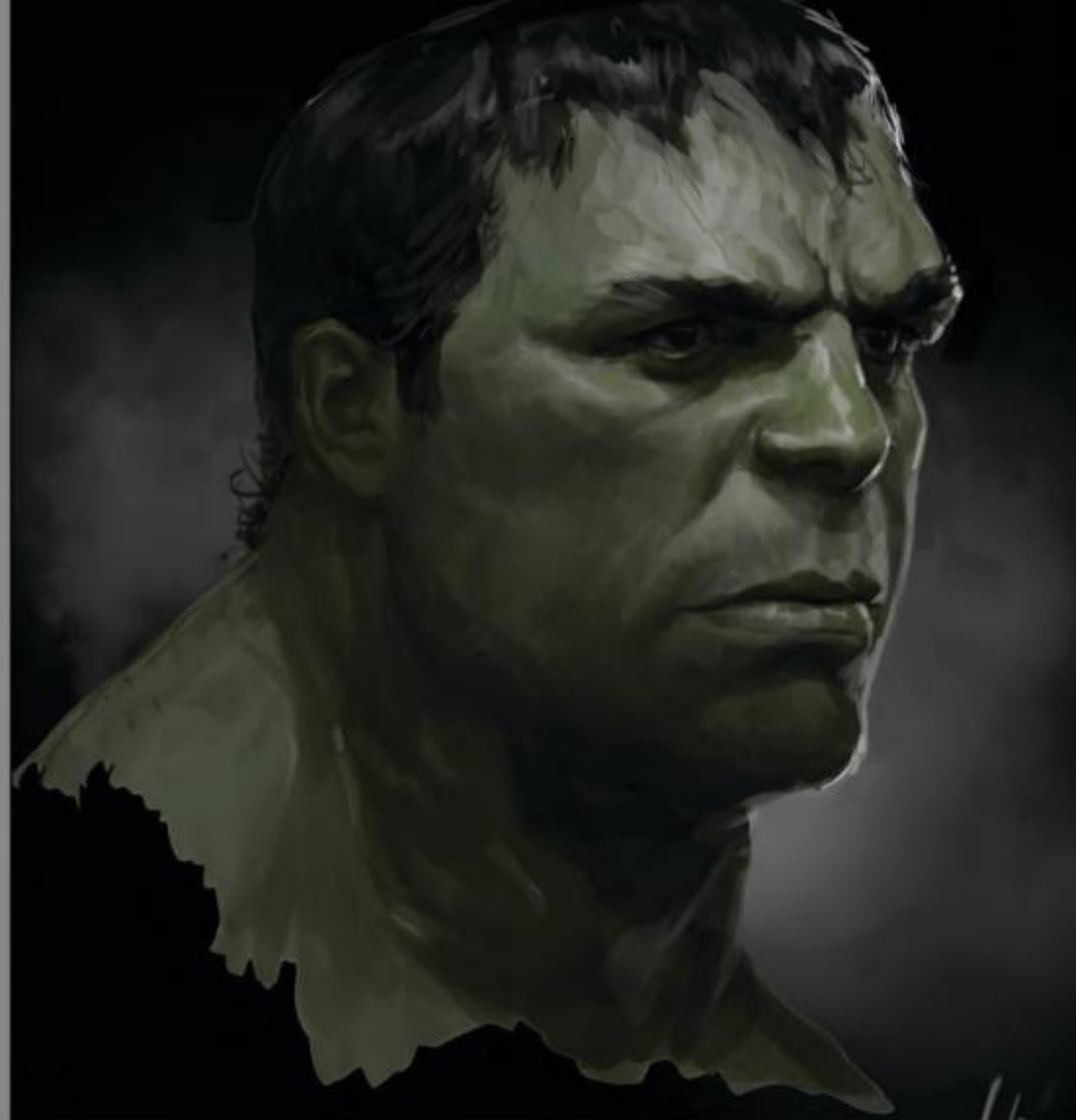
Hulk is essentially a Jekyll-and-Hyde character. The original Kirby drawings of Hulk also felt a little inspired by Frankenstein's monster. He had a very square head. His haircut had that shape that felt like Frankenstein's monster. That's the version of the character I've gravitated toward. It's interesting, although I grew up in the 1980s and 1990s, for some reason my sensibilities for all our Marvel characters go back to designs that had been done before my time. I think a lot of that for me came from the products and merchandise I had as a kid. There was a building set called Fiddlesticks with these printed sets of Marvel characters, which included Spider-Man and Hulk. That was the version of Hulk that became iconic to me. That version of the Hulk was and still is engrained in my mind.



#2 PROPORTION

It can be quite challenging to make the Hulk not feel like a generic muscle-bound Super Hero. Taking a man and bulking him up to cartoonish proportions immediately makes him feel like he could be ready for a Saturday-morning animated show but not necessarily live action. In approaching Hulk for *Marvel's The Avengers*, we had to keep in mind that he's a monster. He's a hero, of course. But in his design, we have to keep in mind that he's a horrifying creature. In previous iterations of the character, there had been an inclination to keep the primary focus of the character on appearing to be heroic and strong. But it's unfortunate what's happened to Banner. This is the Hyde to his Dr. Jekyll. It has to feel that way.





#3 PHYSIQUE

The design of Hulk for *Marvel's The Avengers* was a collaboration between Charlie Wen and me. I was over in England finishing production on *Captain America: The First Avenger* while Charlie was back in the States working on Hulk designs. Charlie had sculpted a ZBrush model of Hulk in 3D. Everyone at the studio really liked the body and the physique Charlie had designed. Charlie put a lot of focus and thought into Hulk's proportions and the pose. And it was extremely successful. He had made Hulk feel massive and powerful. Bodybuilders always work on their chest and their pectoral muscles. Charlie, on the other hand, had focused the muscle mass on Hulk's back and shoulders and making his arms feel massive. And his chest didn't have that massive definition of traditional bodybuilders. It worked really well. Next on the agenda was the head and face. That really needed everyone's attention and quite a bit of exploration.

#4 PORTRAITS

I tried to find ways to make Hulk's face feel monstrous, incorporate elements of Mark Ruffalo's face, and at the same time evoke feelings of the classic Hulk burned into my brain as a kid. The first step I took was painting multiple portraits of Hulk's face — quick renderings exploring options for where bone and muscle would be defined. I started with a literal interpretation of Mark Ruffalo's face, using photo reference of him wearing a skullcap. Then I started making alterations. I pushed the distinctive traits of Ruffalo's face toward Hulk. I pushed his brow forward out over his eyes. I altered the proportions and layout of his face slightly. It's interesting: The distance between Hulk's nose and mouth is something unique. It's an element of the character's design that took the comics illustrators some time to find. But that distance is key in conveying Hulk's face.

#5 3D

Many of those original portrait explorations really embraced that Hulk was a monster. He had almost Neanderthal proportions to his face. Those were designs that Joss Whedon really responded to. But it became clear that a two-dimensional painting of Hulk's portrait wasn't going to convey to everyone all the information needed to get the design approved, so I moved into sculpting in 3D.



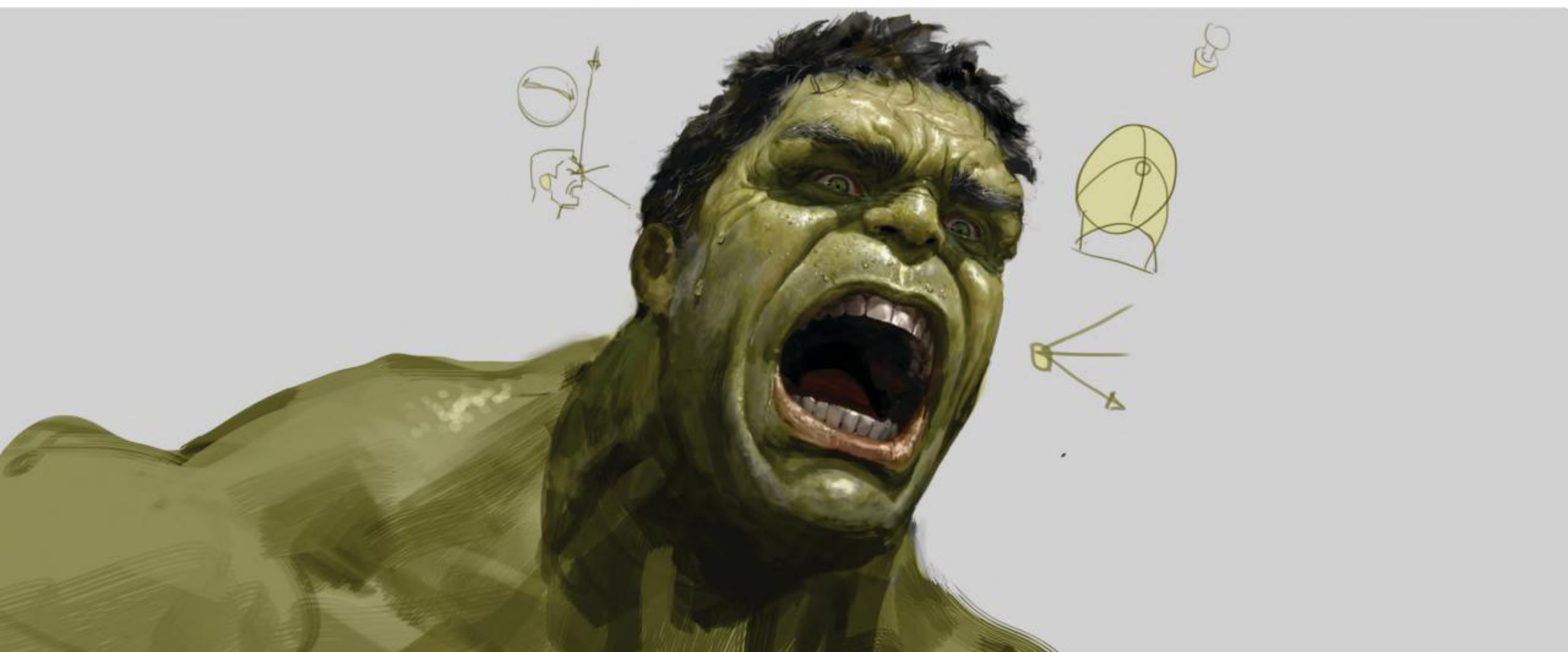
#6 SCULPTING

I sculpted several facial designs for the Hulk with several facial expressions. That way, I could see how a snarl or a brow furl would affect the entirety of his face. How would it look when he was enraged? What I ended up turning in for approval were renderings of Hulk's face conveying a wide array of emotion. Being able to see Hulk's face from several different angles helped get the whole filmmaking team on board with what I wanted to do with the character's facial proportions. This way, from all directions, the space between the nose and the lips was evident. How far forward the brow was being pushed could be seen from a profile view. The size of his eyes compared to the rest of his face was visible.

#7 MAQUETTE

Once that had been approved, the team at Legacy Effects took that head sculpt I had done and the body that Charlie had done and married the two. From that, they created a maquette used as reference for the visual effects animators to use.





#8 MOUTH

Another unique trait to Hulk's face that may not necessarily register on first glance is that he's a mouth breather. His mouth never closes. Closing Hulk's mouth changes the proportions of his face and, for lack of a better word, "breaks" the model. That delicate balance I mentioned can be altered the minute his lips are pressed together. All of a sudden, it looks like the distance between his nose and his mouth is greater. Especially on *Thor: Ragnarok*, I was a big advocate of the visual effects animators keeping his mouth open. That way, the mouth always remained in the same place, and the distance between his nose and top lip was shortened to where we had initially set it. Solving problems like that is one of the virtues of having the VisDev department on the film from start to finish. We can identify when those things have changed. It gives us the opportunity to present options in the visual effects process. We were able to find a solution that solved issues for all of us.

The Hulk II
I-M-CAIG



#9 HAIR

One of the things that's radically important with the Hulk — which if you had told me before I started working on the character, I wouldn't have thought to be true — is his hairstyle. His messy 1970s-era haircut really works for that time period. If you watch in our films, over time his hair has changed quite a bit. His hair becomes a statement of his journey. For some reason, when it comes to fully digitally rendered characters, changing their hairstyle isn't the first thing that a designer thinks to do. Our human actors naturally have different hairstyles throughout the films. Look at Chris Evans as Captain America. Comparing his hairstyle from *Captain America: The First Avenger* to *Captain America: The Winter Soldier*, the evolution of the character adapting into the modern world is extremely evident in his haircut.

We had to look at Hulk's hair the same way. We had to find ways to make his hair feel like Bruce Banner but also be part of his story. Iain McCaig contributed design work for Hulk for the first *Avengers* film. Iain had done a pencil sketch of the character where everyone really liked how the character's hair was presented. That design carried over into our subsequent designs and 3D sculpts. Though not much about the character changes over the course of the films, pay close attention to his hair. It makes a statement as to his current state or predicament. When he's on Sakaar in *Thor: Ragnarok*, his hair has changed to show that he's been a gladiator for quite some time.



#10 TRUNKS

For *Avengers: Age of Ultron*, we had to design pants for Banner that would expand when he transformed into Hulk. It was an interesting exercise because not only did I have to find pants that fit Banner, but I also had to find a way to functionally allow them to stretch during his metamorphosis. There were several options to give the pants that functionality. One idea I had was to place very specific “stretch areas” in the design of the pants. Another idea was to give the pants buttons that would pop, similar to athletic warmup pants. In both of those instances, I had to make sure the vertical distance on the pants was the same when they were on Banner and when they were on Hulk. The pants only needed to stretch in width. It was a pretty difficult challenge, which sounds pretty silly. We had to engineer functional stretchy pants. How often can one say that?





THOR

BY CHARLIE WEN

Thor has been a significant figure in Norse mythology for generations. In the pages of Marvel Comics, his *Journey into Mystery* began in 1963 — in issue #83 of that long-running anthology. That rich history — combined with the inherent challenges of developing an idealized Super Hero in an operatic world and finding the right mere mortal to fill his boots — added to the challenge of adapting Thor for live action.



#1 HUMANITY

Thor took quite a bit of time and development to get right. He's an idealized and very powerful being, which can be complicated. He's a god. We have to convey that in our design while still obeying the laws of our grounded reality that have been in place since the original *Iron Man* film. A god among men is not necessarily something that is characteristically grounded. What do you do? It was a similar challenge that presented itself when I was working on *Guardians of the Galaxy* as well. How do you approach the introduction of a new character? How do you do that while introducing a new realm? How are our design choices going to define the magic and the cosmic sides in this universe moving forward? Thinking on that level, it goes far beyond character design. It's a cohesive design. When thinking of how daunting a task that may seem, it's best to break it down into smaller pieces. Luckily, the first step had been predetermined for me and allowed me to take the development of the character one small step at a time.

#2 MJOLNIR

For several reasons, Mjolnir was the first element of Thor's design I had to complete. Usually, you don't design personalized weapons or tools of the trade for a character prior to figuring out the character themselves and the world surrounding them. We had just started. It was a little backward from how things should have been done, but ultimately it ended up being helpful.

#3 COMPLEXITY

I explored a wide variety of looks for Mjolnir. I made a conscious decision to push the design as far as I could take it, knowing that it could always be reeled back toward something more simplistic. Sometimes something has to be seen to know what direction *not* to pursue. That frame of reference provides a baseline where I can look at the gamut of concepts and determine how each of them makes me feel. Creating a scale of one to ten, it's useful to have a visual representing the most elaborate (being a ten) and the most simplistic (being down at one). That scale helps set tone and can be something used as a reference throughout the design process for any other designs that may fall into the same aesthetic. If all of our designs fall around a five on the scale, anything feeling too ornamental is out of place. And similarly, anything too simplistic is also unacceptable. Creating Mjolnir at the very beginning of the design process actually turned out to be advantageous because it helped in setting the dial for that scale. Finding that delicate balance was helpful in approaching the rest of the character and Asgard as a whole. It established a design language to which everything else could adhere.



#4 COLOR KEY

In the interest of full disclosure to my fellow artists, in laying out the scale from simplistic to ornamental, I was actually sweating a little bit that the filmmakers would spark to the most elaborate designs for Mjolnir. If this was going to dictate the rest of the design aesthetic for the entire world, that highly ornamental design was going to be very intricate and difficult to achieve. I was fortunate that Kevin Feige and Kenneth Branagh responded to something that wasn't too outlandish and preferred the simpler version of the hammer. That meant we weren't tied to something so specific for the entirety of the world. Keeping this first design challenge simple left us breathing room in the development of designing everything else. If the entirety of our design was a color key, this was the first basic color on which everything else could be based. Now that we had this starting point, where do we go with the rest of the costume?

#5 RESEARCH

Before even putting pencil to paper and sketching, I felt like I owed it to the storied mythology of the character to really spend time getting to know who Thor was and where he came from — especially because Thor is a character who exists in the Marvel Universe but is also a character with an ancient history within Norse mythology. Becoming knowledgeable with the intimate details of both sides of that history was important. Leveraging both was key in the character's success. Funnily enough, this was well before there was a script and it was revealed that Norse mythology would play a role in Erik Selvig's recognition of the character.



#6 SYMBOLISM

In researching Thor's Norse mythological roots, I focused on finding symbolism particularly of Mjolnir throughout history. I found a cross-like symbol representative of Mjolnir in my research and worked it into designs of Thor's chestplate. That small detail is a great example of how I was able to tie the mythology at large into the comics' mythology and bring them both into our live-action adaptation. That level of depth is crucial when designing our characters. We can decide how much of the cultural and mythological to incorporate into our designs. They're not things that the audience will necessarily catch while viewing, but it's a level of detail that can be felt. It makes the design ageless and timeless while adding an authenticity to these fantastical representations we're creating.



#7 ICON

On the comics side, I was particularly interested in analyzing the character's first appearance versus how he looked throughout different noteworthy time periods. And in those time periods, there were very significant stories that affected Thor that were memorable and that fans recognize as being instrumental in this character's history. We tried our best to identify all those moments, how the character was designed at that point in time, and what was occurring in his story. This process helped us not only track the visual evolution of the character but also find the key elements and moments that are responsible for shaping the public's perception of Thor's icon.

Most casual fans already have a preconceived notion of Thor: his helmet, Mjolnir, his cape, maybe the six discs on his chest armor. Those are engrained in popular culture. Keeping that perception in mind is just as important as what the actual character appears to be in the books — learning who the actual character is, and then holding that up to what most people already know (or think they know) about the character. It sounds so basic to say something like, "Make the character look like who they are." But the iconic elements in the public consciousness are fundamental to making sure the character reads as they are supposed to.



#8 OPERATIC

When Kenneth Branagh was hired as director on the film, it allowed us to leverage the strengths of the designs that we had in place. With Branagh, my mind automatically gravitates toward the Shakespearean, so I made my designs feel operatic. From his hiring forward, many of our explorations of Thor and the characters surrounding him were treated very theatrically, more so than the other films in the Marvel Cinematic Universe. Angling character design toward the operatic can be a slippery slope. These are embellished characters, but they cannot be too stylized. Our original designs of the character were a little enhanced. We made Thor’s proportions larger than an ordinary human. But that’s a necessity in some cases. On Thor, Ryan Meinerding and I were working directly with Kevin Feige well before preproduction. When we’re working that far in advance, we’re not only designing the character, but we’re also helping the studio sell the idea of the movie to a wide variety of people. We have to make sure the larger-than-life, idealized god comes through in the imagery but at the same time be mindful that a real human is going to have to play this role.



#9 SIZING

Before Chris Hemsworth was cast, we had to design Thor around a real human being’s look that casting could then try to emulate. Once Chris was cast, then we tried to do everything we could to make him look like that version we designed prior to his casting, accentuating his natural proportions to mimic what we had designed. It worked perfectly with Chris. Funnily enough, when Chris came in for his first fitting, his arms were so large that we had to break up the suit a bit. He’d gotten so muscular that we had to change the costume. That’s a large part of what we do at Marvel Studios VisDev: We’re there in the costume department and at those fittings with the actor and problem-solving to make sure that we’re making the right choices and everything is turning out as we all intended.



#10 PARALLEL CHARACTERS

Branagh is a very character-driven director. Reflecting on the original *Thor*, so much of the film is driven by Thor's relationship with his brother, Loki, and father, Odin. That was really important. Visually, I wanted that relationship to come through in their design. Thor has to be informed by Loki and Odin, and vice versa. They all had to be designed at the same time. Their journey and their relationship had to be subtly conveyed through changes in design. They have to be contradictory. We have to see how Thor and Loki are different from each other in their visuals.

It's especially apparent when recounting how little Loki actually wears his armor. In the first film, we designed two costumes for Loki: his battle/ceremonial armor and a simpler, more casual wardrobe. Loki spends more time in the casual wardrobe than the armor. That's who he is. He's not a character who engages in battle. Loki's strengths aren't on the battlefield. He's a trickster. His armor and ceremonial wardrobe speak more toward the person that he thinks he should be. But he doesn't quite fit in. He's an outsider, an outlier in Asgard. Thor had to communicate the exact opposite of that. He thrives in battle. Even what would be considered his ceremonial armor needed to look like it had been through the hell of war.



#11 SUBTRACTION

When dealing with a character that has as recognizable and distinctive of an icon as Thor, there's a process of experimentation with what you can take away from their design and still get a sense that they are who they are supposed to be. That's especially evident with the helmet of the character. Fans associate Thor with a helmet that has these sweeping wings and gives his head a very distinctive silhouette. But from the very beginning of the design process, we all knew that Thor had to be recognizable without his helmet. We weren't anticipating him wearing a helmet for the entirety of the film. I spent a lot of time doing designs without the helmet to make sure that the character read in its absence. In fact, on nearly all my designs, I kept the helmet on its own layer. That way, no matter what iteration of the design I was reviewing, I could see what happened when we took the helmet away by turning off that layer. It was an interesting exercise to see what happened when that part of his silhouette disappeared.



#12 HELMET

We decided the appearance of Thor's helmet in the original film would be more of an homage. When he walks into the throne room for a ceremony at the beginning of the film, he's wearing the helmet. Then he takes it off. We thought that the helmet was more ceremonial than functional in battle. The act of him not wearing it was a statement that said "I'm Thor. I don't need a helmet. This is all just for show." That's Thor's personality. He's a little reckless in that way. It fits. He doesn't need that helmet. And because we had spent so much time making sure that the character still read without it, he was recognizable as Thor even in the helmet's absence.



#13 CAPE

Thor's big, billowing cape for me was a key in his design. It's almost like there's a lift of air following him around everywhere, raising his cape from below at all times. Thor is connected with nature and the elements like thunder, lightning, and wind; that cape integrates into the natural forces. In a way, it makes a lot of sense for the character. His command of the elements is also commanding this cape to hold shape. Getting that concept to be clear was difficult, but that was one of the things I wanted to make sure I kept throughout all the character designs and through the initial concepts and fittings in the costume department. How could we make this cape so that it was always billowing the way it was in the comics? A built-in billow.

A big, billowing cape isn't necessarily all that useful in battle. It really isn't all that practical in a fight. But when we're world-building with a character like Thor and a setting like Asgard, we're setting a tone for an everyday aesthetic that an entire society accepts. If the cape is built into the daily wardrobe of everyone in Asgard, it makes sense that Thor would continue to wear it even in battle. That's part of the Asgardian culture. It ends up being a bit of a balance between the practical elements of Thor's armor and wardrobe and what we've established as the cultural norm of the society surrounding him.

#14 ARMOR

Metal and materials used in Thor's armor and Mjolnir had to be informed by the architecture in Asgard as a whole. This is especially evident in looking at Thor's chain mail. We used square metallic plates for Thor's chain mail not only because that design aesthetic came from the more current comics but because it made sense for how we looked at Asgardian design. In working with Wesley Sewell, the visual effects supervisor on the film, we were trying to figure out what Asgard as a whole would look like. We settled on this concept of many overlapping patterns. There needed to be layers and spirals in everything manufactured and designed in Asgard. And that all came from the character's Norse roots.



#15 PATTERNS

In Norse mythology, there are quite a bit of overlapping ribbons and patterns in their symbolism. Crests, pendants — so many of these artifacts have overlapping designs. One of the things we discussed as an influence for the design of Asgard and its culture were Fibonacci numbers and spirals. These are perfect mathematical spirals that are essentially scientific art. From there, we allowed fractals, or complex patterns, to influence us. Combining those two concepts became “Fibonacci fractals,” which resembled repeated patterns in nature but also felt purposefully manufactured. This combination of art and science helped visualize the concept from the film that magic is just science we don't understand. And I think that design element being associated with the magical realms of the Marvel Cinematic Universe became more apparent in *Doctor Strange*, where the designs were used more overtly.

#16 EVOLUTION

It was important in designing Thor that we future-proof him. He had to start somewhere, but we had to give him room to change and grow. Thor, Iron Man, Captain America — in every one of their films, the character design is updated and changed because they have fundamentally changed as people. There is character growth where we're seeing the physical manifestation of these characters changing. One of the things about introducing a character like Thor into the Marvel Cinematic Universe is that you're throwing in certain things for the character that you can strip away from them.

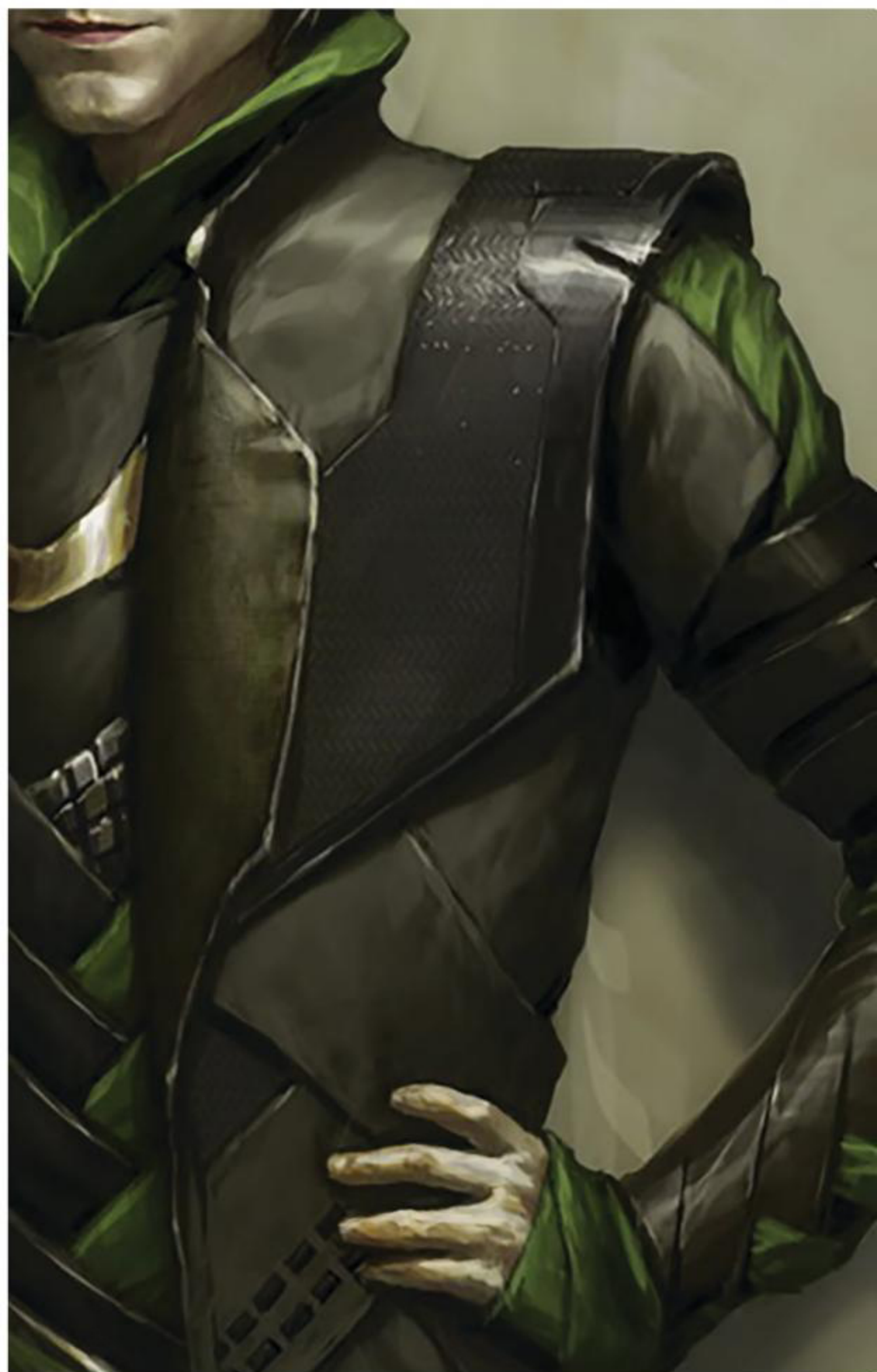
Once the character has been introduced and the audience is familiar with them, we can pull things away in the later movies, and the core design of the character can get smaller and smaller because we've spent time establishing that character. If you're designing the introduction, you have to keep in mind designing a look that is not only going to be able to hold up and be believable but also has room for change and growth. Now that we've defined what magic looks like in the MCU, where do we go that makes it feel fresh and new? Now that this aesthetic has been accepted by the audience, how can you play with it?





#3 INSPIRATION

The shape of Loki's collar was inspired by faux calla lilies. I came across these lilies in figuring out just who Loki is. Calla lilies are often used to symbolize resurrection. I felt that incorporating that blossoming shape was perfect. He wears this shape around his neck as a part of the soft base layer at the bottom of every costume he's seen in. It reflected how Loki was going to grow and change on-screen. It was reflective of the inner turmoil and sacrifice he experienced. He has to carry this with him at all times. It was a part of the design that the costume designer carried over to the fabrication of the physical wardrobe Loki wore, and it was very symbolic for me. It was a large part of who he was and who he could become. I never saw Loki as a typical villain. He's more the prodigal son's brother.



#4 MATERIALS

Side by side with Thor, the materials and fabrics we utilized in the designs for Loki are a lot softer. His armor doesn't feel as rigid or hard as his brother's. Thor is a warrior. Loki is not that person charging as part of the vanguard in a fight. I wanted to convey that this character was very different from his brother. The casual wear, which he's seen wearing in the original *Thor* and throughout the films, I designed as a pleated green cloth that was a visible inner layer. I kept the hard metals to a minimum, and the soft materials are interwoven into Loki's armor. That interlocking pattern also conveys similar Norse patterns to what we utilized in Thor's design. Those weaves are also evocative of Yggdrasill, the tree that interconnects the Nine Realms. The roots of the tree are symbolic of Odin and his family. He and his sons carry that same visual language of Yggdrasill in those connected patterns. Their familial story and their relationships interweave. That layering also covers him up. It protects him. It hides the emotions and the vulnerability of the character. The layers are his armor. Notice how he's always wearing layers except when he's at his most vulnerable. For me, that was very important.



#7 STAFF AND WEAPONRY

The props department was instrumental in the creation and design of Loki’s daggers and all iterations of his staff, particularly his scepter, which became such an integral part of the MCU. The reason I initially gave Loki a staff in his casual wear design, prior to him taking Odin’s scepter as his own, was because it was representative of him being a shepherd. Being a leader. Holding a staff puts a character in a certain position. I loved that he was this person who carried a long staff that made him feel like a guard at the gates. Or a king. It represents power. He fancies himself the heir to Odin’s throne. And the staff was the perfect antithesis to his daggers. The prominence of the staff offset the sleight of hand to his daggers. The daggers were the perfect weapon for a trickster hiding something. Wielding a large weapon would show too much of his hand. Those two weapons told the two different sides of who the character was.

And what character, with his commanding staff in hand and larger-than-life helmet adorning his head, is more operatic than Loki?

— CHARLIE WEN

#8 EVOLUTION

With his first appearance in the Marvel Cinematic Universe, Loki had a striking stage presence. He had large shapes with big lines. He was more opulent and fit into the world of Asgard as it was presented initially. In subsequent films, he was a little more trimmed down. But what's interesting is the basic shapes, the icon, the silhouette that was introduced hasn't changed that much. It's great to see the first design continue to grow and evolve over the course of successive films.



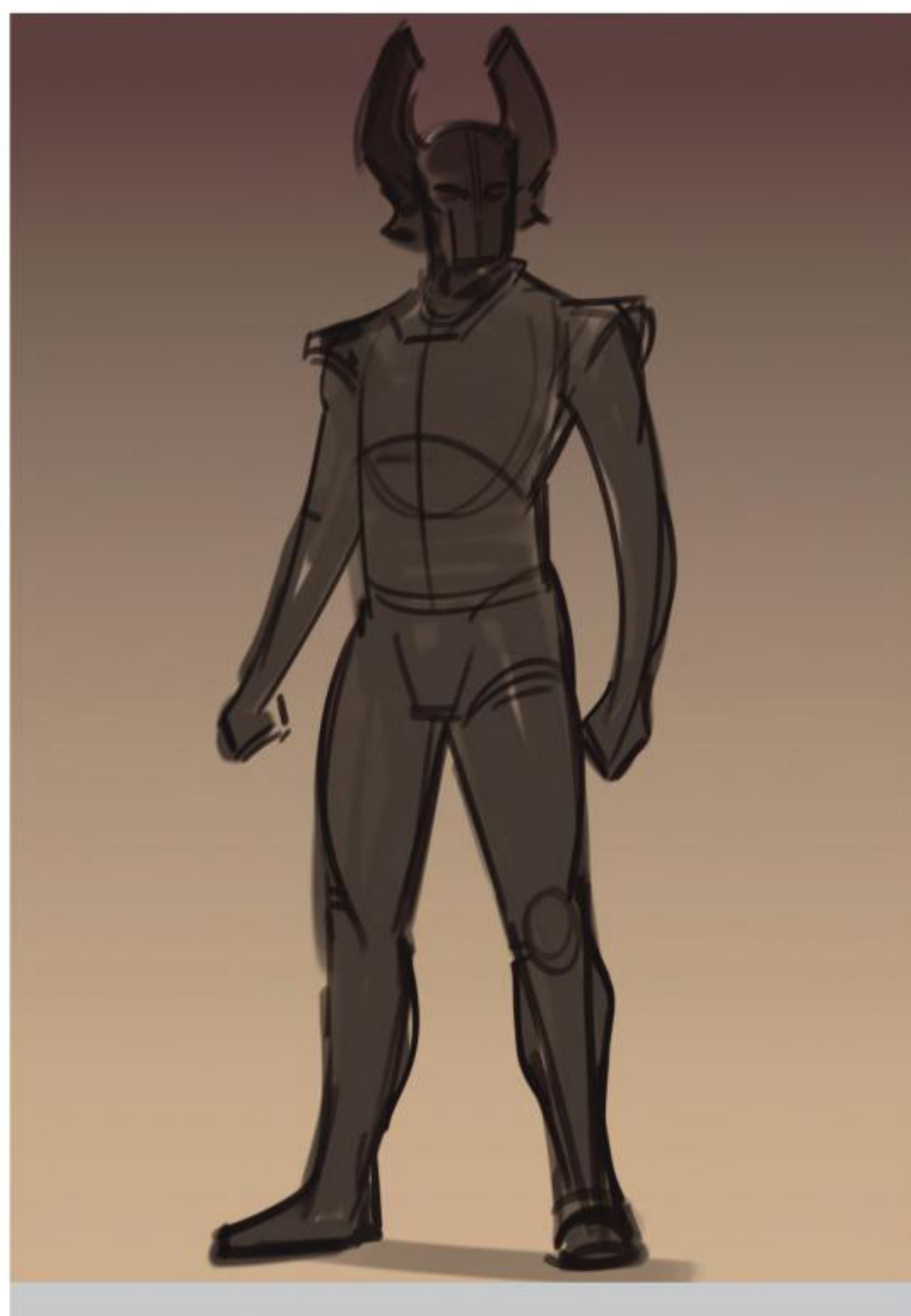


HEIMDALL BY JACKSON SZE

Heimdall is a character who changed dramatically from his first appearance in the original *Thor* to *Thor: The Dark World* and later *Thor: Ragnarok*. In the first film, he's very traditional and ornamental. He sees all and stands in a place of power. For the second film, *Thor: The Dark World*, artist Jackson Sze altered the character slightly for the film's darker tone while staying true to the costume designed for the original film.

#1 REIMAGINING

Heimdall was a unique challenge in that we already had a previous design for the character. In the first film, he had Asgardian armor that's very formal. In approaching *Thor: The Dark World*, the overall directive that we were given in the Visual Development department was to make the characters more functional.



#2 DESIGNING A NEW LOOK

To redesign Heimdall, we started off with his look from the first film. What can we keep from the original costume? What can we change? Instead of manufacturing new armor pieces, we explored design options that involve cutting away existing parts and reshaping certain pieces. Also, I thought about introducing different materials and textures to add more layers to the costume.



#3 SILHOUETTE

The first film really executed Heimdall's silhouette perfectly, really selling the Jack Kirby icon from the comics. He has a bold shape that in no way could ever be misconstrued as being delicate. Our goal was to adapt the new Heimdall for combat. While his armor was clean and glossy in the original film, here we wanted the armor to look more worn. I started with a blocked-out silhouette to get the general shape, proportions, and stance of the character. When deciding on a pose, clarity of design is important because character pieces such as these are more about showing the design. Overlapping too many elements can obscure the look of the character.

#4 BELIEVABILITY

The main goals with this redesign was to add functionality and believability to Heimdall's costume. In order for Heimdall to be more active we shrunk his helmet while maintaining its distinctive shape. Also, by breaking apart the larger piece of armor below his waist, we can allow Heimdall to run and jump unhindered. We wanted to use materials and manufacturing techniques that the audience can relate to as well. Rather than feeling like some unidentifiable space armor, we grounded the design with real-world materials such as metal and leather.



#5 STAGING, LIGHTING, AND COLOR

Once the overall drawing and proportions are established, I started thinking about how I would want to present this character. By putting him in the Bifrost Observatory, I can check to see how his new armor would look in the place where Heimdall would be seen most frequently. I continue the painting by putting down basic color and lighting information. At this point I'm deciding where the main light source is coming from, and where rim lights can be used to highlight Heimdall's design. The Bifrost Observatory is pretty dark, so I have to be mindful of where I place light sources to have his forms read, and where I place specular highlights for material indications. He is essentially a gold character standing in a gold environment, so special considerations must be made to make sure he is distinguishable from his background.



#6 DESIGN

During the design phase, I thought, "There's a good opportunity to tell a story with his armor." Since Heimdall is the Sentry of Asgard, looking at all the Nine Realms, I wanted to incorporate the Yggdrasil world tree onto his chest plate. An amulet that is the same color as Heimdall's eyes sits atop the tree to symbolize his ever-watchful gaze over the realms. Even though the filmmakers had not asked for his armor to be designed with a story specifically, I was able to use his role in the story to create a design that has some meaning.

#7 DESIGN FLOW

Another element that I added were lines that flowed through his body. Consideration is made to the internal composition of his costume. One area of his body would transition into another area through these lines. Asgard is a highly refined society and their design aesthetics would communicate as much. There should be an elegance to their crafts, and I tried to achieve this with long lines that start from the chest, go down his torso, and eventually lead our eye down to his legs.



#9 CONSISTENCY

Finishing up the painting I am mindful of his overall composition. Is it too busy? Does it look functional and believable? Will someone actually wear this? To complete the design, his back view was developed simultaneously and matches up to his front. Unless there is a story-specific reason, a character's form language should stay consistent. Painting-wise I would say step number five is the most important stage, as it is where most of your big decisions are made. After that, the detailing just takes time as long as you adhere to the overall lighting plan you laid down.



#8 ACCESSORIES

Accessories for Heimdall included addressing his belt, how it goes around his torso while also attaching to the tabards that hang from his sides. His gauntlets were redesigned to match some of the decorative themes of his chest armor. Chain mail was included to add a sense of function in battle. Another element we added to Heimdall was dual swords that he can use nimbly in his battle against the Dark Elves. Besides opening the Bifrost, Heimdall's big sword worked well against the Frost Giants. Knowing that there was an action sequence involving him jumping onto a Dark Elf ship and taking it down, we needed something smaller and easier for him to wield. Aesthetically I kept these new swords in line with his big two-handed one.





JACKSON SZC'12

BLACK PANTHER

BY RYAN MEINERDING

Black Panther presented a difficult conceptual challenge: The storied character with a rich heritage also had to convey Wakanda's highly advanced technological development. Science fiction had to meet historical fact while simultaneously functioning on a practical level. How would a skintight suit interwoven with the fictional metal vibranium move and appear? Would it feel like fabric? Would it feel like metal? Would it feel like a combination of both? How could those elements be incorporated into the design to make the costume feel like more than just a silhouetted form?

#1 PRELIMINARY WORK

Jackson Sze had done quite a bit of preliminary work on Wakanda, and at that time he had done some early explorations of how Black Panther would look. But we hadn't done a comprehensive design pass of the character until he was to appear in *Captain America: Civil War*. We wanted to bring design elements that felt African and mix those with Jack Kirby's design from the comics. Kirby's icon from the comics is incredibly simple. The Black Panther is a big, powerful silhouette. We wanted to maintain that silhouette and bring in ideas for design motifs.

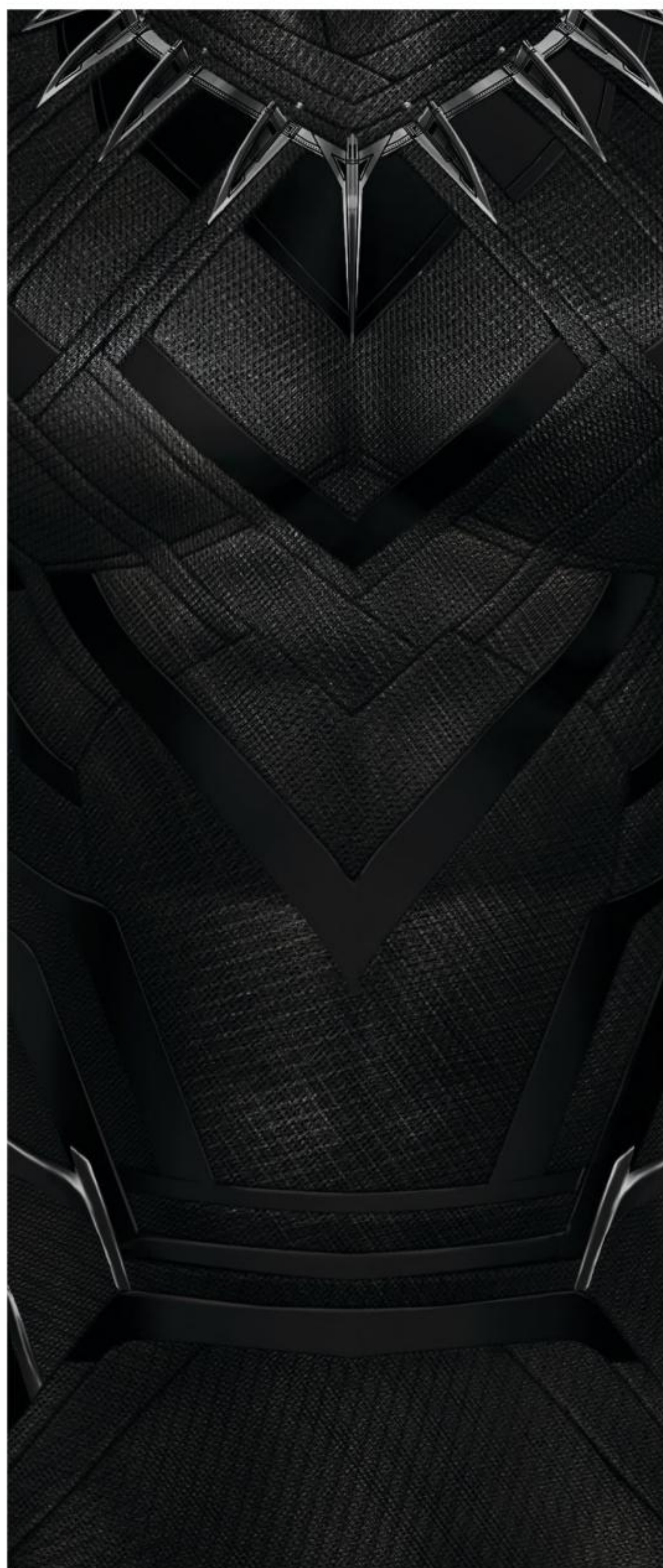


#2 UNIQUENESS

I strive to find ways to make every character I design unlike anything that I would create or conceptualize for any other. Whether it's a unique material or a mode of construction or any other detailing, like a filigree that I wouldn't ordinarily use, I want at least one element to the design that I would never use for other characters. What's a construction method that would never be used on a Captain America costume? Or what material would we never use for an Iron Man suit? The science-fiction nature combined with the African tradition of this suit was always going to be what made it interesting. With the *Captain America: Civil War* costume, I leaned in to that notion. I knew that it was going to be a skintight body suit, and I had to add something to it that pushed it into feeling more African.

#3 MATERIALS

In making that decision, it was natural to study woven materials for his suit construction. Woven fabric felt like it could be part of a tradition passed down from ancient times. With the introduction of vibranium into the mix of their culture, all of a sudden they were weaving it into their cloth. They had discovered that weaving vibranium into the suit made it indestructible. Following that conceptual conceit led me to design first passes on the character that were focused on different layers of the suit interacting in unique ways. My first design was incredibly complicated, which would have made it even more complicated to build practically.



#4 TEXTURES AND LINES

When Ryan Coogler started on the *Black Panther* film, he wanted to make the suit feel more like a singular skin. He wanted to deviate a bit from the layered, woven look that we had started developing. In *Civil War*, we had aimed more for a Jack Kirby look to the character, but Coogler was interested in pushing the suit design more toward Brian Stelfreeze's more recent illustrations. It was an interesting direction to take. I was happy with the layered look that we had developed prior, and I was also a little worried that creating a skintight suit might present a design challenge that could inherently take away from the African components.

We were able to reincorporate those elements back in a few different ways: We added a very specific amount of texture onto the suit and coupled that with some glowing elements. The kinetic-energy-absorbing aspect of the suit naturally added back in lines that we had lost from the previous suit. Interestingly enough, when we put the two suits side-by-side, I would contest that the *Black Panther* suit feels more high tech and science fiction than the *Captain America: Civil War* suit. There are so many sci-fi elements in the second appearance of the suit that mix so well with the traditional African elements.

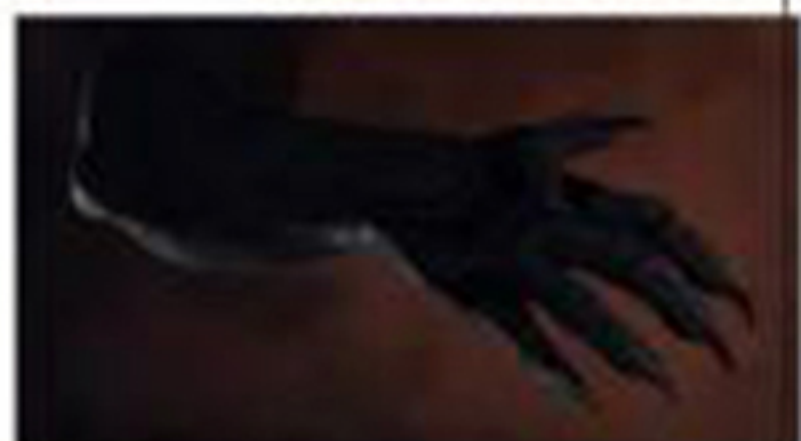
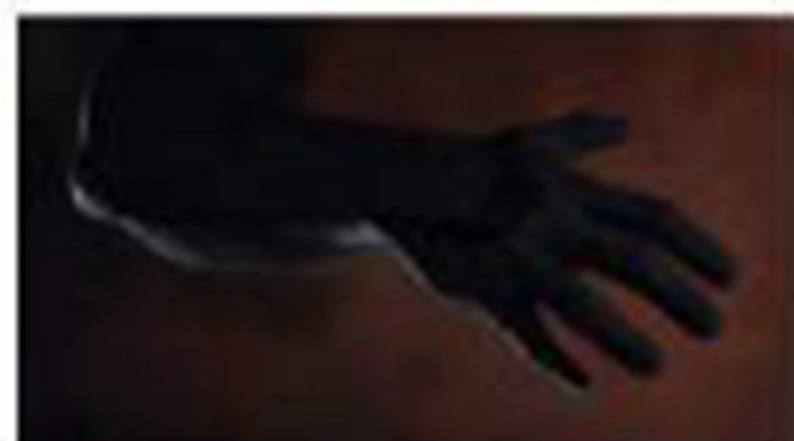
#5 TRUNKS

On the cover of *Fantastic Four* #52, the first appearance of Black Panther, there's a very memorable unused cover where Panther appears to be wearing trunks. In fact, a lot of classic Super Hero icons wore trunks. In developing Super Hero characters, a discussion about trunks is very important — if not a little awkward, because it's difficult to do without saying "crotch" every other word.

Everything we do is about composition and creating focal points. At the very base level in fashion or costume design, we are creating focal points in the eyes and the face, and lines down the body of the character that make them feel powerful. A slight "V" in the abs that carries up to the chest gives the same impression of strength. I say slight, because it's easier to change the physical proportions of a human in comic book art by giving them a severe "V" shape — but we're dealing with real actors, real people. The comics artists are solving design issues by physically altering the proportions of the characters. That's why the characters have such bulky musculature.

The costumes we design have to embellish that shape to a certain degree, because we can't alter the physical bulk of our actors. As much as Chris Evans bulks up for a film, he's still human. In almost all of our character designs, there's a focal point at the top of their form that then has lines that go straight down the body. Those lines break outward from the hips, drawing the eyes away from the crotch, and then descend toward the legs. Giving them lines down their body that kick out just before the legs makes them feel strong. The natural lines on a human body draw attention to the crotch area. It's always a problematic area to design for, even in fashion. Adding a fly to a pair of jeans. Putting a tabard over a tunic. In the classic days of design for Super Heroes in the comics, trunks were a hallmark of a Super Hero. So many Super Heroes were essentially an athletic, muscular form. These heroes had to be athletic, and the least restrictive clothing they could wear — which would show off anatomy and wouldn't wrinkle — was putting them into trunks. Adding those trunks as the design break from torso to leg created iconic characters and was their design solution for how to handle that area.

As we've moved forward in time, putting people in trunks just doesn't feel real anymore. The realities that we're trying to create are more sophisticated. If I look at what comics do, they're able to change body proportions to whatever they want, in order to make the design work. If I look at what we're able to do, we have a slightly more nuanced set of rules. We're trying to do the same things, but we're using different tools.



#6 MASK VS. HELMET

Black Panther is a challenging character because there need to be hard lines and hard edges to the mask, but it still needs to feel like a second skin over the actor's face. There's a difference between a mask and a helmet. That's an important distinction, especially for this character: Is what covers the entirety of his face part of the suit? Or is it a hardened helmet that can be carried and has structure to it? The minute we add protruding ears to his head, there needs to be something with density keeping that form. Those hard edges that extend the mass of a head start to veer the design toward a helmet. The minute we move the bone structure around eyes or the nose, it feels like there's hardened pieces extending the skull there as well. Even if it's nanotechnology — where there's some forgiveness as to how it's constructed — the minute hard lines are added, the design feels more like a helmet than a mask. How do we approach Black Panther's face? Is it a practical suit with a helmet like Iron Man? Or is it a practical suit that continues into a skintight mask like Spider-Man?



#7 HEAD SCALING AND PROPORTION

Think of an ordinary person wearing a motorcycle helmet. We don't instinctually look at that person and think that their head feels enormous. We know they are wearing a protective helmet that is extending their skull. In the context of a Super Hero universe, I would say the only design we have that should evoke that feeling is Ant-Man or the Wasp. Those feel like helmets. They are the characters' heads, but they're on the verge of being big enough that they feel like a large, bulky helmet. Captain America's helmet is his head. Iron Man's helmet is his head. The silhouettes of both those characters are just their heads. If we look at how Captain America's head was treated in the first *Avengers* film, it was treated like a helmet. The Mark I design of the Iron Man suit has a helmet that is very clearly supposed to be a helmet. With every other version of the character past that, however, what goes over Tony's face is intended to be Iron Man's head.

With characters like Cap and Iron Man, their helmets aren't intended to feel like they add bulk. It's a very peculiar conceptual distinction, but it's one that is very important. With Black Panther, the intention is that it's his head. It's not Chadwick Boseman's head. It's not a helmet over top of Chadwick's head. When he puts that on, it is the Black Panther's head. I think the term "helmet" allows people to think that the intention is for the addition to be protective, therefore it can be a little bigger and add bulk to the overall mass of a head. The gut reaction of a designer is to take the bulk of a motorcycle helmet and smooth it to feel like the design of the character. That's usually the thinking that gets artists into trouble. We have to think of these designs as their heads first. Even though the facial construction of Peter Parker or T'Challa is altered and extended when they become Spider-Man and Black Panther, it is still their head. We're not supposed to have even the slightest visual indication that there is a substructure or bulk being added to either of those heads. That's key to keep in mind during the design process.



#8 SCULPTING

For that reason, a process I developed in designing Captain America's helmet has become the standard for how we design helmets and masks for characters. Starting with a 3D scan of Chadwick Boseman's head, I did a rough sculpt of the mask's facial construction over top of that in ZBrush. I wasn't so much concerned about the detail or the lines quite yet. I wanted to get a basic form that I knew fit over Chadwick's head correctly and still evoked the correct icon for the character's face. Once I was happy with how the 3D sculpt of the head felt, I posed a front view, side view and three-quarter-profile view that I could then transpose into 2D illustration for my painting work. That "skull" became the basis or the foundation for then painting a lot of the finer-grain detail work in the design on top of that. The 3D base allows me to visualize how the design will work across the entirety of the character's head. It also assures that anything I'm designing is going to fit onto a practical mask we construct to be worn by the actor. It virtually eliminates all of the guesswork.



#9 INCORPORATION OF ENVIRONMENT

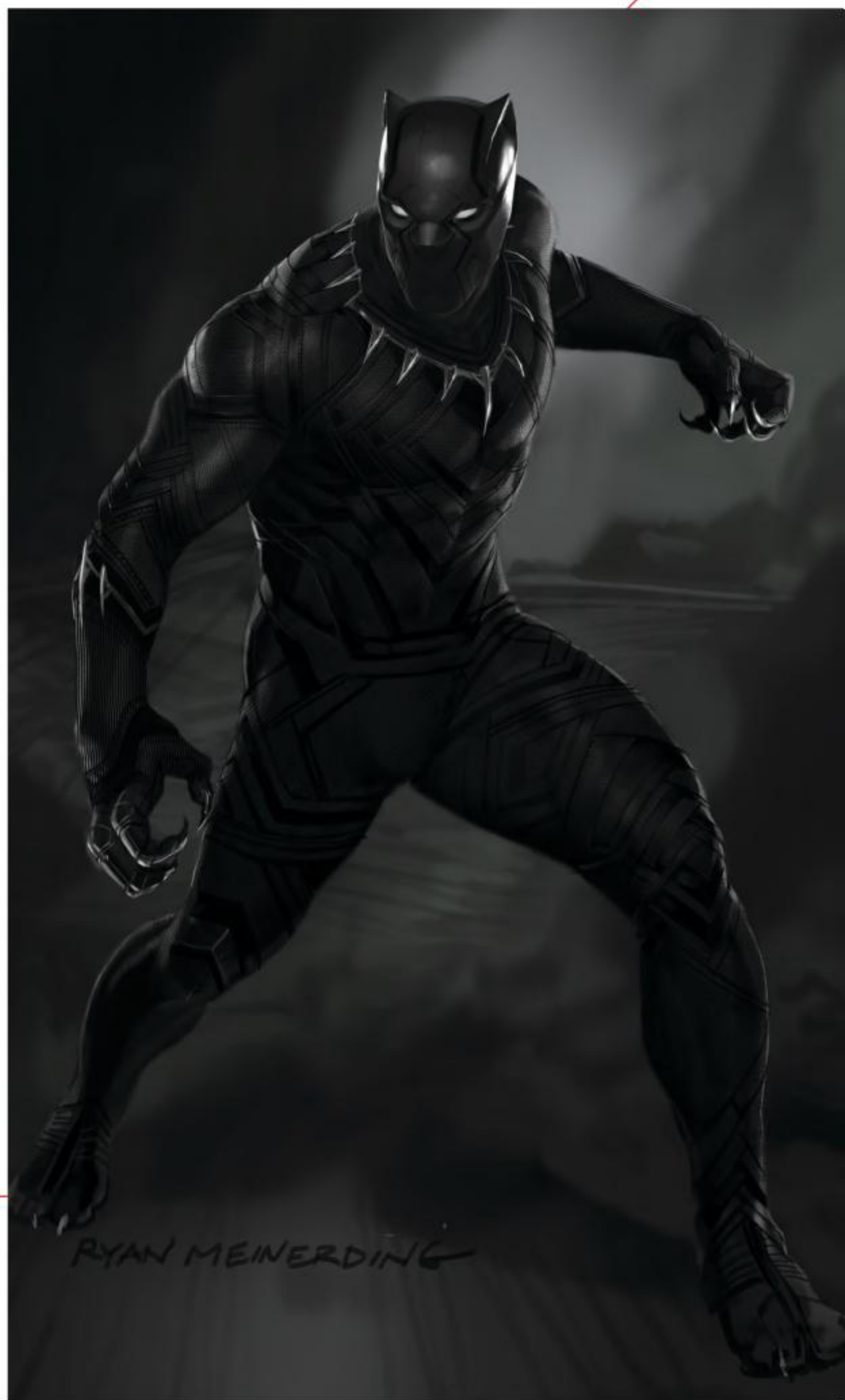
I had the idea of silver vibranium elements being interlaced into the helmet design. Adding those lines visually gave us the landmarks we need to understand a character's face and point of focus. That's especially important when the actor's own expressions are completely covered by a mask but they still need to emote. It's definitely one of the most detailed designs that I've attempted during my time at Marvel. Ironhead Studio was the company responsible for fabrication of the helmet. They were really faithful to what I was trying to do.

#10 REFINEMENT

In redesigning the helmet from *Civil War* to *Black Panther*, the Brian Stelfreeze design of the head changed the shape of the nose and ears. The ears were more pointed downward and back like a snarling, angry panther. The face ended up feeling like a mixture of a big predatory cat with a humanoid. Jack Kirby's face felt very iconic, but didn't necessarily evoke the same feelings of a big cat. Stelfreeze combined very specific panther design elements with a human face and ended up in a cool place.

#13 HIGHLIGHTS AND SHADOWS

Black Panther's suit has a bit of a sheen to it to also reflect light and highlights. I feel like we're always in a weird place when it comes to sheens and finishes on the materials of our suits. There really isn't an efficient way for us to camera- and light-test how the physical costumes we create will react in every single possible lighting scenario. We do camera tests, and the production does absolutely as much as they can. And of course the lighting is controlled to a microscopic level of detail by the cinematographers and gaffers on the films, where they can modulate the lighting in the shot if the suit isn't reading how the director wants it. And in the case of *Black Panther*, there are a lot of shots where the character is completely replaced in post-production by a digital double — in which case the directors have complete control over the lighting and the sheen of the character's suit. I think Black Panther's sheen ended up being a little bit more matte than I was expecting it to become. I had pitched a fairly large level of shine and gloss to the character's surface, but in the final film he felt a bit more matte. It really comes down to the tastes of the director on the film. Most of the time, the note we get from them is to dull things down and make them a bit more matte.



#14 ACCESSORIES

Black Panther's necklace is one of the clearest and easiest places to add African design to the suit. In designing the necklace for *Captain America: Civil War*, the Russo brothers usually have a strong preference to make their costume designs very tactical and practical. The necklace was going to be made of a metallic material because the suit is meant to show the importance of vibranium to their design aesthetic. Taking the classic visual of Panther's necklace and incorporating the vibranium metal was a clear and concise way to pull the icon of the character into something that really worked for the realism of the suit. It has to be invulnerable to harm. How do we make it clear that this suit is impenetrable and has vibranium incorporated into it even though it feels like a second skin? The metallic-silver accents, especially the addition of the necklace, were an easy way to do that.



KILLMONGER BY RODNEY FUENTEBELLA

Killmonger was a character who changed slightly from the icon developed in the comics out of sheer necessity. Artist Rodney Fuentebella set out to find a way to make the character torn between his Wakandan identity and military upbringing. This dichotomy became a crucial part of the character.



#1 REIMAGINING

Ryan Coogler had a lot of great ideas for how Killmonger should look and feel. He gave us the direction that Killmonger had a military background, and he had applied that background and experience to fulfill his own means. I started by sketching out a few ideas of what this militia-inspired character could look like, thinking perhaps he took inspiration from some of the revolutionaries throughout history. Taking inspiration from figures like Che Guevara, I gave him a vintage military jacket that was ripped and worn. Then I explored maybe giving him more futuristic-looking gear, thinking that he'd have more advanced Wakandan technology he'd utilize.

As a concept artist, our job is to explore the visual possibilities of the characters to aid with the vision of the film.



#2 ENVIRONMENT

At this point, the script was still in process and we weren't sure where we'd first meet Killmonger. Would he be in the city? Would he be in Wakanda? We weren't sure. We knew that he was going to infiltrate Wakanda at some point, but where would the character come from? Once we learned that he'd first be seen in the city, keeping the character more practical than high tech made more sense. But we had to do those explorations to come to that decision. Through those sketches and in deciding to keep his equipment more practical, we settled upon giving him more of a bulletproof-vest look. I started pulling reference of Kevlar vests, other military gear, police and SWAT vests, even paintball vests and motocross chest protectors for inspiration — anything that evoked that idea of a protective vest with distinctive straps.



rodney.f



#3 HISTORY

As I was wrapping my head about what his vest could be, I also wanted to find a way to inject Wakandan textiles or something that evoked his heritage. These two aspects of the character had to be designed in concert with one another because both were so important. This way, even if he wasn't wearing the mask, there would be these hints and gestures toward his roots. Eventually I came up with the concept that the Wakandan elements would be close to his body. I researched African bead patterns and materials and tried to find decorative mementos of a past he wished he had that he would incorporate into his clothing. But over the top of those traditional elements would be the tactical gear. It's a visual storytelling element that suggests maybe the militaristic militia side of him is taking over. His Wakandan roots had been aggressively attacked and buried by this aspect of his life. It was a huge part of the character's struggle in the film, so visually it made a whole lot of sense to make that the crux of his design.



#4 SYMBOLISM

Killmonger has the pattern on his chest that is a way to connect him to his Wakandan past. And it's underneath all his armor. That symbolizes what he really is. We went through a lot of iterations of how those kills would be represented on his skin. Karla Ortiz also explored a variety of different concepts to see how the patterning would look. At first I thought maybe these would be design aspects that would always be visible and present on his person. Then we started exploring the concept that maybe these marks were intricate scarifications on his body that were decorative.

#5 RESEARCH

We did a lot of research to see what scarification looked like in reality. African culture has a history of scarification and modification of the skin. Certain patterns had meaning. Certain tribes used scarification as ways to enhance their beauty. We landed on giving Erik pill-shaped scar tissue to make the patterning look purposeful and less like the scarification had happened in battle. These were badges he had been instilling upon himself, not cut marks. There's a ferocity to it, especially when you learn that each one of those pockmarks is a kill. It's deliberate, and there's a sinister reasoning behind it. It made the character feel dangerous.

#6 MASK

A crucial part of Killmonger’s design was his mask. Ryan Coogler had accumulated a lot of great reference of the masks that he liked. At the very beginning of the design process, during an exploratory phase, I took inspiration from his mask in the comics, painted authentic African masks, and started seeing how these masks would work in conjunction with the overall approach to the character. We had multiple artists working on the masks. Some were terrifying; some felt more ceremonial.

One of the best aspects of being a concept artist is the exploring of ideas and seeing visually what works for the project and what could be.



#7 ACCESSORIES

In designing his blades, I first thought that Killmonger would have something sharp, effective, but not necessarily decorative. He’s a killer without much ceremony to what he does. I thought maybe he had even created these blades himself, so they’d be fairly simple in design. In talking with Ryan Coogler, we decided that he had been given his blades in a ceremony. They had to feel authentic, unique, and passed down from generation to generation. Killmonger’s blades ended up being a great device to bridge the high tech and the traditional African roots of his heritage together. I researched Damascus steel and how those blades are created. The patterning of those swords, the curvature that they have, all those elements gave Killmonger’s blades a very interesting visual look that combined ancient tradition with something that looked ahead of its time. That’s Wakanda. In our designs, we’re trying to make each and every detail iconic. The decision to give him these designed blades are unique and set his weaponry apart from other MCU characters.

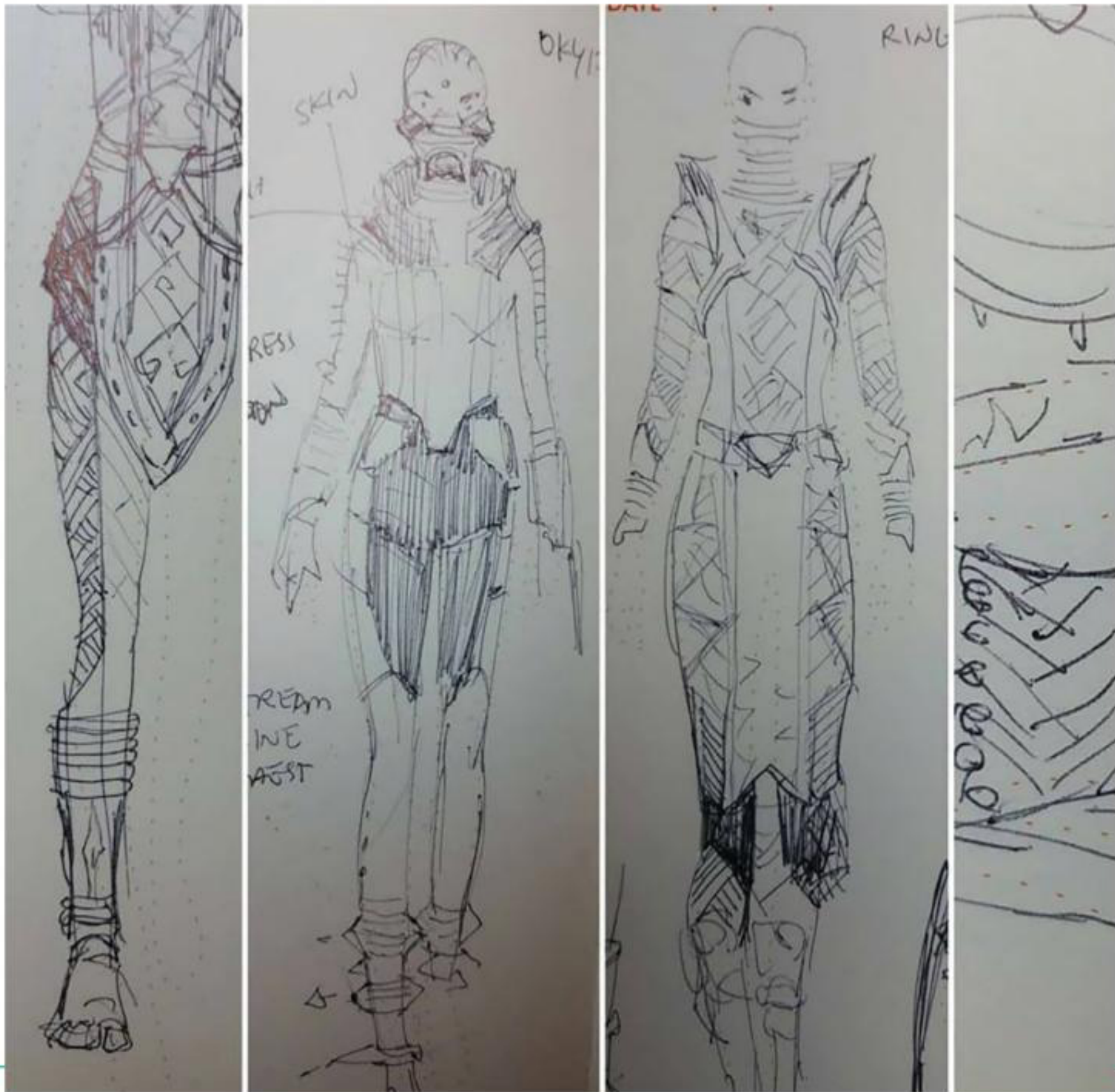
THE *DORA MILAJE* BY ANTHONY FRANCISCO

Similar to Killmonger, the *Dora Milaje* present a unique storytelling challenge. These proud and noble warriors have been tasked with keeping the king safe for generations, so they required a traditional look while also having hints of modern Wakandan civilization. At the same time, they needed to have a regal air to them because they are the king's honor guard.

#1 RESEARCH AND INSPIRATION

The research process was one of the most important parts of designing the *Dora Milaje*. If we were to copy traditional African warriors too closely, the design wouldn't reflect the technologically advanced society of Wakanda. But then, if we make them look too modern or futuristic, they wouldn't look authentic to a society that has emphasized tradition and their heritage. So how do we do that? What elements of the *Dora Milaje* design would make them feel traditional, and what elements would make them feel high tech?

I started pulling reference from everywhere: the comics; African tribes like the Ndebele, Dinka, and Maasai; Southeast Asian tribes, like the Ifugao from the Philippines; and even Scandinavian and Native American tribes. Each of them have very iconic looks, and I was trying to study each and every one of them. They all have ritual costumes and traditional warrior garb. I looked at each of them asking myself questions. What elements were unique to each tribe? What sets the Apache apart from the Navajo? What rituals did they have that necessitated certain elements to their dress? I'm not a scientist, but it felt a bit like I was. With all that information compiled, I borrowed elements from here and there to incorporate into the *Dora Milaje*. I was trying to piece together a costume that felt like it may have inspired elements throughout the world to give it a sense of familiarity.



#2 REFERENCE

The comics were also a great starting point, especially helping inspire the red armor of the *Dora Milaje*. But in most of the looks that I liked, they had these extremely large shoulder pads that were the centerpiece of very machine-looking armor. Making the hard pieces of armor look more handmade and less machine-made helped make things look more traditional. And then I thought that if I layered that on top of something that looked sleek — giving the armor a texture that felt like Kevlar or a fiber mesh, like Black Panther's suit — it would give it that bit of modernism.

#3 COMBINING CULTURES

I was inspired by the samurai armor for the sleeves on their arms that run from shoulder to wrist, but instead of using armor plating I designed beading patterns that would represent traditional scarification seen from some African tribes. Incorporating these elements with the metal rings on the forearms made some beautiful textural combinations.



#4 TIME PERIOD

Beading and weaving incorporated into the armor added a sophistication to the design. Beadwork and weaving inherently evoke the feeling of something that has been handcrafted using techniques and materials that have been used for generations. Adding those elements helped give the overall design more of an African feel. The tricky part with this was making the weaving and the beading look like they were integrated into the armor. Incorporating that handcrafted work into the armor, rather than simply laying it on top, gave it modernity.

#5 POSTURE AND PRESENTATION

Because the characters were to be regal, I had explored using a corset to force a very straight posture into the characters. But corsets aren't practical. These are warriors who need to be agile. So I tried adding armor plating around the midsection but found that it interrupted the neckline that I was liking, which the corset continued. Though they are armored warriors, there's a femininity to the flow in their lines that I needed to maintain. Finally, I designed a vest that was inspired by the back braces that you use for support when you're moving or lifting heavy objects. The thought was that by adding this piece to the construction of the armor, it would assist them in fighting while also forcing their shoulders back and giving them that regal posture.

#6 ACCESSORIES

At one point, I explored adding neck-elongating rings similar to some tribes in Africa and Asia. From a story perspective, there was talk that they needed to have a battle mask that would extend out of part of their armor, which ultimately didn't happen. But I liked the look of that neckpiece. I thought that it made it look more authentic while also really adding to their regality. Again, it was another design choice that made sense until I thought about it practically. They can't really fight while wearing those neck-stretching rings — it would limit the mobility of their head on their neck. Plus, an actor needs to be able to wear it. I kept the feeling of those neck rings in the design but incorporated them into a necklace piece that could actually work.

#7 EVERYDAY INSPIRATION

Over the top of the vest, I designed a tabard that would act as a center to the design. This was something that I imagined could be unique to each individual in the *Dora Milaje*. Inspiration from that came from one of the strangest places, but often that's where you find the best design to help get your imagination running. I was at my aunt's dinner table and noticed the runner down the center of the table. The design and the feeling of it was so fantastic. I kind of picked it up and played with it, placing my belt over it to see what it would look like. It's actually pretty funny, but it also goes to show that you are just constantly thinking about your designs.

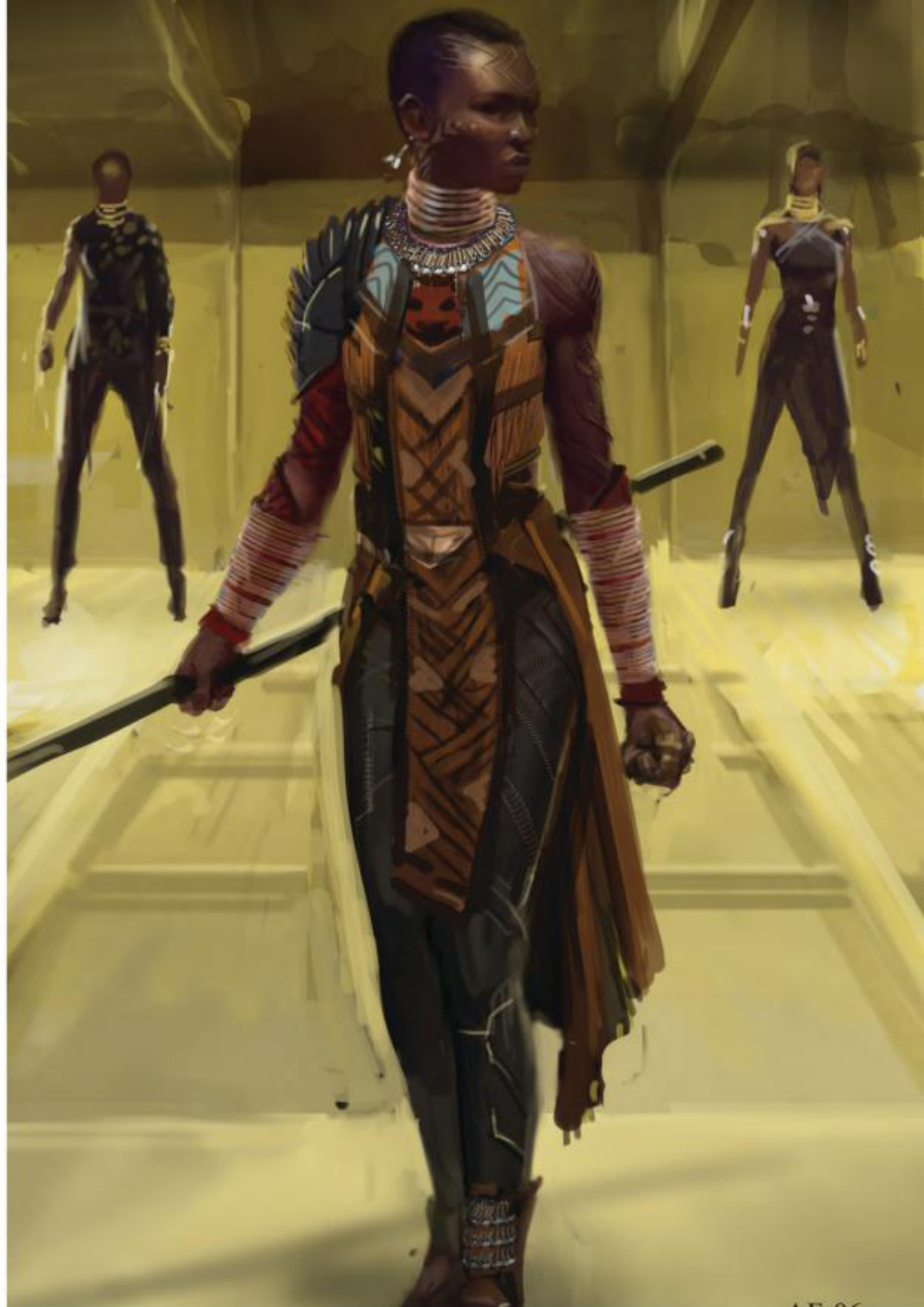


#8 CLOTHING

Next, I had to figure out their legs and their pants. In the comics, the *Dora Milaje* have a lot of exposed skin. But that doesn't make much sense from a tactical perspective. I explored iterations of the *Dora Milaje* with bare and exposed legs that were scarred from battle, but something about it felt off. However, I did like the sense of detail distribution that keeping their legs bare presented. Instead of showing skin, I designed an under-suit based on the Black Panther suit that gave them a nice color separation from the red top piece to a black undersuit. And it made sense they would need protection while in battle, so their legs should be armored. Sometimes designing these elements of costumes so that they serve multiple purposes can be the best solution — it just takes time to hone that process.

#10 OVERALL AESTHETIC

The final part of the process was taking a step back and looking at the design as a whole. I wanted to make sure that there were landmarks in the overall design, and that the balance between tradition and technology felt weighted correctly. Much like I mentioned earlier, when you're designing creatures and you need to imagine a slider where you have 100 percent creature and 100 percent human and find the right balance in between, I had to do the same with the *Dora Milaje* with the ancient and the modern aspects. Eighty percent modern felt too modern; twenty percent modern felt too ancient. Stepping back and looking at the piece as a whole allows you to make those criticisms and find that correct balance. What I found in that process, interestingly enough, was that some of the more modern designs felt traditional from a distance. The paneling that I added to the formfitting pants continued lines and angles that the African beads started. In some instances, I had to take a more traditional element and add something modern to it.



#9 WEAPONRY

The Wakandan spears took quite a bit of exploration. The filmmakers definitely wanted the *Dora Milaje* to all have spears. Obviously, a spear is something that is stereotypically associated with these ancient tribes as a weapon. But Wakanda is so advanced, why would this be the weapon of choice for them? Why wouldn't they have something far more high tech? In thinking about that question, the answer was quickly clear: Why couldn't the spear be high tech? It's not just to be thrown or used as a melee weapon. It has energy in it. Coming to that conclusion was extremely helpful because then I was able to explore designs for the spears where there were all these hidden abilities, and that was a lot of fun.



ANTHONY FRANCO
2016

DOCTOR STRANGE

BY KARLA ORTIZ

The introduction of Doctor Strange heralded the arrival of the mystic arts into the Marvel Cinematic Universe. Integrating the fantastical side of Marvel lore into a live-action universe that had grounded itself securely on terra firma required thoughtful problem-solving on the part of the VisDev team. Strange needed to be a real person, from the real world established in the previous films, while still evoking the supernatural elements and design aesthetics that made the character so popular in the comics.



#1 CHANGE IN DIRECTION

As a freelancer, I hadn't been part of the conversations and brainstorming that the rest of the VisDev department had in the offices, which allowed me to explore different paths that perhaps they hadn't traveled. I conceptualized a few ideas, but for some reason nothing I was painting was really sticking with me. Frustrated the night before I had to turn in concepts to the studio, I told myself to just have fun with one painting before I went to sleep. The painting that resulted that night was what the studio ended up approving.



#2 TIME PERIOD

I focused Doctor Strange's design on textures that felt elegant but also ancient. He had to feel otherworldly. His clothing choices had to feel steeped in eons of history. Even though he was a mystical wizard, the cuts and the fabric choices that we made for his design had to be rooted in reality. There had to be sophistication to his design. He's a topflight surgeon. He'd probably complain quite a bit if he were forced to wear garish clothing. His costume had to have a lot of Victorian-type shoulders that were very defined, very rigid. The collar on his jacket, not his cape, needed to have a very Victorian cut to it. That's why I chose to show him in a tailcoat. It felt like this costume needed to have Eastern culture and style influencing it. The fabrics and the lines had to enhance the story of this character. The result, I feel, was a great fusion of Eastern and Victorian influences with a little bit of edge.



#5 ACCESSORIES

The Cloak of Levitation was one of the elements of the Doctor Strange costume that was done collaboratively. The design I originally created was asymmetrical with very simple detailing. I felt that there was already so much going on with the entirety of Strange's costume that I wanted to keep the cape simple. I focused mainly on the coloration of the cloak. It had more of a traditional pattern to it that felt older, weathered, and worn. The shape of what I designed was taken from those original designs, and the rest of the team ran with them. Jack Dudman added a lot to the cloak. He created the checkered pattern and the detailing on the side of the cape, which was then only enhanced even more by the final fabricated cloak by the costume department. That's one of the great things about working with Marvel Studios: It's such a collaborative effort. All these talented people we work with improve the design with every step of the process. It's mind-blowing. I'd say 80 percent of my original design was what ended up onscreen, but the additional twenty percent where it was altered really enhanced the design and made it incredible.



#6 SYMBOLISM

The Seal of Vishanti, Strange's "symbol," is incorporated into the fabric of both his cloak and his topcoat. It's a supersubtle detail. Conceptual painting for film is about storytelling. But there also has to be a thoughtful elegance to it. Sometimes to achieve that, it means that certain design choices can't be too over the top. Strange has several design elements that could easily be taken over the top: His cloak and the Eye of Agamotto are such bold design statements and focal points. If we then made a symbolic icon so bold and gave it such a focus, it would have been too much for the character. It would actually detract from the overall design. We decided to incorporate that symbolism of the Seal of Vishanti into the fabric of his actual costume. That symbol is there, but it's engraved into the fabric. It's a lot subtler.

#7 DISTRIBUTION OF DETAILS

I think the cosplay community may hate us. The only way to get all the detail in both the topcoat and the Cloak of Levitation that we incorporated is to stitch it by hand. I've met people at conventions who tell me how much they love the costume. But they follow up their praise by saying, "Re-creating that cloak is killer, man." The people that put the love and attention into re-creating those details really show me who's who. Go big or go home.



#8 SILHOUETTE

In the comics, Doctor Strange's collar is such a dramatic part of his silhouette. We knew that the collar had to be a landmark to the design of the character. But in the reality that Marvel Studios has created, an element like that can be complicated. That type of design embellishment looks incredible in illustration and in the panels of a comic. On paper, it can bend in all kinds of ways. But when you translate that to live action, it just doesn't have the same effect. If we had made his collar as large and sweeping as it is in the comics, it would have felt a bit too outlandish. We had to take inspiration from that dramatic, gravity-defying collar and make it work in reality and the shapes we're familiar with.

I let anime influence me slightly in overemphasizing the collar and allowing it to just barely reach his cheeks. I looked at thick leather jackets with really big collars that you could pop up, and I studied how they held their shape and what lines they created — or even in the noir detective stories, where they're wearing these long trench coats with the collars popped. Taking inspiration from those for the shape of Strange's collar added a mysteriousness to the character and incorporated really well into the V-shaped lines we'd designed. It was still a very high collar. It's still very dramatic and tall. In fact, I think they actually had to build a physical harness on the set to keep that collar in the shape we had designed. But it's just not as over the top as it can be in the comics sometimes.

#9 COLOR PALETTE

Throughout the years, Doctor Strange has had some pretty crazy color schemes. In the character's first appearance in the comics, he's got this very black silhouette. Then later, throughout the years, he gets this blue, red, and yellow color palette. I really had to play with color theory in the costume. When you have a lot of crazy colors like Doctor Strange has, it can look fun in a comic book. But when you bring those colors into reality, they can feel like they clash. Primary colors like red, blue, and yellow together can be very tricky to pull off, especially at the exact same intensity. It works in a comic because it needs to be fun, grab your attention, and be flashy. But when you translate that into film, it's like a song where everyone is playing their instruments at the same intensity. It doesn't work. There needs to be a harmony to it.



THANOS

BY RYAN MEINERDING

Thanos made brief appearances in *Marvel's The Avengers*, *Guardians of the Galaxy*, and *Avengers: Age of Ultron*, teasing larger machinations occurring in the background of events seen in the films. When it became clear that *Avengers: Infinity War* would finally push Thanos to the forefront, the VisDev team set out to refine the previous designs, paying careful attention to the character's head and face.

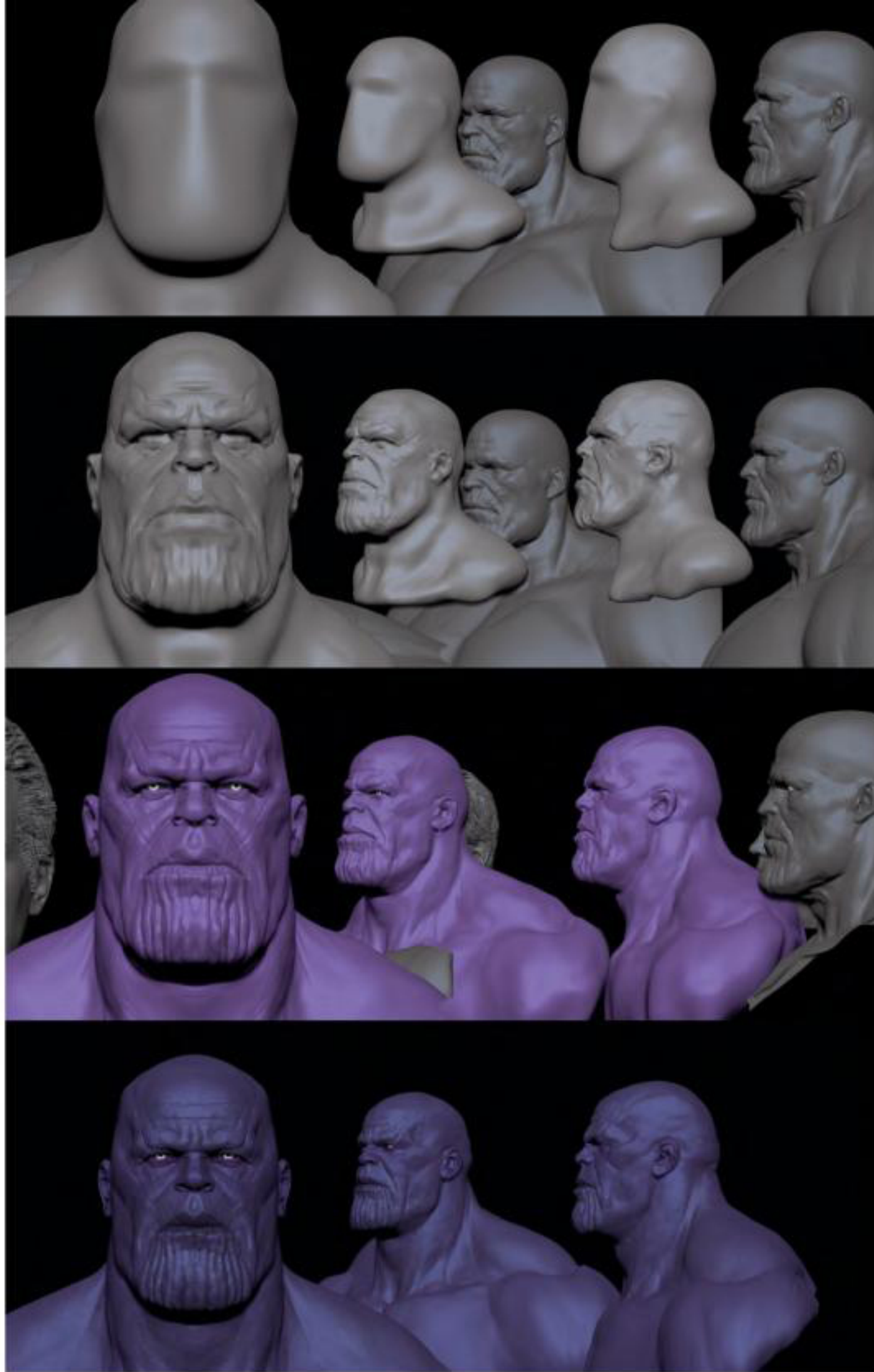
#1 PREVIOUS ITERATIONS

In the previous films, Thanos had to be integrated into the design aesthetic of the Chitauri. The gold coloration, the shapes — a lot of that design language for Thanos came out of what had been established for the Chitauri in the first *Avengers* film. In approaching *Avengers: Infinity War* and its follow-up, the Russo brothers wanted to take a different approach to Thanos. In the comics, Thanos is a very broad character. He's very powerful, he's very sinister, but he's almost comical because of how maniacal and crazy he's been portrayed as. The Russos wanted to give him a seriousness. Thanos may be crazy, but he's an unstoppable force. He's not going to be a maniacal character smiling from ear to ear as he's killing people. We have to make him a relatable villain. We have to understand why he's taking the extreme measures that he is. Because of this character choice, it became necessary to break Thanos into two design paradigms: the warrior and the philosopher.



#2 PRE-METAMORPHOSIS

The first approach to Thanos is what we referred to as "Warrior Thanos." This was how the character had appeared in the previous films and how he first appeared in *Avengers: Infinity War*. He's heavily armored. He's ready to get his hands dirty in physical altercations. In *Guardians of the Galaxy*, his armor was also a statement of how he saw himself as royalty. The armor design was very grand, very regal. The armor evoked power and prowess. When he sat on a throne, it felt intimidating but also ceremonial. The Russo brothers wanted to take that concept and bring a hard-edged and dangerous feeling to the armor. The armor was indicative of how he was trying to execute his plan until completing his quest for the Infinity Stones. He wanted to kill half the life in the universe, going planet to planet and literally killing half the life and moving on.



#8 REFERENCE

After taking photographic reference of Josh Brolin, I started by sketching portraits of his likeness. I was focused on figuring out proportions in taking Brolin's face toward Thanos and vice versa. It was a very similar process to what I had done with Mark Ruffalo and Hulk. At this point, I had to explore a lot of options in a relatively short amount of time, so I was sketching in 2D as quickly as I could. In painting these designs, once I found a likeness that I was happy with, that's when I started adding the purple coloration and seeing how it affected the overall design of his face. Much of this process was seeing just how far I could push the likeness and the coloration before it started to feel unreal. At the end of that process, I had a pretty good representation in painted form of his face with details of his pores, line details in his skin, and proportions. Even though this was supposed to be more of a preliminary exploration, I wound up finding most of the design at this stage. The Russo brothers and Kevin Feige liked these 2D illustrations, and then we moved into 3D modeling.



#9 USE OF DIGITAL SCANS

I took 3D models that had been created for *Guardians of the Galaxy* as well as a 3D scan of Josh Brolin's real face and started my own sculpt from scratch. Whenever you start with photos or reference of people's heads, that level of finish can mess with your mind as a designer. If you're modeling or painting over reference, you're holding on to the level of realism so much that you end up losing track of what is actually important to you as a designer. That's why I find it beneficial to bring an illustration or a 3D sculpt together from the ground up as one process, so you're able to focus the attention to your design in the face where you need. And the result ends up being a much higher quality.



#10 EXPRESSION

As I did with the Hulk 3D renders, it was important for me to start putting different expressions onto the face as quickly as possible to see how the design choices that I'd made were affected by different dramatic and subtle expressions. One of the cool things about a program like ZBrush is that I'm able to put those different expressions on layers I can toggle on and off. The more work that I do on his neutral expression, I can then turn on a layer where he's smiling, for example, and see more clearly how the overall structure of his lip is impacted. At this point in the process, I'm starting to figure out the textural qualities of his skin and pushing the purple color palette of his skin into a realm that felt more real.



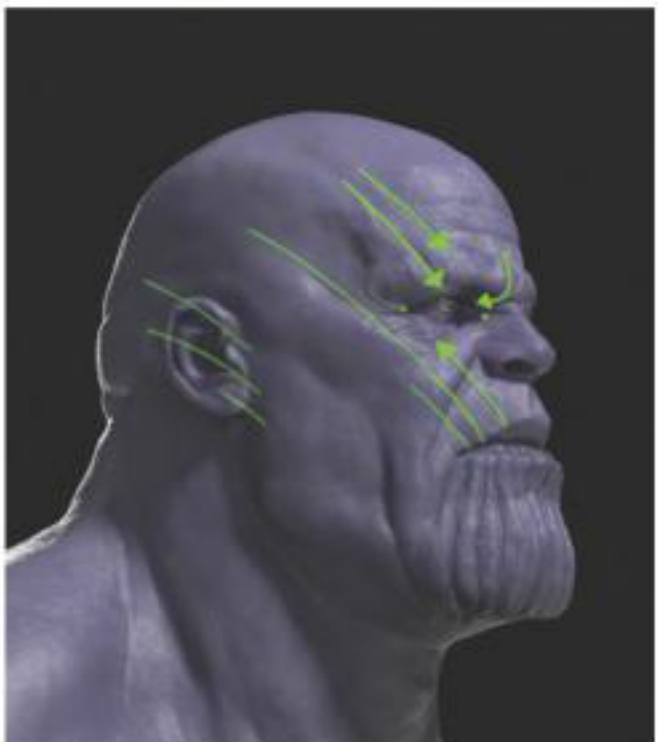
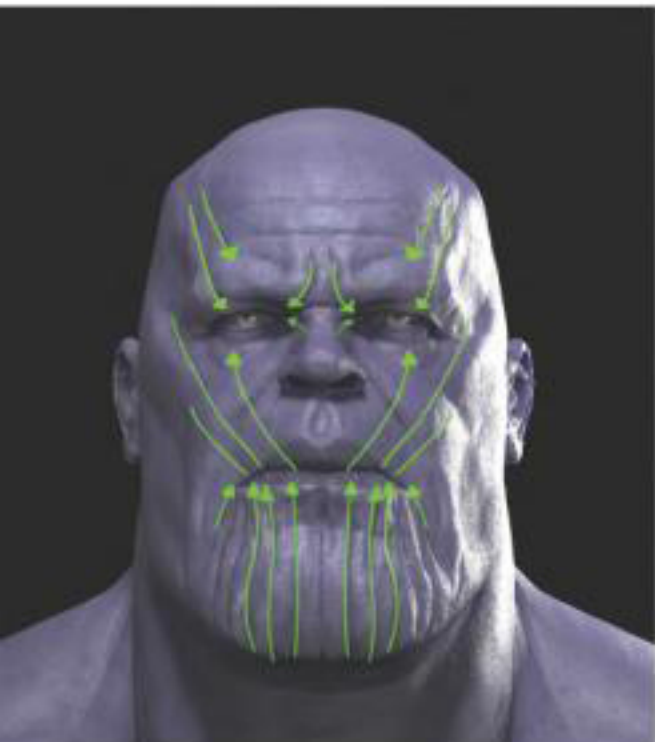
#11 AGING

When you look at Thanos in the comics, one of the most important aspects of his facial design are the lines in his chin. I did my best to integrate the lines in his chin into the natural lines that happen in mature men's faces. The lines come down his chin and then graduate out toward the ears. I was very focused in trying to ask things like, "How old is this character in human years?" It helped in determining how to design the lines around his face. If you're creating the head or the skull of a character from scratch, there are all these subtle things in people's faces that direct our attention to their eyes as focal points. We as humans aren't conscious of these hints. But if I were to sit down and analyze individual faces of people passing by, I could walk through at least five ways each person's face is engineered to direct our attention to their eyes. It's different for every person. Complexion changes. Eyebrows change. Wrinkles around the face change as people get older. But looking closely at them, those wrinkles radiate from the eyes.

#12 LEADING LINES

When we're designing characters from a blank canvas, our controls as designers aren't as nuanced as an actual person's face. We can suggest those subtle nuances, but we're not sure how the visual effects artists will be able to translate those designs into the final animations. As a result, I create very direct focal points in our characters' faces that direct attention to the eyes very obviously. And while that's not an elegant solution to the problem, it ends up being a solution that can be conveyed to other artists and collaborators. In the instance of Thanos, I put lines that go straight to his eyes. From all sides. From his upper lip, from his ears, everywhere. Especially since he has the lines in his chin that we've established; I can then utilize those lines elsewhere on his skull. I can put more lines on his face that run straight to the eye. It becomes a very effective way of focusing the viewer's attention directly to the eyes.

It's interesting: I had put lines through Thanos' ears, which I didn't think would make it into the final version of the film. But it did. Keeping in mind how unconscious these guidelines to the eyes can be, this design choice isn't something that I've heard anyone talk about. It's so integrated into the design and the lines that already exist everywhere else on his head, perhaps it doesn't register that these lines run over top of his ears. It could be scarification that he's done to himself; it could be something that he was born with. But I don't think anything reads as accidental. It's all purposeful.



#13 BROW

Thanos doesn't have eyebrows. That's actually a huge problem, but one that we had to solve. Eyebrows are huge identifiers of expression. And as mentioned earlier, Thanos had to emote and be extremely expressive. We had to incorporate bone structure in his skull to give the indication of brows. Eyebrows cloud so many of our ideas of form. They're a fast and effective identifier of expression over form. We had to rely solely on form. And regrettably, I haven't seen Josh Brolin with shaved eyebrows, so I wasn't sure what that form was. I had to consider all these things in proportions and draw lines to his eyes that would also give the indication of a brow.



CAPTAIN MARVEL

BY ANDY PARK

Though her roots are steeped in the Marvel Comics mythology, the Carol Danvers iteration of Captain Marvel is a relatively modern addition to the lineup of characters. Andy Park was challenged to adapt a more modern design from the comics to the Cinematic Universe for this fan-favorite hero making her long-awaited big-screen debut.



#1 EXPLORATION

Captain Marvel is one of those iconic Super Heroes, not only in her look but also in her abilities. She's powerful, can blast energy out of her hands, and can fly. So I wanted to first portray her in the sky looking all-powerful. I explored different ways to design her costume while maintaining her iconic red-and-blue costume and her gold star. She has a military background, so I wanted the lines and design elements to reflect that. She has a flight suit of sorts that's also a symbol. She's not trying to be stealthy by any means. She's making a statement.



#2 TO SASH OR NOT TO SASH

The other iconic element from the comic book is her red sash. I played around with doing different options on how it could work. It's a great graphic element to have, especially when she's flying. But it's also very impractical in real life. Besides looking really cool, it's hard to justify in a real-world setting where she's going to be fighting various types of enemies. But I had to try to figure it out. Maybe it hangs more asymmetrically like a side skirt. I did do various sashes as well. Ultimately, they decided against it.



#3 MATERIAL DETAILS

I continued to come up with various design options homing in on elements that showed the details of what the costume could look like. I put in textures throughout the costume to convey a sophistication to its construction. This is a suit created for war. It possibly had alien origins, so I wanted to create a super-strong weave look to sell that this is the kind of suit that could theoretically survive the harsh environment of space. It's a flight suit and a space suit.



#4 HELMETS

The other iconic aspect to Captain Marvel is her helmet. I explored so many different types of helmets. A unique aspect to her look in the comic book is that her hair turns into a mohawk when her helmet appears. This presented a challenge of how to accomplish this look for "reality." Does a mohawk even make sense? We weren't sure so I explored both options where the top of the helmet was mostly open to expose her hair in a larger area than just a mohawk. I also explored non-hair ideas with a mohawk fin. I wasn't too keen on those as I was determined to get the classic look to work.



#5 MOHAWK

Ultimately, I figured that since this was advanced alien technology the helmet would form onto her head and pull her hair up to form the mohawk. Why not? It's science fiction! It was a design that I was determined to see on screen because it has such a unique and iconic look that is different than any other hero's helmet we've seen. It speaks to her strong-willed character to do things her way. Yon-Rogg is always telling her to control her emotions and be an ideal soldier. Even though she tries, deep inside Carol was always one to do what she wanted to do despite what everyone else tells her what she can or should do. So a design element as simple as a mohawk coming out of a helmet tells a story to who she is. That's why it's important!



It was a design that I was determined to see on screen because it has such a unique and iconic look that is different than any other hero's helmet we've seen. It speaks to her strong-willed character to do things her way.

—ANDY PARK



#6 BINARY/POWERS

Part of designing a character like Captain Marvel is designing her powers. It's essential to her look. It becomes part of her costume. So I did a lot of explorations on what her super charged powers looked like, and what her photon blasts could look like. Because we have so many characters in the MCU it was important that it look distinct compared to the others like Iron Man. It was a challenge for it to not just look like she's on fire. The directors wanted the powers to convey that they come from within her rather than from the suit. She has so many elements to her look in both the costumes and her powers that set her apart from the other heroes of the MCU. It was definitely a fun challenge to explore.



ANT-MAN BY ANDY PARK

Ant-Man's suit has evolved from the first film to *Captain America: Civil War* to *Ant-Man and the Wasp*. As discussed earlier in this book, the original Ant-Man suit would have been designed by Hank Pym in the 1960s and may have been influenced by the scientist's love for classic horror and science fiction. This suit from *Ant-Man and the Wasp* has some slight updates.

#1 EXPLORATION

As usual I first started by looking at the character's comic book origins. Ant-Man has a very classic comic book design with his bulbous helmet, protruding mandibles and little antennae on top of his head. It's a design that looks cool on paper but is seeming challenging to bring to real life. Our version also needed to be very retro, due to the fact that our Hank Pym created it in the '60s, but still look cool with Scott Lang wearing it in current time. It's all a fun challenge. I explored designs that were reflective of his comic book origins and felt like retro technology, all while trying to avoid it from looking overly clunky or goofy. I looked at a lot of old astronaut suits and old machinery and their components. And I definitely wanted to have exposed piping throughout the suit to show the flow of Pym Particles within.





#2 FINAL DETAILS:

This is final approved design for Ant-Man. I definitely wanted to bring in the dominant red and black colors to the costume along with the silver helmet that pops off the page. I added silver accents throughout the costume in the metal tubing, gauntlets, and belt to really sell the idea of the technology that is the Pym Particles. It's a containment suit, so it has a similar feel to an astronaut suit. I also wanted to make sure that the costume materials felt retro, from the black leather to the red texture and sheen reminiscent of space suits. It's almost sci-fi but still grounded. And to really sell the idea of the tech, I added red glows in choice areas.



#3 HELMET

The helmet was a fun challenge. I wanted to create a helmet reminiscent of the comics but definitely sleek it up to avoid the overly bulbous look in the comics. But I didn't want to make it so sleek that it looked like some Stark design. That was one of the biggest things I wanted to maintain — a separation from the tech looks already established in the MCU. Hank Pym designed this suit, not Tony Stark, so I wanted that to be obvious. The idea of the helmet opening up was one that I explored. I liked the idea that the mouthpiece could split in half and move to the sides of his face much like the mandibles of an ant, and it also would keep that mandible look from the comics. And then his face plate opens up to reveal his face. This was just one idea I came up with.



#4 REDESIGN

I was able to revisit the Ant-Man design for *Captain America: Civil War*. With this design, I wanted to maintain the staples that made him who he is, but this time modernizing him. So I sleeked him up from head to toe; integrating the tubing into the costume more without hiding it helped to get this across. But I still wanted it to be seen. I gave the materials of the costume an upgrade, adding texture and variations in tone, and streamlining the mechanical aspects to be less clunky than its predecessor.



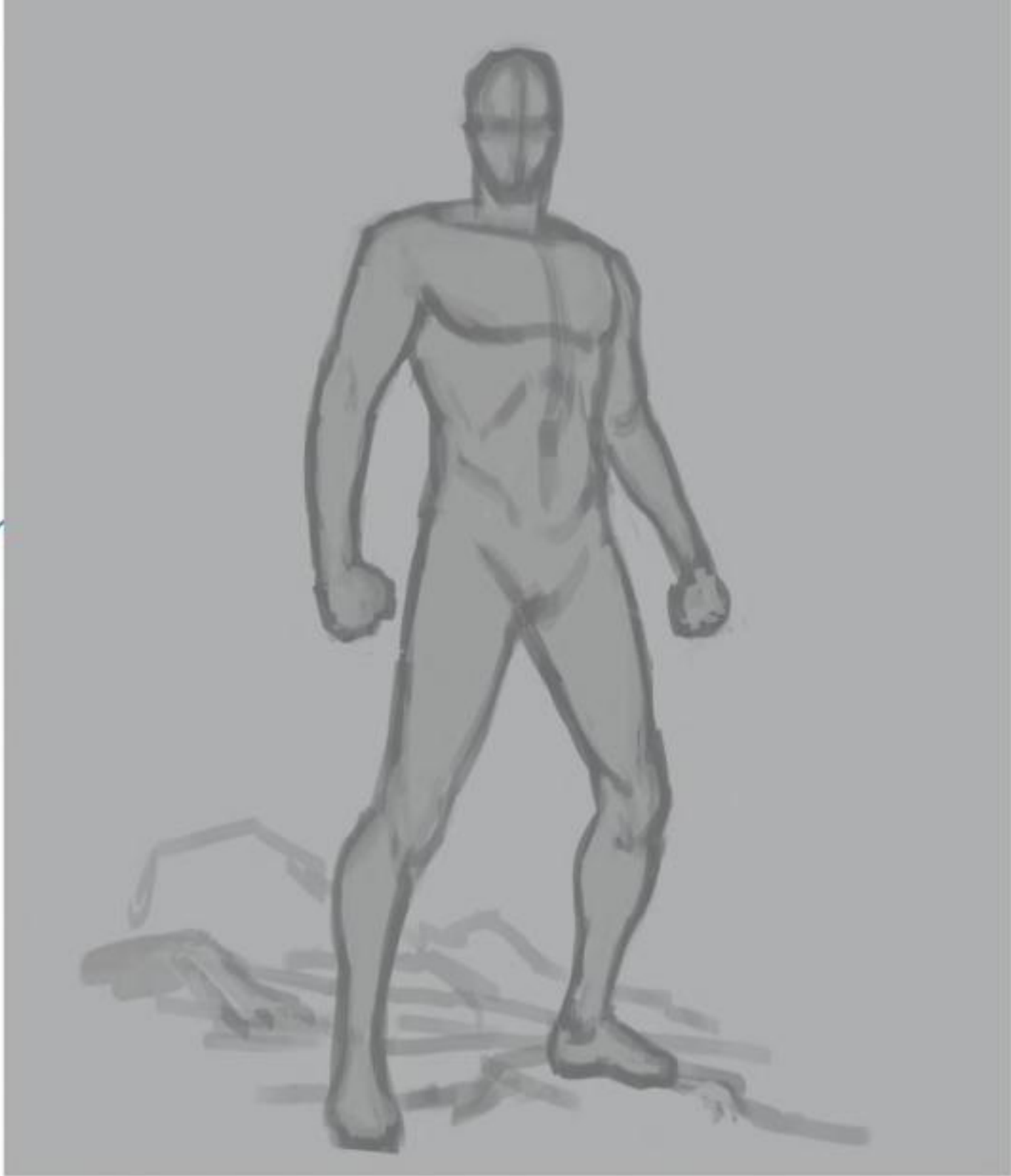
#5 HELMET REDESIGN

A lot of times you want to avoid redesigning a look too far from the previous iteration, especially if it was a successful look. But I also wanted to avoid doing a redesign that audiences would barely notice. So I went a bit more extreme in upgrading the helmet's look. Conceptually it makes sense, due to the upgrade in design being decades later. I imagined Scott Lang having some design input this time around. So just like the costume I wanted to create a sleeker, streamlined look. The function is the same, but I took the elements of the old helmet and tried to integrate the lines, angles, and flow to a more modern sensibility. I'm doing all that while maintaining the fact that this is not a Stark design.



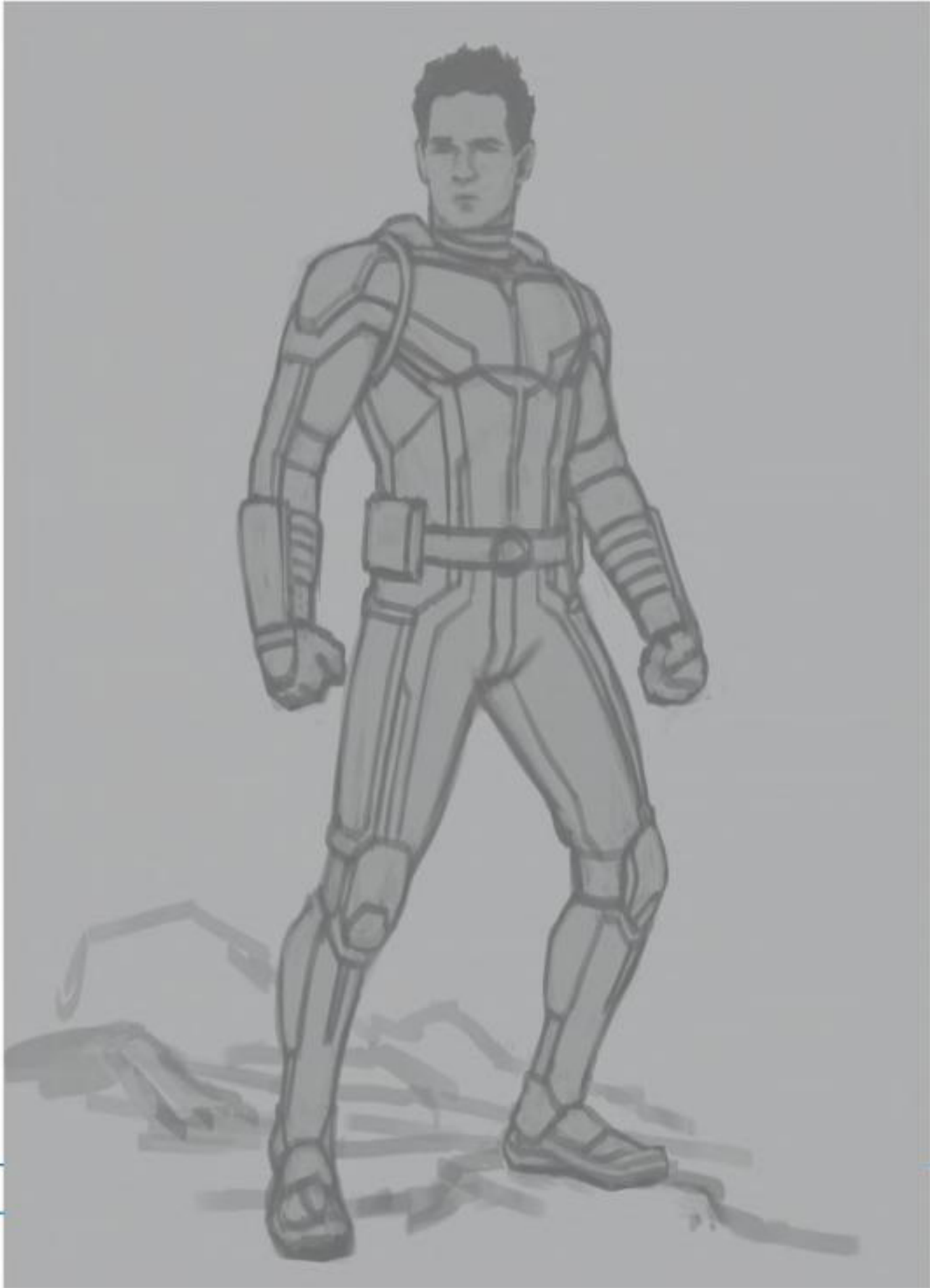
#6 ROUGH POSE

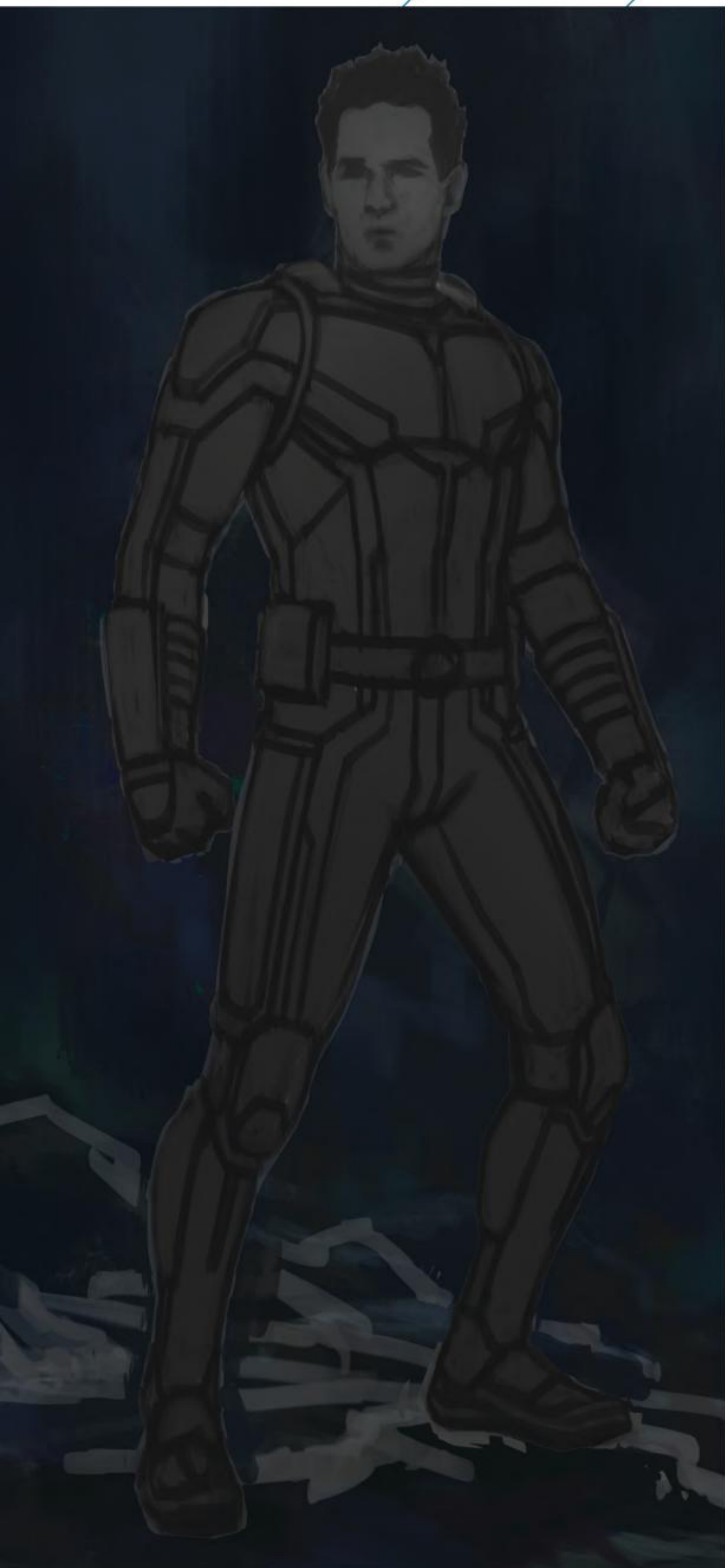
In designing Ant-Man 3.0 for the sequel *Ant-Man and the Wasp* I started out by picking a fairly neutral pose to show all the aspects of the costume. Sometimes doing a more action-y pose can work, but the neutral pose is always the safest. Starting with a 10% gray background and a 25% gray brush, I rough out a figure that feels strong, still neutral but ready to spring into action when the moment calls for it. Knowledge of anatomy and figure drawing is crucial at this point. You need to know what is going on underneath the costume before putting it on.



#7 SKETCH DESIGN

This is where I start figuring out the overall design. I sketch out lines throughout the costume, keeping aware of how it all flows with the whole. Flow is especially important in an Ant-Man design due to the fact that particles literally need to flow smoothly throughout it. How do things connect, and how is it going to differ from the previous iterations? These are things I'm thinking of as I draw out the design. What I decided to do was an amalgamation of the first two costumes, the best of both worlds. Hank Pym is designing this without Scott's input, so he inevitably brings back a lot from the original design while maintaining some of the necessity of the modern suit.





#8 COLOR

Once the general design choices are made I try to go to color as soon as possible. It's fine to start rendering in black and white, but I prefer to render in color. So I start adding in the background look and feel. I wanted to keep it simple so you're not sure if he's shrunk down or normal human size. It could be either. And I wanted to make the background a dark, cool bluish color to contrast with the warm red and light value of the metal pieces. Both this color contrast and value contrast is what should make the piece stand out.



#9 COSTUME RENDER

At this stage the general design is there. It's now a matter of taking the time to render every detail out. And during this process design choices are still being made. It's all figuring out what exactly is going on in each section. How does one area plug into another? What material differences are there? How exactly should the metal tubing sit on the costume? Is it on top of the costume or does it sit within the costume? These are the questions I'm hopefully answering as I'm rendering out each detail. This is probably the most time-consuming step, but it's fun to problem-solve all the aspects of the rough design.

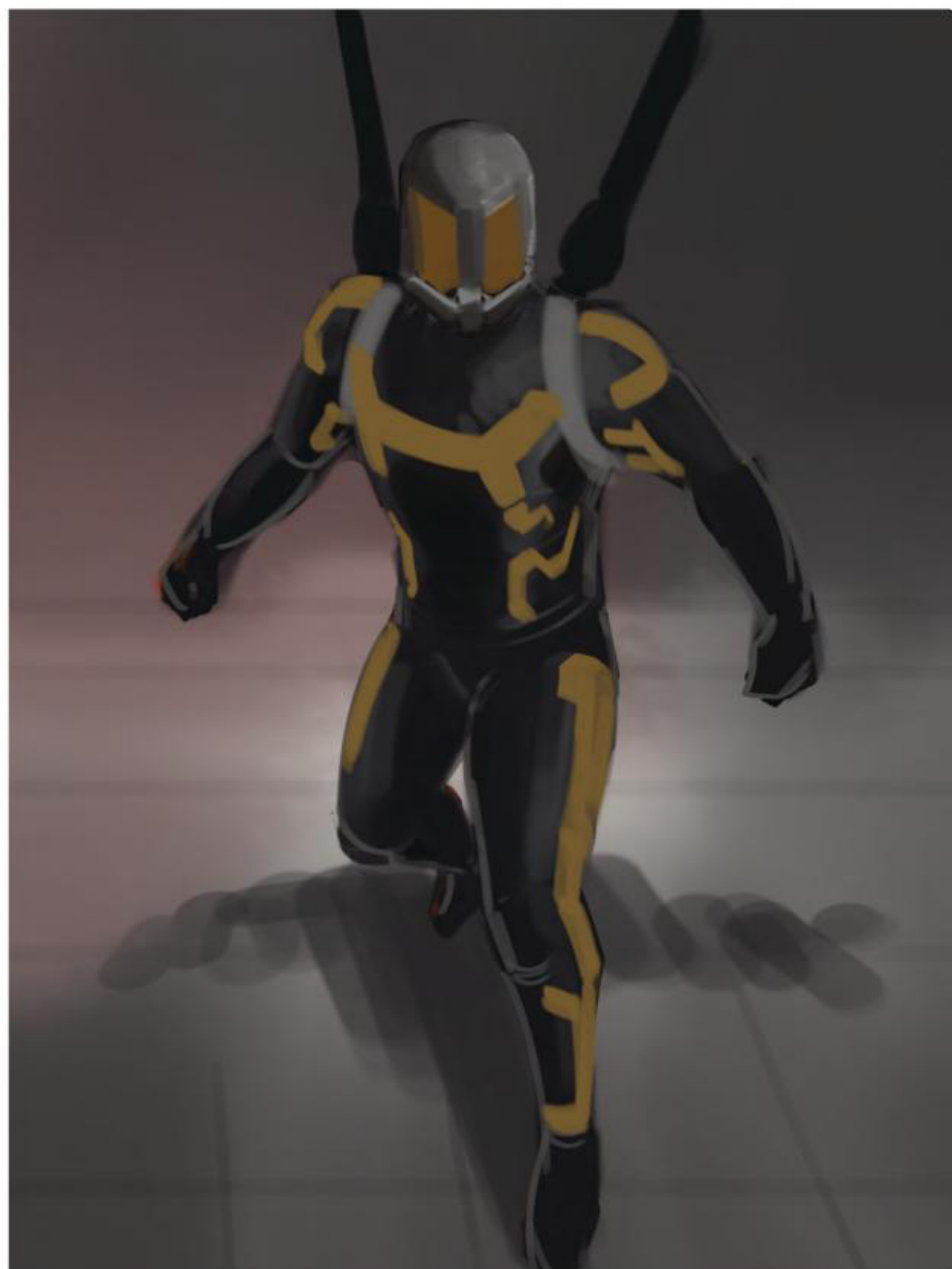


Pank

YELLOWJACKET

BY JACKSON SZE

A militaristic counterpoint to Ant-Man, Cross Industries' Yellowjacket was a departure from the character comics fans had come to know. But even though it wasn't Hank Pym under the mask, it was important to keep the character's icon intact.



#1 DESIGNING A VILLAIN

From my experience, in Super Hero movies, there is often more leeway in terms of how exaggerated a villainous character can look. In the story, the Yellowjacket suit is an advanced, militarized version of Hank Pym's Ant-Man suit from the 1960s, and the filmmakers wanted to incorporate robotic arms as part of his arsenal. With those directions in mind, I researched modern/future military technologies and tried to combine that with an evolved Ant-Man aesthetic that Andy Park has already established. The fact that Yellowjacket is a villain allowed me more creative space to explore overtly aggressive shapes.

#2 STORYTELLING AND STAGING

We offer the filmmakers a range of design options in initial meetings to gauge how close our vision of a character is when compared to their direction. Once an option is chosen, we address notes and refine the design in an iterative process. When possible, I like to place my characters in potential settings that the character will find themselves in on film. Hopefully this adds context to a design. I chose to showcase Yellowjacket from a slightly top-down viewpoint to give a hint that he is being seen in a miniaturized state. The challenge will then be to still have him come across as menacing while small. His pose should convey strength while his design speaks to his lethality.



#3 BASICS

Figuring out the perspective and proportions first will save me from having to fix mistakes later. There will be adjustments throughout the process, but a solid foundation pays dividends later down the line. The idea is to work from big to small, broad to specific. Here I am laying down his basic design and graphic pattern.

#4 COLOR AND GRAPHICS

The pattern in front of his costume is inspired by the patterns you see on the heads of actual yellowjacket insects. It looks to be a bright pattern warning others to stay away. It made sense to incorporate that into an aggressive design. The task is to abstract that natural pattern into something I can use in the suit. How is it composed on the body? Does it fit into the rest of his suit? What function can it serve besides being a purely graphic element? These are some of the questions I ask when evaluating if the element is integrating into the design successfully.



#5 PARTS AND INTEGRATION

Yellowjacket is complicated. There are a lot of moving parts to his costume. I broke down each component separately in order to think things through. Pieces such as his helmet, gauntlets, boots, arms, and thrusters were called out individually.

Approaching each piece on its own is important for engineering and believability. The design can only be approved if all aspects of it are figured out. Function plays a huge part in this process. Function gives the character abilities, and these abilities can be used on film in creative ways. When the VFX team asks about how each arm joint folds or how the laser emits, I need to have thought those decisions through and communicate those ideas to the team. The entire process took months. There were design decisions made in preproduction as well as in postproduction.

#6 MOVIE SCIENCE

One of the biggest challenges with the additional arms was figuring out how they would collapse when not in use. These were muscular and bulky appendages that wouldn't make much sense just hanging around when not in use. They may hinder Yellowjacket's movements. Are they always on display? If they are always flailing about, they will be cumbersome. To rationalize collapsing these arms into a convenient size, I thought about using the very same Pym shrinking technology to make them small when they are stowed. Though never shown on film, I wanted to make sure the design is thought through so if an issue does come up, there is a rational "movie logic" behind its functions.

#7 ICON

The comic book version of Yellowjacket has these exaggerated shoulder fins that looked iconic but if translated literally to live-action would not be practical. Still, I wanted to pay homage to those fins, and the solution I came up with was to echo that shape with movable propulsion thrusters so Yellowjacket can fly around. It is very much inspired by anime mechs or robots. Interestingly, outside of Iron Man's suit in *Avengers: Infinity War*, I think Yellowjacket has been one of the most anime-influenced character designs in the Marvel Cinematic Universe.

#8 CHANGES IN PRODUCTION

As I mentioned before, Yellowjacket was a long design process. Changes in postproduction included the need to see the actor's face with an open helmet, and changes in the functionality and look of his arms. Being on staff allowed me the opportunity to continue to work on this character months after his initial design approvals and, together with the incredible VFX team, create the Yellowjacket you see onscreen.





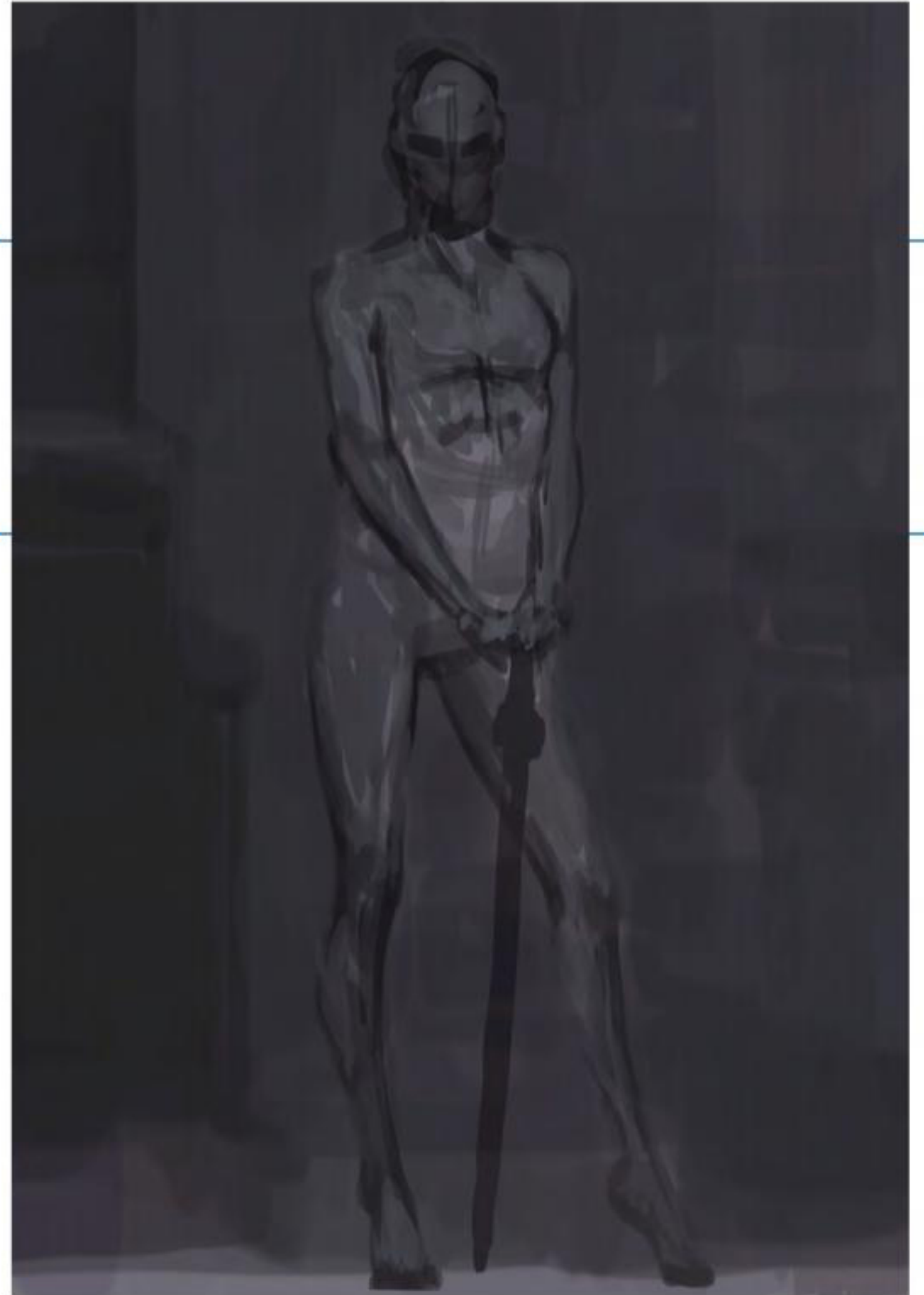
GAMORA AND NEBULA BY ANDY PARK

As sisters and as daughters of Thanos, Gamora and Nebula had to be designed in concert; each character had to inform the other. In the development process, sometimes designing characters simultaneously will be an effective way to ensure their lines, coloration, and themes correlate and contrast.



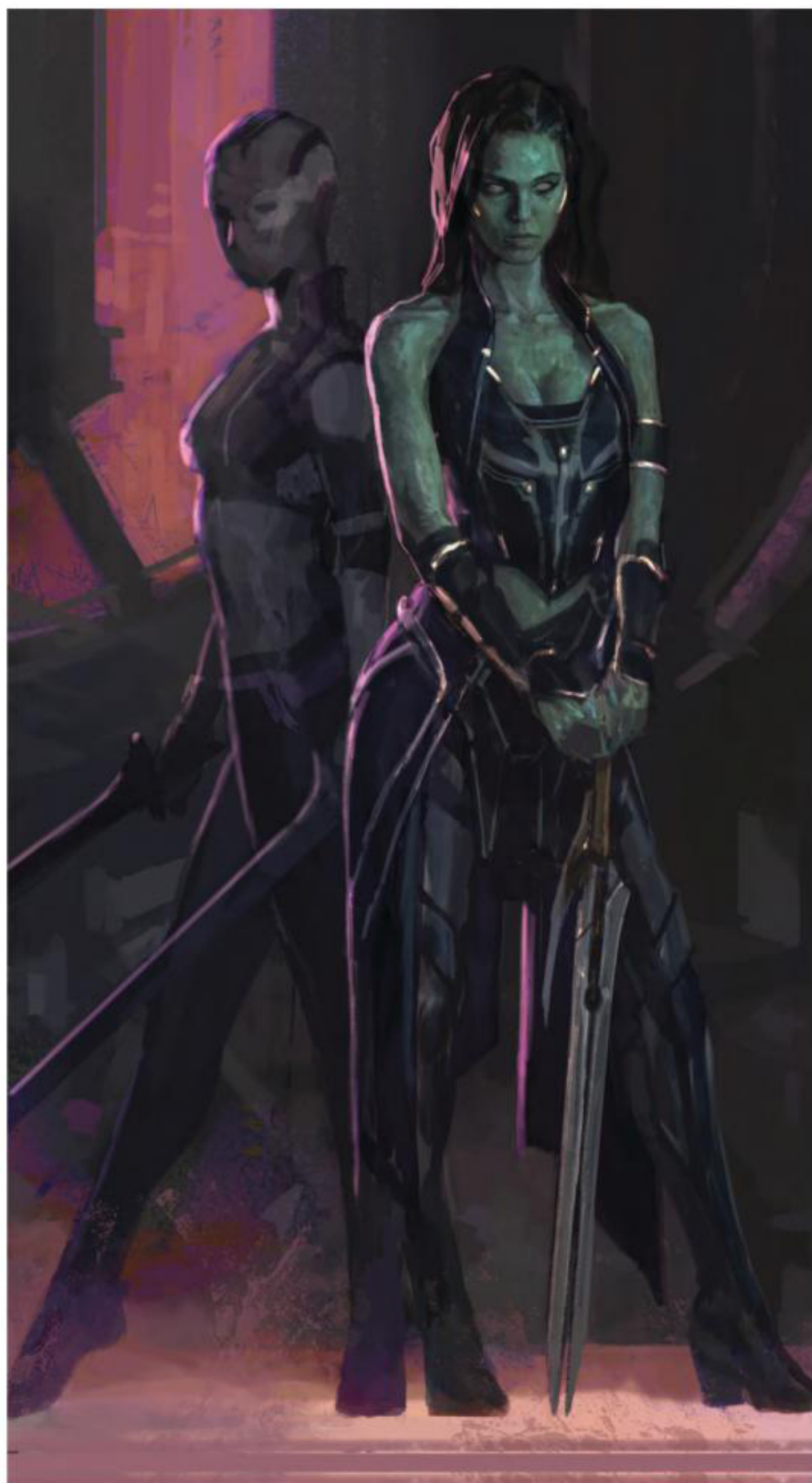
#1 PORTRAITS

There are times when doing portrait-style concepts makes more sense. This was the case with characters like Gamora who was a relatively unknown comic book character. Due to this, we were given more leeway. I pursued exploring all types of designs focusing on her face: Did she have to be green? What are the details of her face, and how can we convey that she is an alien? I tried to convey these necessary things, all while trying to maintain an appeal to her look. With Nebula, I was less concerned about making her look attractive. She's alien but also cybernetically enhanced. I focused on how to make her feel ominous and deadly. With one look she should be someone you know you don't want to trifle with. But she is the sister of Gamora, so I also kept that in mind while exploring designs.



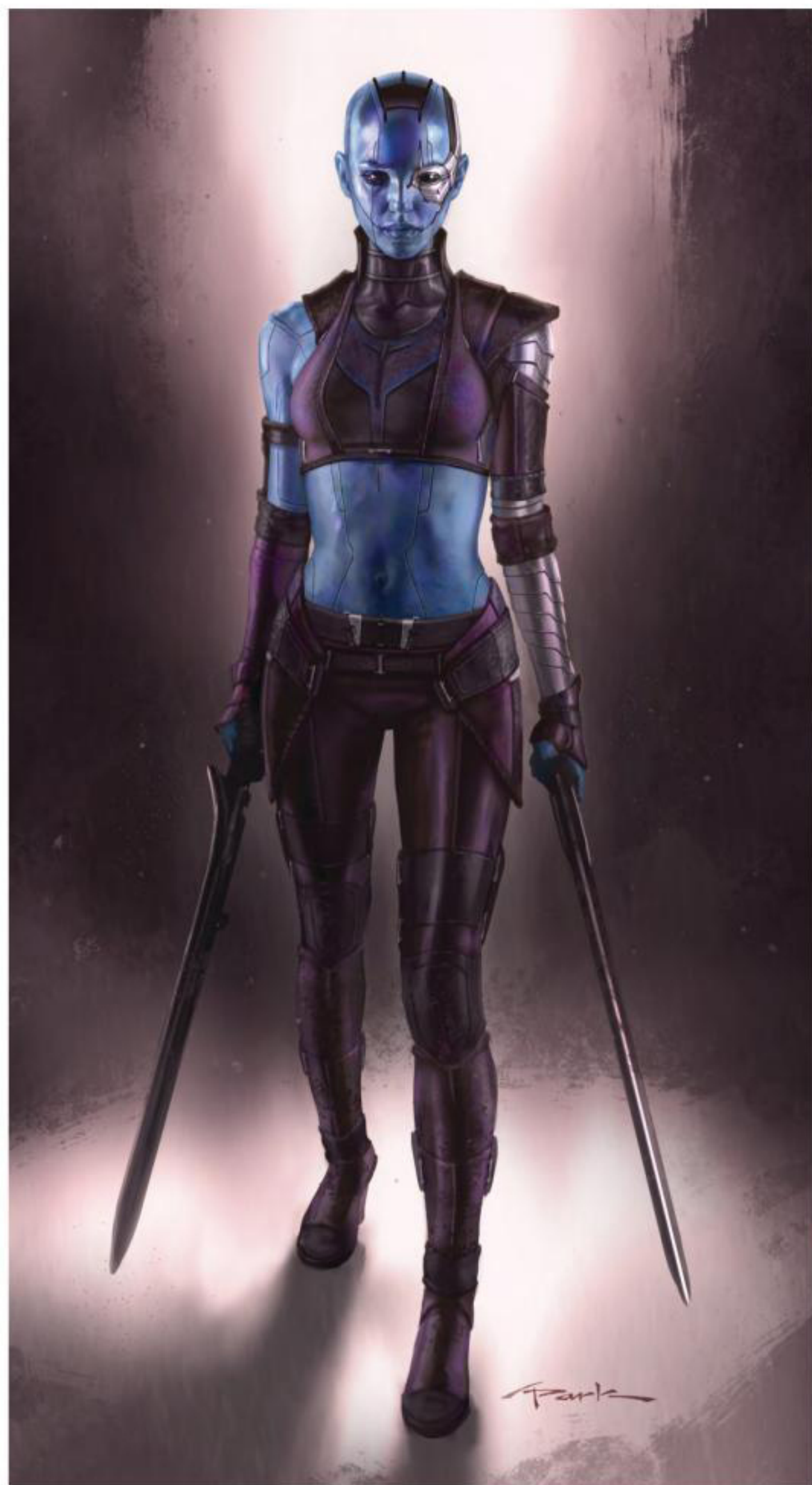
#2 ROUGH POSE

I want to convey the strength and resolve in Gamora as she stands facing us with her sword balancing on the ground. I rough out the pose and rough in a fairly neutral color palette knowing that it will evolve as I go on, so I keep it a cool gray tone with a fairly dark value.



#5 DETAILS

Now it's just adding details and spelling out what is going on in the design of her face as well as her costume. I render out Nebula's design as well, but I want to keep Gamora as the focus. So I don't light Nebula up as much and also keep her rendering a bit looser. These two are forced to be sisters by the will of Thanos. They're assassins and the best at what they do. Do they hate each other even though they're sisters? Or do they see each other as family? There's a tension between them that I wanted to convey in this concept illustration.



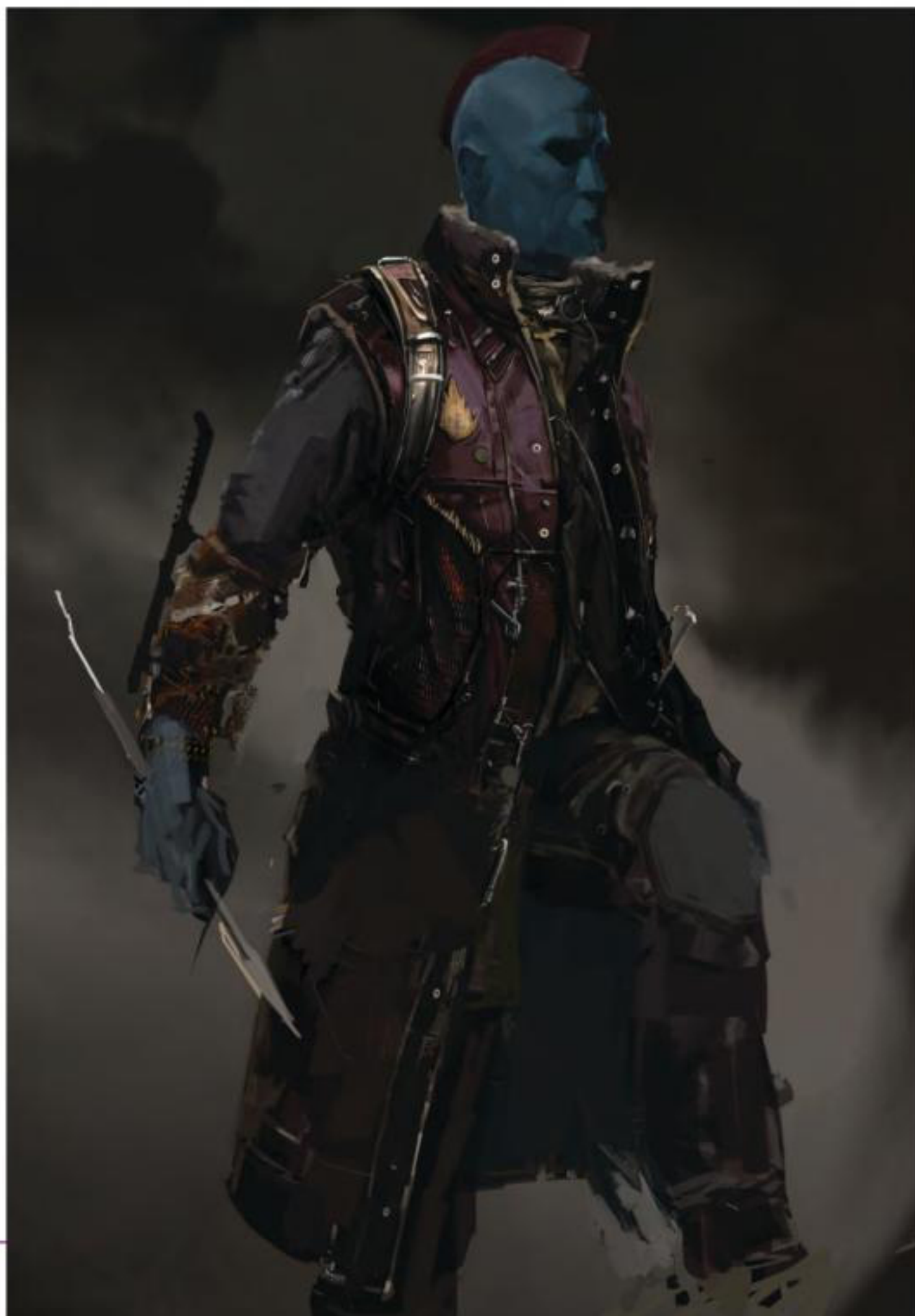
#6 NEBULA

This is the final concept design of Nebula. She's half alien, half mechanical robot. It's always fun to design two characters that are connected — to find the contrast between the two, to find the connection between the two. That's what you want to find in these kinds of characters.



#6 COLOR CHOICES

Once I have a sketch of an attitude that I'm comfortable with, that's when I start blocking in the painting. Whatever I feel comfortable moving on to next that guides my process. Sometimes it's blocks of color, or sometimes it's laying out the value grouping and forms; sometimes it's all of the above. In this case, I'll block in the colors that I know I'll be using, like his trademark blue skin and the red of his jacket. When I'm doing this coloration, I'll use a brush that has a little texture to it. I like to paint on a Cintiq, and quite often it can give you the feeling that you're painting on glass. Using a brush with some texture to it gives that simulation of canvas. You have so much control over the brushes, but there can be a disconnect between yourself and the media. I like to use brushes that make me feel like there's a physical connection with a medium, like when I draw on a sketch pad or paint onto canvas, even though I'm digitally painting on a screen. This part of the process is twofold, because it's also helping me visualize the materials that we'll create his clothing from or how scaly and textured his skin will become.



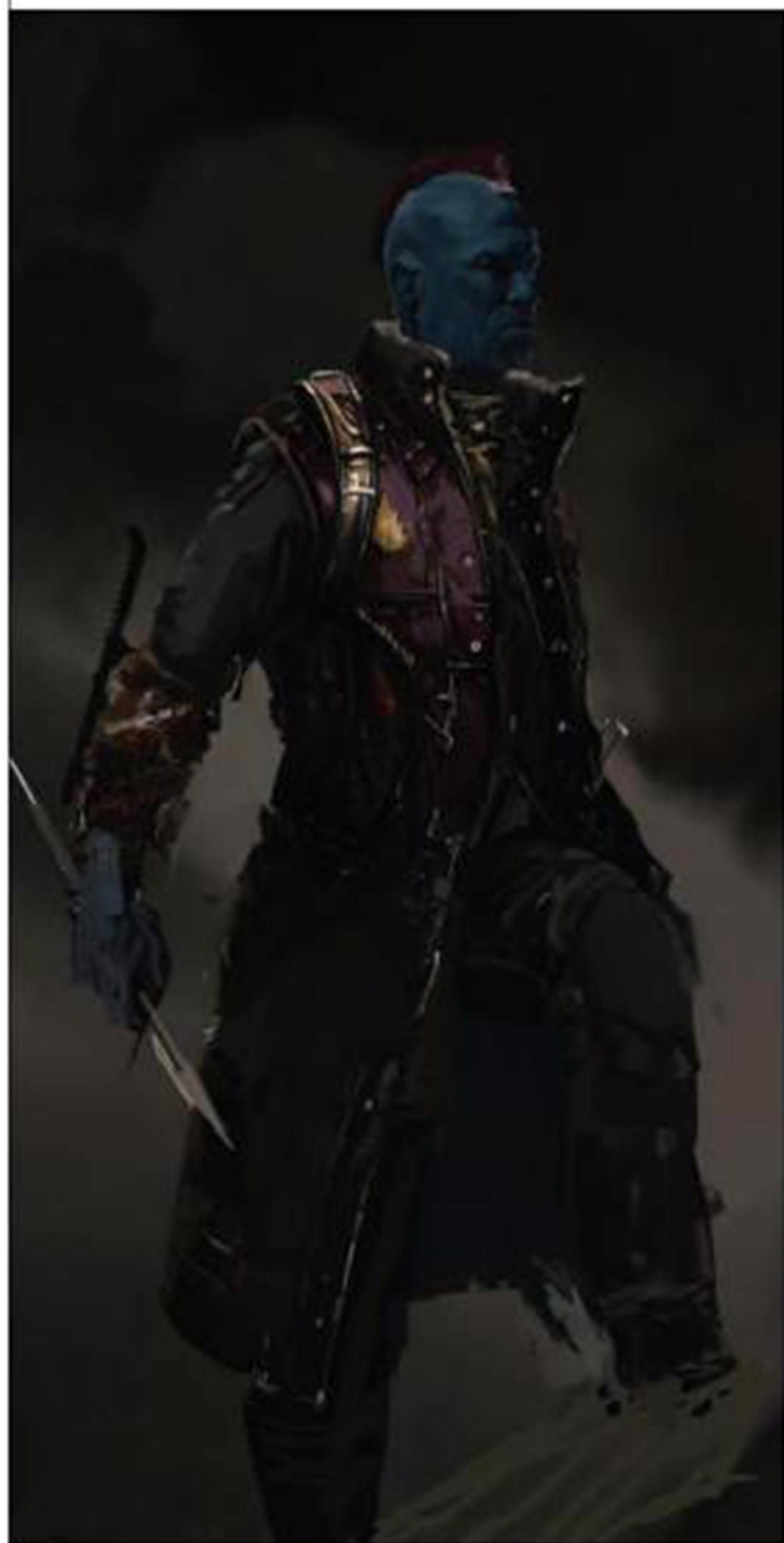
#7 TAKING ANOTHER LOOK

Multiple times in creating these characters I like to take a break and do something else and then get back to it. I feel it's important to get a fresh set of eyes and see if the proportions look off, if the details don't read, if the character feels stiff, etc. There are always issues with my paintings that I see throughout the process. I try to embrace those necessary course corrections and move on.



#8 FOCAL POINTS

There are times when I want to try to nail down a certain detail. I'll break out of my basic form, create a new layer, and zoom in where I can explore those avenues. When I'm working in this more generalized approach, I'll home in on these details and give them a large amount of attention and rendering. Yondu's mohawk was one of those instances. It's a keystone that helps me understand the rest of the painting. Those keystones will be the foundation that drive me toward the next step of the painting like a road map. They're also a good reminder to keep me on task. Sometimes I'll get lost in the details of something that is more inconsequential. But staying focused on the landmarks keeps me on task. It's almost like being a pilot. You have to keep your eye on the horizon. Or if you're sailing a ship, you know you always need to head true north. I try to find my true north and make sure that whatever I'm doing is helping, not hindering, that true north.



#9 DETAIL CASCADING

I knew that I had to play with a variety of shapes of the mohawk, using a variety of materials and a variety of sizes. Would the mohawk be his hair? Would it be a piece of technology? The mohawk was originally translated as a large, sleeker-looking centerpiece on his head. The first film's mohawk was more minimal, and on the second film it was more substantial. Both were challenging in their own way. It's something so distinctive that even the subtlest change on the fin can have a ripple effect to the design as a whole.



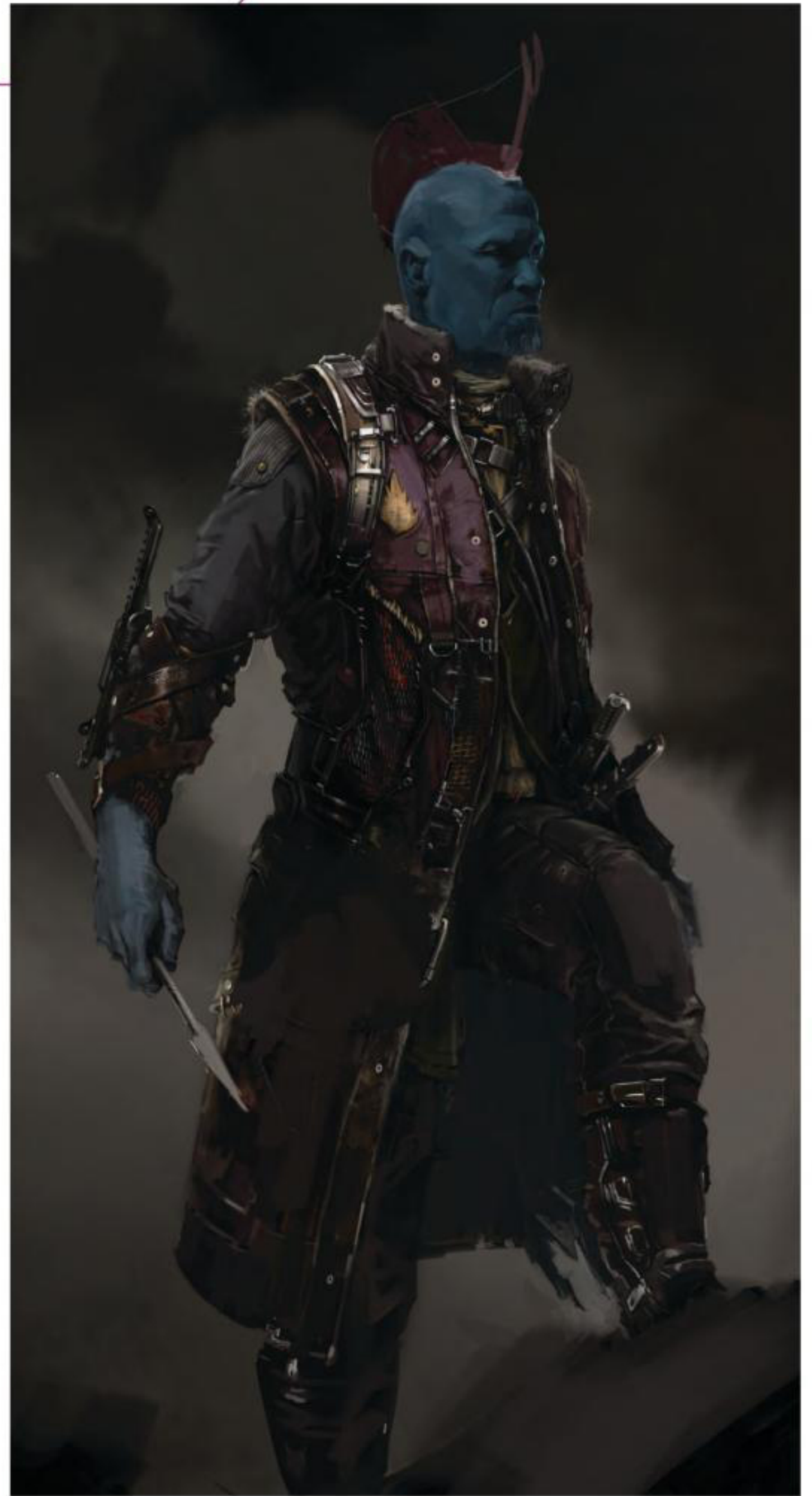
#10 DECISION-MAKING

Ultimately, and especially after Michael Rooker was cast for the role, we all decided that the mohawk would be close to the head and minimal. However, the second film needed him to have an upgrade. I was excited to design that second one closer to the comic versions of Yondu.



#11 TRIAL AND ERROR

Figuring out how and where his jacket and his clothing would be constructed with this patchwork was a bit of a process of give-and-take. I played around with putting patches over his knees and ripping holes in his jacket and having them stitched together with materials and fabrics that were radically different from those used for the main construction. I added buttons that looked like they were collected. Maybe he had a green button amid metallic ones. I was playing with textures and seeing what worked and what didn't. That's something you can only see by doing it. I figured that each detail was a story. Each one represented a different fight or adventure. That made him a really fun character to conceptualize, because I could jump around and explore all these various "what if" scenarios. And I'm the type of artist who likes to jump around. I may be working on the fin, and it'll give me an idea to work on his gauntlet. Or I'll be inspired, break out to another page, and start working on his arrow.



#12 ACCESSORIES

During one of those inspirational moments, I was working on the patchwork of his jacket, and that's when I realized I wanted to give him something around his neck — like a scarf or maybe some sort of a retro-looking communication device. The minute you start adding technology, there's a question of how sleek and high tech or how retro and analog it should look. The majority of the technology in *Guardians of the Galaxy* was very retro and analog-looking. Plus, you have to think from the character's point of view. Yondu isn't the type of person who would have the top-of-the-line Stark-like technology. If he did, he probably stole it. Those are the things I like to play around with in my head as I'm building the character from the ground up.



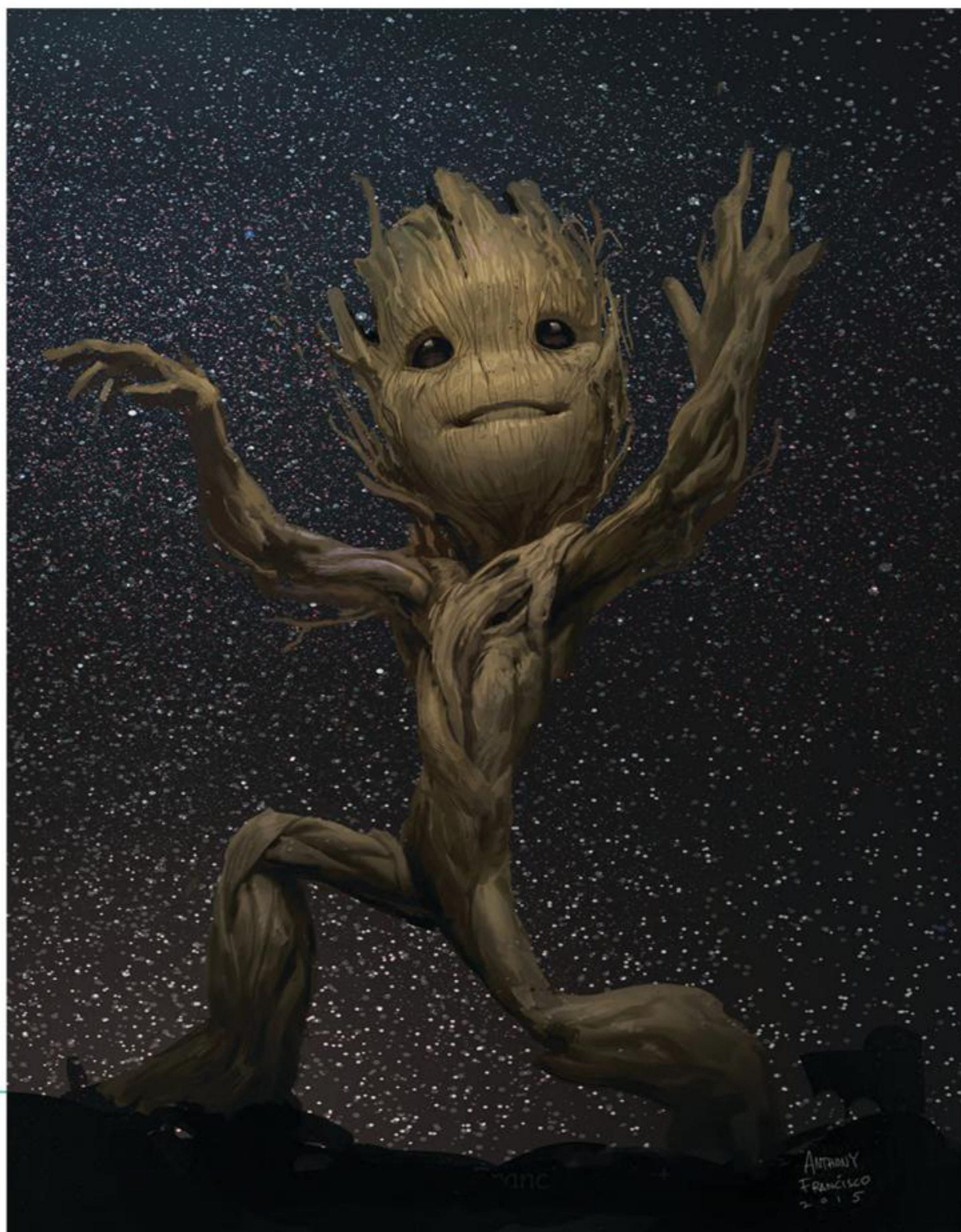
BABY/ADOLESCENT GROOT

BY ANTHONY FRANCISCO

Following Groot's heroic sacrifice in *Guardians of the Galaxy*, the end of the film revealed a younger, cuter version that was a hit with audiences. When it came time for *Guardians of the Galaxy Vol. 2*, the character's design needed to reflect the passage of time.

#1 INSPIRATION

I was basically tasked with creating something cute and iconic. One of the main design challenges with Baby Groot was making him still evoke the look of a young boy and not an old man. I immediately thought of the happiness and warmth that I feel when I look at my kids. That was a big part of why I chose to base the initial design of Baby Groot in *Guardians of the Galaxy Vol. 2* on my son. Taking things in your own life and incorporating them into a character can be one of the most effective ways of conveying emotion. When we talk about reference, it's not just copying or being inspired by visual imagery; it's finding feeling within the world around you and allowing that emotion to influence you.



#2 REFERENCE

My son was an athletic toddler. He was break-dancing and could do handstands at the age of 4. His body type moved the way that Baby Groot needed to move. I just copied my son's body type and movements exactly — which made it all that more heartbreaking when the teenage version of Groot turned to dust in *Avengers: Infinity War*. I pulled a lot of family photos of my son in various poses, dancing and playing around. It was wonderful having all these photos of my son open on my screen as I started outlining a simple body structure for Baby Groot based on those photos.



#3 SILHOUETTE

I then put that line drawing onto a toned background, opting for a middle gray. I set the line drawing in Photoshop to multiply. Then I create a new layer just under it where I can start to paint a mask with colors — just a quick color reference for me to see how that color looks in that form. This way, I'm seeing the tonal structure and the base color to quickly visualize the form. I like painting from a base form or shape. It's a lot like doing color flats for comic books or in oil painting. You do a local color first and make sure the shape is clear, and then paint within that shape.



#4 MASKING

That base then serves as a mask, so that I'm keeping my painting within the lines of that simple form from this point forward, keeping a clear silhouette and keeping the character completely separated from the background. And I'll start to move on to the contact shadows and see where the highlights on Baby Groot's form will be, where there will be shadows, that sort of thing.



#5 EXPLORATION

Next, I'll start with textures and figuring out what the hard and soft edges of Baby Groot will be. I'm doing all of this on separate layers. The reason we do this is because when there are changes that need to be made, not everything in the design is flattened, and I can adjust a layer as needed. I'll use hue-saturation layers, adjustment layers, and curves layers to start putting some volume into the flat shapes I've been working with. This helps develop the form. As I'm making these adjustments, I'm looking at photo reference of trees and elements in nature to see how the light is hitting the bark, how the shadows turn into the light. Sometimes you can use these layers to add warmth in certain layers without having to repaint. It's additive, but it's a great way to make the process go a whole lot faster. We try to be as efficient as we can, and this is a fairly quick way to work.

#6 BASIC FORM

Then I start adding layers to see what elements on Baby Groot will jut out from the basic form. Baby Groot has these intertwining vines that make up his anatomy, which contrasts with the hard edges of the bark on top of that. I'm layering these elements together on top of that base layer that I flatted. This way, I can make sure that the silhouette of the character continues to stay intact, even though I'm adding elements on top of it. Again, it also makes it easy to change should the director or the producers not like the shapes of the paneling I'm creating.



#7 LAYERING

Layering and layering — that's the process with a character like Baby Groot, adding different textures in different groups and seeing how they interplay with each other. In some instances, I'm creating my own textures. In others, I'm looking at textures from nature and utilizing those. Both the adult and the baby Groot have a lot of textures and lines that are inspired by balete trees found in the Philippines. They have a very distinctive look with the roots incorporated into the trunk of the tree.



#8 ACCESSORIES

Baby Groot has these small branches that extend out from his body — little twigs that I put onto a different layer. A little bit goes a long way with these, so I'm playing with the number of twigs and the volume of each of them. It's a bit of a trial-and-error process as I create these layers on top of each other, move them around, turn them on and off — just seeing what looks the best and what it makes me feel. It sounds very random, but it's not. All these added elements have to flow through the body properly. I have to be mindful of Baby Groot's front and his back to make sure the audience understands he is facing us or turned away from us. There has to be landmarks and lines that are instantly readable.



#9 EYES

Baby Groot's eyes were particularly important. I watch a lot of Japanese anime, and that really influenced the layout of his face. I gave him a rounder face and separated the eyes just slightly — making everything look a little wider, making sure that his eyes were able to show the maximum amount of emotion at all times. But the entire time that I'm making these adjustments, all that I'm seeing is my son's face. I know that it's cute.







THE MARVEL STUDIOS KEYFRAME

The keyframe is an essential part of the Visual Development process. In one panel, a simple, striking story is told — conveying as much information as possible and immediately eliciting a strong emotional reaction from viewers. Among the most memorable: Captain America leading the charge across a World War II battlefield as bullets ricochet off his iconic shield. The Hulk having finally met his match in a Hulkbuster that grips his fists in a match of strength. Iron Man with his back to the wall facing off against those he believed to be his allies. These works of art are often seen as prints, used for marketing and the covers of books and more.



RYAN MEINERDING: The purpose of a Marvel Studios keyframe is to essentially create a frame of the film before the cameras roll. Most films ordinarily tell this type of storytelling through storyboards. But with that method, to get a full story across, you need about 50 panels or more of drawings. What we're trying to do is condense this linear storytelling into one image that conveys the entirety of a scene — or, better yet, tells the story of a larger sequence. That consolidation is one of the most difficult parts of our jobs. Trying to pick the right moment, at the right angle, with the right lighting and the right colors — putting all these elements together into one image can be a daunting task. But when done correctly, it can quickly and authentically convey such a wealth of knowledge and evoke the appropriate feeling.

RODNEY FUENTEBELLA: When I first started in VisDev, I was hired to paint keyframes. I didn't realize just how hard that was going to be. I thought that a keyframe was just a cool way to show a shot so that the production designer can build from it. But I quickly learned from Ryan and Charlie that the Marvel Studios keyframe illustration was about storytelling. And I really enjoyed that challenge; it was something new to me. It wasn't a tool to help build sets — it was a tool to advance the story.



ANTHONY FRANCISCO: The context of seeing the design within a specific moment helps the viewer see and feel the story. Above all else, we're trying to elicit an emotional response first and foremost. Emotion helps people connect with the character we are designing; that emotion carries over to the film as well. When I was working on *Ant-Man*, I watched a lot of nature programs on ants. They were fascinating. At one point, a program mentioned the fact that ants love sugar water. That knowledge inspired me to paint Ant-Man training an ant almost as if it were a pet. When you're training a dog, you give them treats — you show them love — so I painted Ant-Man holding sugar water in his hands, feeding it to the ant. I wanted to convey that warm friendliness in the training process to show the bond between the two. It also made the ant appear approachable and like a pet. That moment made it into the final film. It was awesome to contribute that.

RYAN: The most important element in a Marvel Studios keyframe is how it conveys drama. Does that story moment read? Can I feel what the characters are feeling? Do I feel the action? If the scene is meant to be scary, does it feel scary? If the moment is meant to be happy, does it feel happy? Nothing should need to be explained about a keyframe.



ANDY PARK: They take our keyframes and plaster them all over the walls in all the departments on the films, from visual effects to the production meeting rooms, because those images serve as inspiration for the direction the movie is heading toward. It might not always be one-to-one compared to the end product, but it helps everyone to be united in vision.

ANTHONY: I always try to think of the most emotional moment to paint. There's a certain level of emotion to all our paintings, but it's especially evident in the keyframes. When we look at art, just as we look at nature, we immediately feel something about what we're seeing. What is it about a tiger that makes it feel ferocious? The angled lines? The shoulder blades? If the painting is a thrilling chase, what makes the viewer immediately feel that rush of adrenaline? If I feel a certain way about the design, perhaps it will resonate the same way with the audience. That sets our keyframes apart from others. The composed keyframe is dynamic compositionally. It tells a story. But at the same time, it evokes emotion from the viewer.



ANDY: For us, it really does go back to illustrators like Ralph McQuarrie, because those keyframes that he did back in 1977 were the proof of concept that helped sell *Star Wars*. And that's exactly what we do. Marvel Studios has gone back to that. In the decades since *Star Wars*, keyframe illustrations became more industrial in assisting the practical elements of filmmaking. Everything Visual Development does is about the heroes. It's about the characters. We are selling these iconic moments that are all about story and less about settings. They're almost like covers to comic books. They tell stories, and they draw you in to read the rest of the book. That's how I, and so many others, got into comic books. We went into a store and saw *Iron Man #200* and that cover showing Iron Man's new Silver Centurion armor fighting Iron Monger, and we were sold.

CHARLIE WEN: How do we make an audience feel the way I felt when I first read the comics? Because when I was a kid and I was reading comics, I wasn't seeing each panel in just the way that they were drawn. My imagination was inspired, and I'd see these images in my head. You see the images on the page, close your eyes, and then you have your own take on it. I feel like that's what we're trying to re-create. That's what we're trying to put onto the screen: the images we've all internalized when we've dreamed about these characters. And that's when it works the best.

DOS AND DON'TS

How can you be a great artist (outside of having the talent and knowledge to render work realistically)? How can you put yourself in the correct mindset to be an effective and productive Visual Development artist, no matter what industry you work in? Here are some artists' suggestions of things you should do and things you shouldn't do.

DO — BE PASSIONATE, PATIENT, AND KIND!

RYAN MEINERDING: Be passionate about what you're doing. Care about what you're creating and own it. You should feel like the material you pitch is the exact right direction for the design. You should feel like what you're presenting is the way things should be. From my point of view, the more time an artist spends figuring out a direction and generating art that gets one thing exactly right conveys understanding and passion far more than presenting hundreds upon hundreds of options. Your focus is something that people can respond to more than the amount of work you've produced.

ANTHONY FRANCISCO: Be confident. But be kind. Be mindful of the type of person that you are. Being a good person will always get you far in my book.

KARLA ORTIZ: Paint with intent! I've seen too many students haphazardly paint in a way where they're not paying attention to the brushstrokes they make. Later on, they get frustrated with the painting because it did not come out quite right. But of course this happened! It's like falling asleep at the wheel! The key to making beautiful work (also to improving as an artist) is making sure you think about each brush stroke you make and why. By doing so, you become mindful of why certain aspects of your painting needs to be portrayed in specific ways. So if you ever feel lost with your painting, get away from distractions and start painting with intent!





DO — ABSORB AND ENJOY AS MUCH ART THROUGH AS MANY AVENUES AS POSSIBLE.

JACKSON SZE: There are so many art books out there. Artists are on social media and various portfolio websites. I'd also recommend digging deeper and finding the inspirations of your favorite artists. What is it that's fueling their creativity and design?

RODNEY FUENTEBELLA: Look all around you at the art being created. Take in the talent of those around you. And be inspired by it all. Yes, a lot of the work being done can be intimidating, but instead of being hindered by such amazing works, be motivated!

DO — KEEP A GOOD WORK-LIFE BALANCE.

KARLA: A wise man once told me, rich lives lead to rich imaginations! In your quest of becoming a wonderful artist, remember to make time for your loved ones, for your hobbies, for exploration, and for your imagination. Sometimes you do have to just sit down and do many long hours of work (more than eight hours!), but let this be the exception, not the rule. Work-life balance is important for artists, because a refreshed mind is a mind that is more willing to be creative!



DO — MAKE SURE YOUR DESIGN FEELS APPROPRIATE TO THE SOURCE MATERIAL WHEN ADAPTING A CHARACTER TO A NEW MEDIUM.

RYAN: Does it feel like you’ve actually taken a known character and done something new with it? At the same time, have you done that character justice? Does it look like something that will fit within the world that may or may not already be established?

DO — TAKE A CHARACTER IN VASTLY DIFFERENT DIRECTIONS IF YOU’RE GOING TO PRESENT MULTIPLE VERSIONS IN A REVIEW.

RYAN: When looking at iterations of design, there needs to be reasoning behind each version you’ve created. I want to see that you understand that a conceptual direction is different than a visual alteration. I don’t want to see four different visual solutions to the same concept, which is something that happens all the time. Visual artists think they can solve things by changing something red to blue. Sure, you’ll need to do those variations eventually, but that’s not what’s difficult about our jobs. We need to understand the needs of a story. We need to find a conceptual direction that’s going to transition that character into something that feels real.



DO — MAKE SURE THAT IF YOU’RE INCORPORATING YOUR CHARACTER INTO A KEYFRAME, THE STORY IS CLEAR AND DOESN’T NEED MUCH ELABORATION (IF ANY).

ANTHONY: Clarity of your keyframe is essential. You don’t have to explain to the viewer what is going on.

RODNEY: A lot of the time, I cannot be present to explain what is going on in the keyframe. It needs to speak for itself.

DO — MAKE SURE YOU UNDERSTAND THE PURPOSE OF THE COMPOSITION AND THE IMAGE YOU ARE CHOOSING TO PAINT.

JACKSON: It is important to understand what you want to convey with your image. Are you focusing on showcasing the environmental design? Or are you trying to tell a story moment between characters? Knowing the story is a big part of finding the appropriate composition. If the storytelling is unfocused, it can lead to a weaker image where nothing is emphasized and the message is diluted.

KARLA: Try to always tell a story and give your characters a personality when making them! Even if it’s as simple as a slight shift in posture or an interesting decoration they wear! Everything and everyone comes from somewhere, and remembering their history will help make your paintings feel more natural and tangible.

DO — PAY CLOSE ATTENTION TO THE POSE IN WHICH YOU ARE PRESENTING YOUR CHARACTER, BUT KEEP IN MIND THAT YOU ARE SHOWCASING THE DETAILS IN YOUR DESIGN.

ANTHONY: Your character can be posed in a way that's still dynamic and shows character, but you need to be able to see the detail. It's something that's very difficult to do, because a simple twist of the body or where the character's eyes are looking can make quite a bit of a difference.

ANDY PARK: Think at great length about who this character is and how they would stand and present themselves. Would they stand with confidence or be a little timid? There is a danger in over-posing characters. Especially for those coming from a comic book background, there's a temptation to really play with the pose of your character. You may think it's boring to have a character just standing there upright. But the reasoning behind having them stand straight up and face the camera is because we need to see what the character actually looks like. If the body is in a pose where it's turned away from the field of view, it will look super cool...for a poster. But nobody can actually see what the details of the costume look like. In that case, you aren't selling the character design. You're selling the character. For a character design, the character needs to be completely visible.





DO — DESIGN YOUR CHARACTER FROM BACK TO FRONT, AS IF DESIGNING THEM HOW THEY WOULD GET DRESSED IN THE MORNING.

CHARLIE WEN: When I'm looking at artists' portfolios, I like to see their thought process. I want to see examples of their problem-solving on the page. I want to see that the artist was thinking about the materials they're using. I want to see that they've thought through every component of their dress and there's a reasoning behind each part. That thought process is a key supporting role, especially in designing for films and television. You have to be able to understand some of the inherent problems to filmmaking and ensure that your designs are solving those issues.

ANTHONY: You don't need to design their underwear, but think of your character in the layering they would get dressed in. Start with their skin, then work your way to the outermost layer. They wouldn't put their armor on and then put something bulky on top of that. These are real people. They still have to be able to stand and move.



DO — TAKE THE TIME TO FINISH AND POLISH YOUR RENDERINGS. ONLY PRESENT WORK THAT YOU FEEL IS COMPLETE.

RYAN: It doesn't have to be fully, beautifully rendered. But it has to be beautifully drawn. It has to be beautifully painted. There should be a certain amount of polish. Do the textures and the materials feel like they have enough contrast between them? Do they feel accurate? Do they feel like they're actually serving the design?

ANTHONY: Look at how directors light scenes in your favorite movies. Take note of how they make you feel. Lighting can immediately convey tone. Know the values and the value hierarchy within your composition. What is dominant in your painting: the highlights or the shadows? The light or the dark?

ANDY: Fundamentals go a long way. Showing an understanding of lighting and color is the first component of your artwork. Check if the proportions of your character are strange, like whether the head is too big or the anatomy is incorrect in certain areas. Anything that will distract someone viewing the painting from what they should be focused on can be an issue. The character and the design should be the focus. If a viewer gets stuck on the rendering, the lighting, the pose, or anything in the fundamentals of the illustration, they will be paying attention to the wrong details.



DON'T — HEAVILY STYLIZE OR OVEREMPHASIZE. BE REALISTIC.

CHARLIE: There are artists like H.R. Giger who have a very distinctive style. Productions will want to hire that artist specifically for their specialized flair. But it may not work for other things. Make sure your painting stylistically matches what you're attempting to achieve or the job you are trying to win. If you want to present commercial designs for entertainment, it's more about problem-solving.

ANDY: As artists, we all have a style, or we gravitate toward certain sensibilities. I remember when I made the transition from drawing comics like *Uncanny X-Men* into concept art for films. I knew it would be very difficult to get a job in film by only showing them my comic book work. In concept art, you need to show what the final product is going to look like. At Marvel Studios, we're trying to create a realistic interpretation of what that art will appear to be on film. It has to look photo-real. It has to look like the actor — which can be challenging when an actor hasn't been cast for a particular role. The likeness and the anatomy have to look real and have realistic proportions. It can't look like a cartoon or a stylized human being.

DON'T — FORGET TO TAKE BREAKS.

KARLA: Don't forget to take breaks! Too many of my peers (myself included) have had arm and hand injuries due to the long hours of work! What we do is absolutely brilliant and easy to get lost in! However, be sure to take care of your most important tool: your body. Do so by taking breaks, exercising, doing stretches, and so on. This will help prevent injury and ensure you'll have a long, happy, and healthy career.





DON'T — GET FRUSTRATED AND GIVE UP ON YOUR PAINTING.

KARLA: Just because something isn't turning out quite right (and this happens with every painting) doesn't mean it's your fault or that you are a failure. The work that we do will always have its ups and downs. Professionals recognize that the frustration is a part of the creative process, but more importantly, that frustration is an emotion that will pass! The key to overcoming it is taking a moment (sometimes a quick break!) and figuring out *why* it's frustrating. Paintings can feel off for all kinds of reasons, but always double-check your fundamentals (anatomy, composition, perspective, values, color, etc.)! This is a wonderful starting point to figuring out what is off in a painting! So breathe, take a break, think, and finish that painting!

JACKSON: Concentrate on anatomy and figure drawing. It's what we do almost all the time. Here at Marvel Studios, we tend to portray more realistically proportioned humans with an emphasis on character or actor likeness. We do idealize and push some of our characters in our images to make them look more heroic, but only to a certain extent.

ANDY: Look at some of the great American illustrators like Dean Cornwell, Norman Rockwell, or Mead Schaeffer for inspiration. That said, you do need to show your ability to design. The greatest portrait illustrator may not be able to design a functional costume with a cool look. You need to show your design sensibilities all while having an ability to paint realistically so the viewer doesn't have to use his or her imagination on how the character will look in the film. It's about making a character come alive in front of their eyes.

ANTHONY: Practice portrait painting with heavy emphasis on likeness, and focus on showing emotion through those paintings. And make sure the clothing you're painting onto your character looks real and as if it fits them. Know how to render cloth and the folds and stretches that are natural when a person moves. When a knee is bent, where is the pinching on the fabric of the pants? Exercising and honing those details are crucial for making your painting look realistic.





DON'T — PLAGIARIZE, PHOTOBASH OR STEAL MATERIALS FROM OTHER PHOTOS OR ARTWORK.

RYAN: We all try to do homages and pay tribute to the comics and things we love. But if I can clearly see that you've taken something that's recognizable and altered it in Photoshop, that's an immediate red flag. Stealing someone else's composition or pose wholesale is unacceptable. Photo-comping is a big turnoff for me as well. If somebody uses a photograph for a background because they didn't have time to photo-realize it, that's occasionally okay. Everyone's under time constraints and deadlines. One of the biggest things for us in VisDev is ownership. There are so many ways to pass off someone else's work as your own these days. Make sure it's clear that the image came from you.

KARLA: Remember, that which you are not painting, you are not learning! Before you go and reach out for a picture to bash on top of the subject in your painting, ask yourself, do you know how to paint this subject? If the answer to that is no, then give yourself the opportunity to paint it. You'll be amazed at how much you'll learn from painting everything yourself!

JACKSON: Strive for originality in your design. We also appreciate artists who can create most, if not all, of the image themselves, be it through painting or sculpting. Photobashed work that is not integrated well can unnecessarily distract from the design.

RODNEY: Don't present work that looks as if it's been regurgitated, for lack of a better word. For example, if you're designing Iron Man armor and it looks just like the armor that Phil designed, there's no innovation. I love to see things that are creative and inventive and that pop — that make me realize there was something about a character that I had never noticed or thought about before.



DO — CONSTANTLY CONTINUE TO PRACTICE AND WORK TO HONE YOUR SKILLS.

RODNEY: I've been doing this for years, and there are still certain poses that I just can't get quite right. There are days when I'm frustrated and don't feel like I can accomplish what I've set out to do. It can be depressing. You have to really work hard and hone your craft. Practice how to render, how to draw people, how to draw faces, how to enhance gestures, sculpting mech anything and everything you can. Study hard to build that library of knowledge in your head. You want it to happen overnight, but it won't. With a good work ethic, a lot of passion, a lot of practice, and a growth mentality, you have the ability to do great things. So go out there and do them!



GLOSSARY

aesthetic — the base guidelines that define the design or the artist’s visual intention.

anatomy — the most basic structure of your design; in humanoids, referring to the proportions of their skeletal structure and musculature composition. Understanding of anatomy is essential to lifelike figure drawing and painting.

animatic — a simple animation, sometimes only a few frames, meant to previsualize a concept; in character design, especially for mechanical or robotic beings, animatics can be helpful in demonstrating functionality.

archetype — an understood pattern that is replicated or duplicated reliably. Archetypes are present in design, history, behavior, and methodology.

articulation — the connection point or pivot point on joints occurring in moving objects. Articulation can also refer to the movement of mouths into distinctive shapes during speech or emotion.

augmenting — the additive nature of incorporating more (or less) of a supplemental principal or design pattern into a painting.

CMYK — cyan, magenta, yellow, key (black); the traditional offset four-color printing process.

RGB — red, green, blue. The traditional color model used to reproduce colors in video or photography using additive, or overlapping, light. RGB is used for on-screen applications rather than CMYK because red, green, and blue are the three primary colors visible by the human eye. As a rule of thumb, remember: CMYK for printing, RGB for anything to be seen on-screen.

color tones — the lightness, darkness, warmness, or coolness of a particular color; also referred to as tinting or shading.

comp/composite — in visual effects, the combination of two images into one; in design, a finalized, “flattened” painting presented for approval or printing.

deliverable — the final product to be turned in for printing, production, or archiving. Character artists may find they have several deliverables for a project, including a full-body composition, back view, close-up detail, and three-quarter profile.

digital double — the fully computer-generated and animated character that replaces an actor during the postproduction process.

dpi — dots per inch. In printing, dpi refers to the density at which dots or pixels are distributed, often in reference to the resolution or clarity of an image. Final deliverables composed and delivered at a high dpi can be printed at larger sizes without losing fidelity.

environment — a character’s physical surroundings.

grounding — in the adaptation of characters previously existing on the page to live action, elements of design that connect the character more closely to the physical world with which we are familiar.

highlights — the intensity and luminosity at which light is present.

homage — paying tribute to or reflecting a quality admired within another work of art in that which you are creating yourself.

icon — the visual representation of a character that has become symbolic over a period of time. In popular culture, the icon is often familiar or even nostalgic to the viewer.

industrial design — in comparison to character design, the creation and design of physical goods, often for manufacturing.

landmarks — critical points in a design without which the character would not be whole. They are often the first places to which an audience member’s eyes are drawn.

layer — in design, the overlapping of components, such as clothing or panels in a suit design; in Photoshop, a separate canvas on which the artist can work over a base layer without altering what is underneath.

lines — the flow of a design, i.e., the natural movement of the eye as it is drawn from one focal point to another in a design.

mask — in the world of heroes, a facial covering that provides physical protection or conceals a secret identity; in design, “masking out” refers to covering a certain area for selective modification.

maquette — a physical statue of a character, used as a preliminary concept for approval or visualization. This can be created whole cloth by a sculptor or 3D printed from an artist’s 3D design.

modeling — creation of a character or form in a 3D space using geometry or through virtual sculpting.

motif — a distinctive pattern, element, or concept present throughout multiple iterations or visible through repetition. Artists can also use this word when discussing patterns.

orthographic illustration — the illusion or representation of three dimensions in a two-dimensional medium, often achieved by illustrating or painting multiple angles to a three-dimensional object across several views: top, bottom, front, back, sides, etc.

paint-over — bringing a photograph or frames from the final film into an illustration tool such as Photoshop and painting over the design to solve a particular problem.

photobash — combining several photographs into one piece.

portfolio — a collection of artwork representative of an artist’s talents and abilities.

proportion — the comparison of physical features relative to one another: shoulders to chest, torso to legs, head to body, etc.

rendering — in illustration and painting, adding details, including shading and lighting, and fine-tuning.

sheen — a material’s gloss or reflective properties; also sometimes referred to as “luster.” Materials that have a glossy sheen often reflect light and are mirrorlike. Materials that have a matte sheen are often light absorbing.

silhouette — a visual representation of a person or object’s form as a whole; essentially the outline or impression of a character visually in its most basic shape.

symmetry — the similarity (or dissimilarity) of proportions or design. Designs that are symmetrical are often similar, uniform, and consistent in their visual presentation. Designs that are asymmetrical are often unequal, inconsistent, and erratic in their visual presentation.

texture — the feeling of a material based on its smoothness, roughness, pattern, or arrangement. Texture can also refer to the combination of elements to create an overall feeling or mood.

thumbnail — in drawing and illustration, quick pencil sketches done to get an idea onto paper as quickly as possible; called “thumbnails” because they are often relatively small in size.



CHEAT SHEET

If you're in a hurry, or if you're picking this book off the shelf in the library and looking for some quick tips, this is the page for you. We thought it would be helpful for you to have an instantly accessible "cheat sheet" right here that you can quickly turn to when you need to remember some vital stats as a Marvel Studios artist!

STORY IS KING.

STARTING POINTS FOR A CHARACTER SHEET:

- The Design Challenge
- Archetype
- Environment
- Tools of the Trade
- Story Moment(s)
- Complexity of Character

VARIABLES TO BE MINDFUL OF IN ADAPTING A PREVIOUSLY EXISTING CHARACTER TO A NEW MEDIUM:

- Character Logline
- The Previously Existing Icon
- The Story Moment

THE BASIC COMPONENTS OF A CHARACTER DESIGN:

- Value Shape and Separation Design
- Material Design
- Distribution of Details/Focal Points or Centerpieces to the Design

DELIVERY SPECS AND DIMENSIONS FOR THE IDEAL MARVEL STUDIOS PORTRAIT (IN-HOUSE VISDEV SPECS FOR PRINTING 13X19):

WIDTH: 3000 px

HEIGHT: 4000 px (portrait orientation)

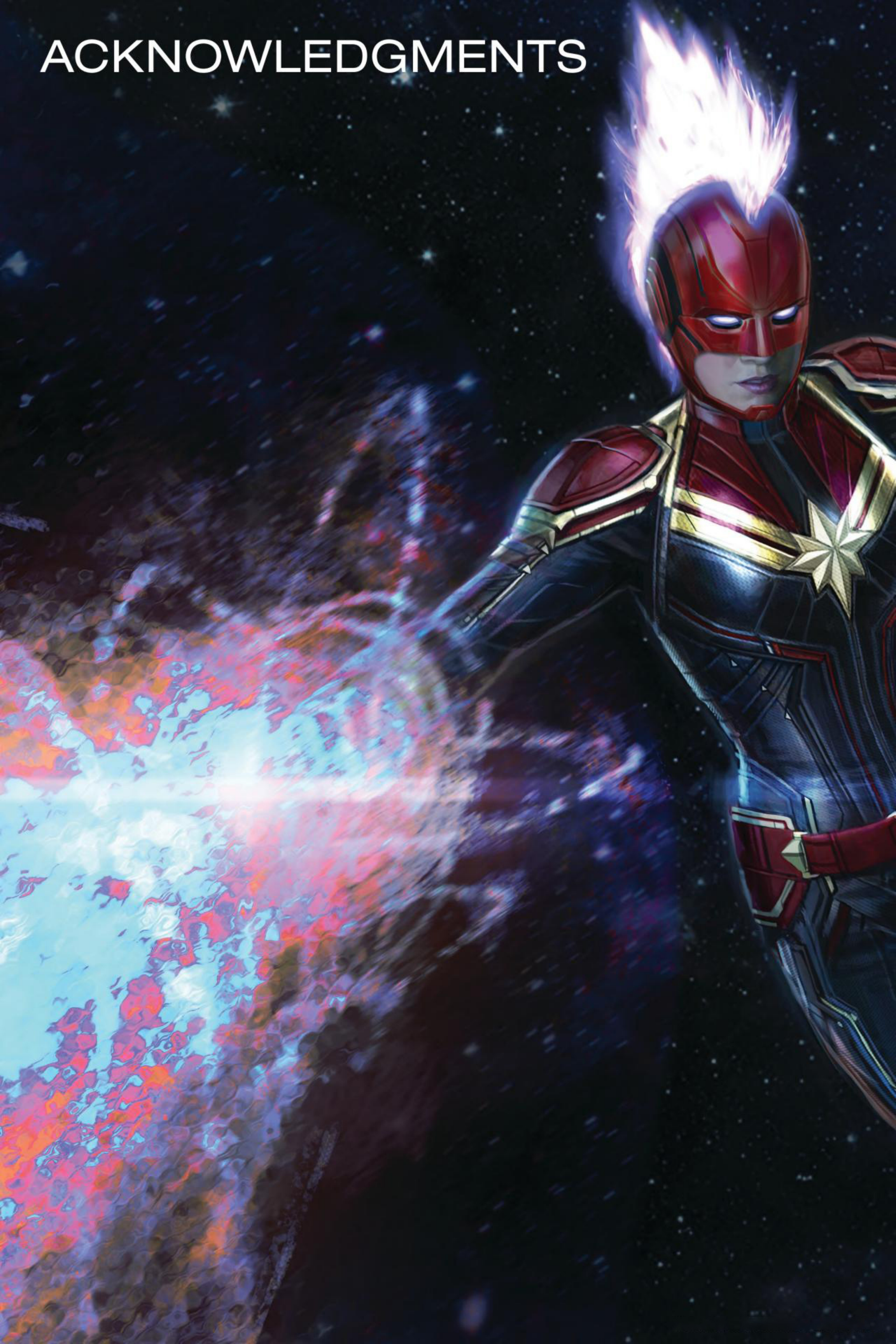
RESOLUTION: 300 dpi

(tends to be irrelevant since we're working with pixels)

COLOR MODE: RGB

**AND SERIOUSLY DON'T FORGET,
STORY IS KING.**

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LEARN FROM THE MASTERS WHO VISUALIZE THE MARVEL CINEMATIC UNIVERSE!

The industry-leading concept artists of the Marvel Studios Visual Development team open their doors and invite you inside to discover the incredible secrets behind the creation of iconic designs for all your favorite movie characters—from Iron Man to the Hulk, Captain America to Captain Marvel, Black Widow to Black Panther! Peerless pros share their tips, tricks and tools of the trade and guide you step-by-step through the collaborative process of bringing Marvel's comic book legends to life in all their cinematic glory.

If you want to create heroes and villains that look like they belong on the big screen, then this is the book for you!

MARVEL

