

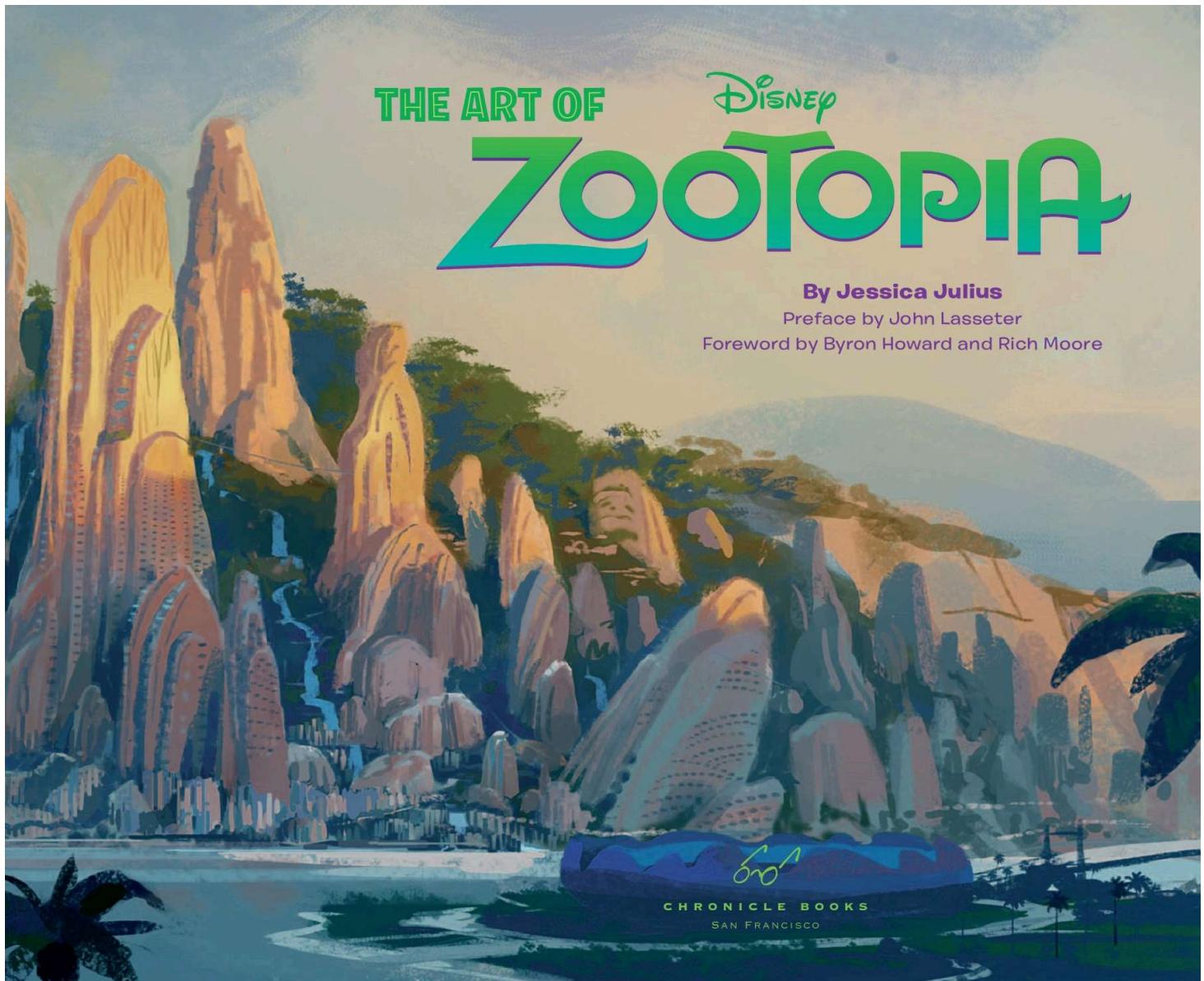




THE ART OF  ZOOTOPIA







Creating an animated film involves years of inspired collaboration and the highest levels of artistry. Before the final rendered images of *Zootopia* were seen on screens around the world, the following artists contributed their talents to the digital images included in this book:

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Byron Howard Rich Moore

## WRITER &amp; CO-DIRECTOR

Jared Bush

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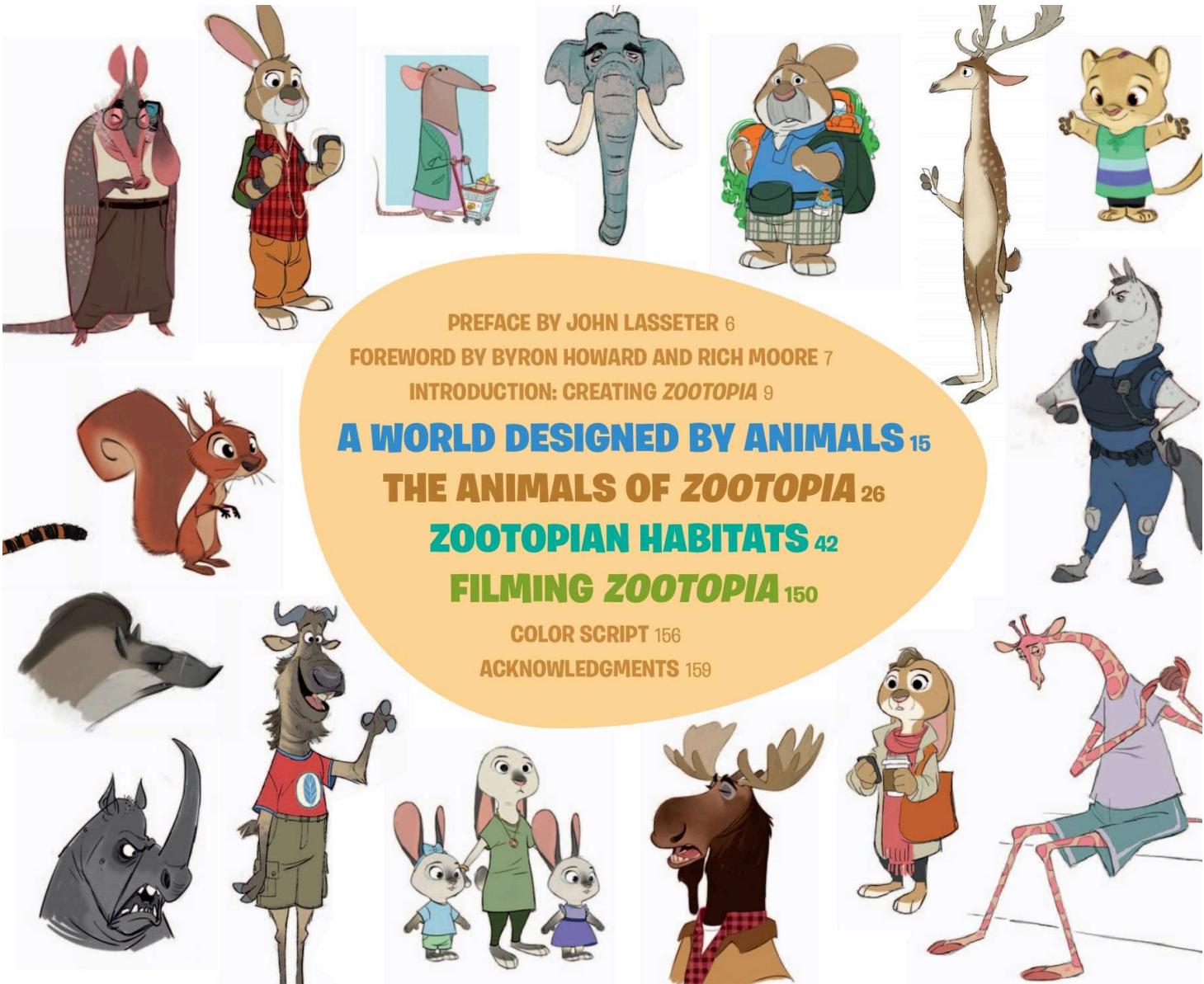
Cory Loftis (design print) / digital

Page 1: Byron Howard / digital

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Pages 4-5: Cory Loftis, Borja Montoro, Shiyoon Kim,

Nick Orsi, Bill Schwab, Dale Baer / digital, graphite



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# PREFACE

I have always had a deep love for Disney animated films, where animals talk, walk upright, and wear human clothing. Shortly after *Tangled* was released, I discovered that film's co-director, Byron Howard, shared this affection. Movies like *Robin Hood*, *Wind in the Willows*, and *Pinocchio* are so entertaining. These kinds of films are classically Disney, but we hadn't done one in a while, and we were inspired to make such a film for modern audiences. Byron is a funny, quirky, charming director, and the ideas he pitched were so fun and appealing. We also wanted to create a Disney animated feature that pushed the filmmaking and storytelling to the highest possible level. With that in mind, Byron and his team began to develop *Zootopia*.

From the beginning, I was so excited about what this all-animal world could be. Most of the time, stories in animal films are really just human tales—if you replace the animals with humans, it would be exactly the same story. So we brought in Rich Moore to shepherd the storytelling. He always turns the expected on its head and comes up with ideas that are surprising and fun. I challenged the filmmakers to imagine *Zootopia* as a world that is truly and uniquely animal, where there are no people and mammals have evolved to human levels of intelligence. For inspiration, I encouraged them to dive deeply into research on animals and their habitats.

As with the story, the filmmakers did not want to design just a human world with animals living in it. *Zootopia* had to look like a realm created by animals, for animals. Yet it also had to be relatable to audiences as a big city. The visual development team, led by production designer Dave Goetz, researched animal habitats, asking, Which mammals live in each place? How do they live? What is each environment like? Inspiration came when they realized the city of *Zootopia* could parallel melting pot neighborhoods of human metropolises like London and New York. But rather than Chinatown or Little Italy, in *Zootopia* there is Tundratown and the Rainforest District, and the animals built infrastructure to support the diverse climates. The artists applied the research brilliantly, creating a world that is logical yet appealing and unique.

The team always sought to find the familiar while also being animal-specific, and Dave and Matthias Lechner, the art director of environments, brought so much imagination to the fun details that constitute *Zootopia*. One of its foundations is the idea that public spaces must be accessible to everyone. A mouse should have as equal access to a building as an elephant. So everything—doors, escalators, walkways—is constructed so all types of mammals can safely live together without fear of being squished or stepped on. Door handles that hooved animals can open as easily as animals with paws, or traffic signals that animals of all sizes can see, are essential to making *Zootopia* functional and believable. The city also has vehicles of all kinds, so we brought in the brilliant J Mays, former head of design at the Ford Motor Company. He came up with entertaining solutions to the unique issues of this world, from trains that have double-height areas for giraffes and rows of seats for smaller creatures beneath the bigger animals' seats, to automobiles that are super tiny for mice or have extra-heavy-duty suspensions to carry the weight of elephants and rhinos.

The characters themselves also had to be distinctively of this all-animal world. They had to talk and walk upright, yet maintain the essence of the animal itself. Cory Loftis led the character design team, and every department in the pipeline worked together to study the way, say, a camel versus a bear walks, or how a bunny versus a fox moves. The character team captured each animal's individuality on-screen.

The challenge of creating a talking-animal film that would raise the bar for our artists and storytellers pushed everyone in the studio to their highest levels of achievement. Our dream is that audiences will fall in love with *Zootopia*. We hope every scene will be surprising and funny and make you think, "of course that's what a DMV or a train would be like in a world of animals!" I believe the cleverness and fun add up to make *Zootopia* one of the most entertaining films we've ever made. At its heart, it's pure Disney. But it's also unlike anything seen before in animation.

—John Lasseter

# FOREWORD

*Z*ootopia had to be something new. We knew that from the beginning. There have been dozens of animated animal films, many from our own studio, so we were determined to make our film unique by asking ourselves one big question: Who created this world?

Zootopia is a world created entirely by animals, for animals. Walt Disney Animation has a wonderful legacy of films where animals talk and walk upright, from *Pinocchio* to *The Jungle Book* to *Robin Hood*. Our love for those movies inspired us to make a film like that for today's audiences. But figuring out what, exactly, this world, its creatures, and its story would look like was its own evolutionary process. The talents of hundreds of people, and many thousands of ideas, all came together to create a film that we hope will stand alongside those Disney classics and open up new worlds for our audiences.

Initially, we envisioned Zootopia as a futuristic, idealized City of Tomorrow. But through our research, we came to understand that cities are a reflection of their inhabitants' history and lifestyles, and that Zootopia had to evolve as a human city does. It had to have layers built up over time to make it feel like a place that truly exists. John Lasseter challenged us to find the cool details that are specific and unique in this world, which would help make *Zootopia* so fun and appealing. Practical needs like accommodating animals of all sizes are solved with the design of multiscaled buildings and trains. Real-world biological details, such as the fact that in nature prey animals outnumber predators ten-to-one, affect how the characters behave and move through their lives. Audiences also need to relate to what's on-screen in order to feel truly immersed in the film's world and invest in the characters. They should recognize their own experiences, but with an animal twist. So, of course the DMV is staffed by sloths! All of this creates those extra layers to make Zootopia feel like a real, functional city and a believable animated world.

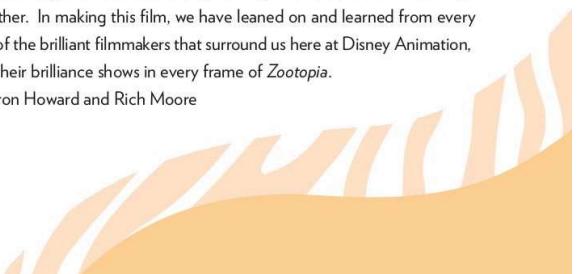
The Zootopia team did months of research: visiting zoos and museums, talking to experts in multiple fields, even travelling thousands of miles to observe wild animals in the grasslands of Kenya. We then distilled all we had

learned—about how human cities grow, what creatures need when they're gathered together in large populations, the personalities of different animals—into the soul of this all-animal world. Zootopia quickly took on a life of its own, and it was bigger and more alive than any of us had ever imagined. The city has thousands of elements, from multiple environments like desert, rainforest, and tundra to mammals of all kinds, in every possible size, each with distinct types of fur. It also has all the things that make human cities distinct—a blend of ancient and modern architecture, lots of vehicles, and dust in the atmosphere.

Over the course of four years, the film's story changed drastically. What began as a 1960s-era spy caper morphed into a mystery set in the present day underscored by a theme of how bias affects all of us. But our artists were always resilient and so steeped in research that they were able to evolve their designs along with the changing story. A huge amount of amazing artwork for characters and environments was created. Many of these pieces got repurposed for other uses, but some of our favorites didn't end up making it into the film in the end. But in our minds, the city of Zootopia is a big enough place that it contains a lot more stories, locations, and inhabitants than can be seen in a single film. This book is a small way to showcase some of the remarkable art that doesn't appear on-screen, as well as the art that does.

*Zootopia* is a film about recognizing that our world is complicated, that life is complicated . . . for all of us. The film also says that the challenges we face each day are made bearable by leaning on one another and learning together. In making this film, we have leaned on and learned from every one of the brilliant filmmakers that surround us here at Disney Animation, and their brilliance shows in every frame of *Zootopia*.

—Byron Howard and Rich Moore





Matthias Lechner / digital

## INTRODUCTION: CREATING ZOOTOPIA

**W**hat if animals evolved to human-levels of intelligence and civilization? What if they lived in a world inhabited only by them? What would a city built by animals look like? These were the imagination-stirring questions that inspired Walt Disney Animation Studios' *Zootopia*.

*Zootopia* began as all feature films do at Walt Disney Animation Studios: as one of several different ideas pitched by a director to chief creative officer John Lasseter and president Ed Catmull. In the case of *Zootopia*, director Byron Howard (*Tangled*, *Bolt*) pitched six ideas, including an all-animal twist on the classic literary tale *The Three Musketeers*, a 1960s B-movie-style story about a six-foot-tall mad doctor cat on a deserted island who turned children into animals, and a film about a bounty hunter pug in space. "John loved the quirky quality of the 1960s world and the animal characters from the space pug concept," recalls Howard. "It was his idea to mesh the world of one with the characters of the other."

Howard began developing a new idea that blended those elements together. When he pitched his new take for the film, it had evolved into

an espionage story called *Savage Seas*. "The protagonist was a rabbit spy, very James Bond in nature, named Jack Savage," Howard laughs. "It was fun, but every time we pitched it, everyone always said that the first act, which was set in the animal city, was the most interesting part. So we lost the spy element, as well as the '60s vibe, and let the animal city inspire the whole movie." Howard kept the bunny character as well, and started brainstorming ideas for the other creatures that could populate this all-animal universe. "I kept drawing a fox character. Foxes are natural predators of rabbits, so I thought it would make a great buddy dynamic."

What began to emerge was a comedic detective story set in an all-animal city starring Judy Hopps, an optimistic bunny cop, and Nick Wilde, a scam artist fox. It would become the fifty-fifth feature film from Walt Disney Animation Studios.

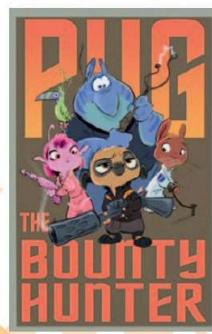
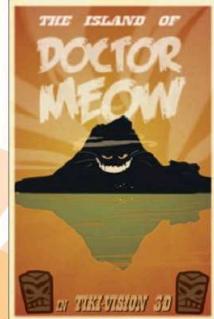
It was time to hire a screenwriter. Howard read scripts and met with a few candidates. Then he sat down with Jared Bush, a writer best known at the time for his work in television (*Penn Zero: Part Time Hero*; *All of Us*). "I knew immediately Jared was the guy. His writing is insanely smart, but it also has a playful quality that I love, especially in animated films. It was just so clear he was the dude to do this."

Bush was thrilled to work with Howard, on *Zootopia* in particular. "When I met Byron, it was like we'd known each other for a thousand years," he says. "Our sensibilities for this movie were so similar. Since I was a kid, I have obsessively loved animals of all kinds. When I was hired, it was still a spy movie, and my dad and grandpa had been in the CIA. And the pitch had all the elements that inspired me to become a screenwriter in the first place—real stakes, fun character dynamics, and an unbelievable, expansive new world to play in."

The film Howard and Bush were imagining was hugely ambitious in scope, and Howard knew he would need a crackerjack production crew to help realize that vision. With that in mind, Howard asked Clark Spencer



Byron Howard / digital





(*Wreck-It Ralph*, *Bolt*, *Lilo & Stitch*) to produce *Zootopia*, certain Spencer would lead and assemble just the right team. The two had worked together on *Bolt*, and Spencer was glad the chance to collaborate again finally appeared with *Zootopia*. "From the minute I heard the pitch, I was excited," he says. "It was a fantastic animated world, with engaging characters and a great script, but it also had a compelling message. Byron and Jared were talking about the challenging and important topic of bias. I deeply wanted to be part of this project."

The breadth and depth of *Zootopia* engendered many challenges, including an ambitious, emotionally complex narrative. To ensure the story's integrity during times of competing production needs, Howard, Spencer, and Bush asked veteran animation director Rich Moore (*Wreck-It Ralph*, *The Simpsons*) to come on board as director of the film, working alongside Howard. Moore was excited by the wealth of material presented by the world and characters of *Zootopia*. "It was beautiful and relatable and well thought-out. There was so much good stuff in the story and this world

that we had to be careful not to get lost in the mire, and to stay focused on Hopps and Nick's relationship. Theirs is just one story among many that can be told in *Zootopia*."

From the beginning, executive producer John Lasseter challenged the filmmakers to create a uniquely animal world, one in which humans never existed but animals had evolved to human-level intelligence. Lasseter encouraged the team to dive deeply into research before they began thinking about story, plot, or characters. The team spoke with zoologists, animal behavior specialists, and scientists who study animal evolution. They embarked on field trips to the Natural History Museum to examine animal pelts, visited the Los Angeles and San Diego Zoos and Disney's Animal Kingdom to study animal behavior and artificially created animal habitats, and even went on safari in Africa to observe animal behaviors in the wild. All of this research greatly inspired the film's story and visual development.

The visual scope and scale of the all-animal realm of *Zootopia* began to take form when the team asked Dave Goetz (*Tangled*, *Atlantis*) to come on as production designer. Says Howard, "We brought Dave on early. Evolving the city of *Zootopia* would have been nearly impossible without a production designer on the development team. Jared and I would discuss peculiar ideas we wanted to explore in the story, like animal scale, organic architecture, even the separate environmental districts. Dave took those ideas and turned them into images so compelling that they inspired us to make *Zootopia* even bigger and more immersive."

Goetz had been looking for a way to collaborate with artist Matthias Lechner for years. "I saw his website years ago, and his work was exceptional." Lechner, who was a German citizen living in Vancouver, worked on *Zootopia* remotely for two years, before eventually moving to California to become art director of environments. "I had wanted to work at Disney since I was a kid and I loved this project. It's my style of silliness and simple charm," says Lechner. Spencer adds, "Matthias is fast, his work is so detailed, and he's conscientious. He always has a reason for every decision he makes; it can't just look cool."

Since *Zootopia* takes place on a planet populated entirely by animals, it needed a spectacular character designer, so the filmmakers asked Cory Loftis (*Wreck-It Ralph*, *Wildstar* videogame) to join the team as art director of characters. "Cory comes from the video game industry, and the guy can do anything," says Spencer, who first worked with Loftis on *Wreck-It Ralph*.



Spencer continues, "When 2-D designs are translated into 3-D models it can be difficult to maintain their appeal—the charm inherent in a character that is artistically enjoyable to look at. Cory expertly managed that process." Howard concurs. "Cory is a mad genius. He designed hundreds of unique animals for this movie. And the 3-D model of every character looks like a beautiful drawing from every angle."

Loftis worked closely with the department heads of modeling, rigging, simulation, and look development to make the designs work, and he's proud of the entire design team. "There are so many characters in this film that it was tough for everyone to sit in one room to evaluate everything. So we worked in smaller teams, with the department supervisors for each character working together so everyone was on the same page." Loftis continues, "It's a huge movie and it would be out of control if we didn't trust each other."

The filmmakers set out to bring a variety of voices into the story and editorial departments. They hired Fabienne Rawley (*The Insider, Monster House*), an editor with mostly live-action experience, because, Spencer says, they liked her approach. "She is very thoughtful about how to edit films, and cares deeply about this project. Fabienne asks the right questions about the characters and story, and she's great with emotion." Josie Trinidad



joined the crew early on as head of story, her first time in the role. Bush was especially pleased to have Trinidad leading the story artists. "The concept of the film was a bit weird and dark for a lot of people early on. Prejudice is a tough idea to talk about. But Josie got it." They also asked Jim Reardon (*Wreck-It Ralph*, *Wall-E*) to be co-head of story. The pairing worked well. "Josie and Jim are a great team," says Moore. "Josie is always thinking about emotion and character, while Jim is focused on comedy and structure. They balance each other well."

Spencer and Howard selected Scott Kersavage (*Wreck-It Ralph*, *Brother Bear*) for VFX supervisor. Spencer, who had worked with Kersavage on

*Wreck-It Ralph*, says, "Scott's very smart and strategic, but he also deeply cares about the art." That combination was important because *Zootopia* had a fundamental artistic ambition that directly influenced a massive technical challenge—creating believable fur. "We have a cast of furry characters who we want to look believable, not like stuffed toys," says Kersavage. "We have foxes, bunnies, sheep, polar bears, porcupines, as well as animals like elephants and rhinos with thick, scaly hides. They all have fur, but each type of fur is different in how it moves, how light bounces off it, whether it looks coarse or fluffy. We had to develop a brand new tool in Hyperion [Disney's proprietary rendering software] for that."

The rest of the production team came together quickly. As co-heads of animation, Renato dos Anjos and Tony Smeed led their department with passion and tenacity. "Renato is able to articulate what the directors are seeking in the movement, timing, and believability of the animation," says Kersavage. "And Tony has a great sense of acting and emotion." Brian Leach and Nathan Warner were brought on as directors of cinematography, with Leach focused on lighting and Warner on layout. Both have strong backgrounds in photography but were new to leadership roles. "Brian and Nathan are impressive artists, and they're also good collaborators," says Kersavage. Together, Leach and Warner pushed boundaries in their departments, using new types of lenses, innovative camera movements, and lighting that captures dust or water vapor in the air to give a sense of atmosphere.

Spencer says his team-building philosophy is all about balance. "On this film, we worked with a lot of new people—new to the studio or new in their roles. You don't want everyone to be first timers, but it's also nice to give people an opportunity—just like Hopps gets her chance in the film as the first bunny cop on the ZPD [Zootopia Police Department]." Spencer smiles as he reflects on the crew. "We have a great team that really gelled. Everyone feels supported and enjoys what they're doing, which shows up onscreen."

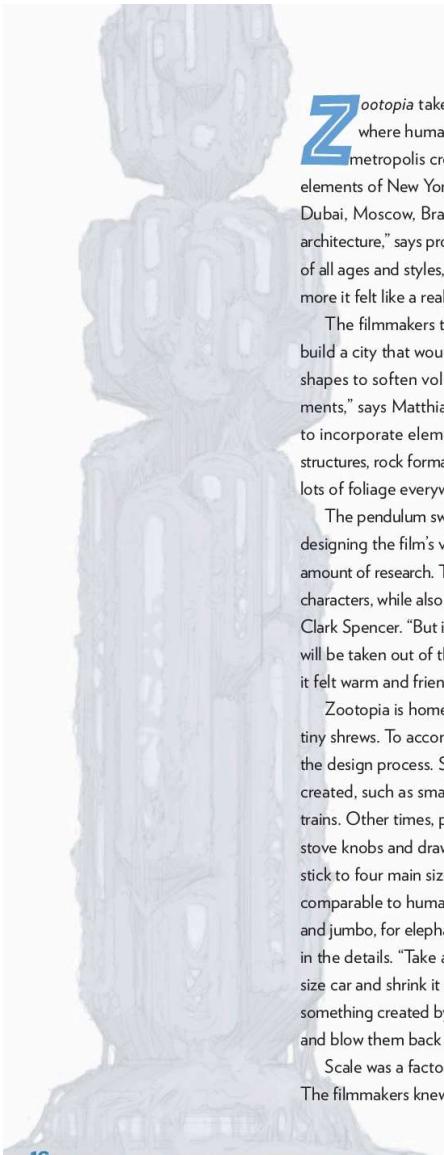
"This film has a lot of inherent challenges," says Howard. "Even so, I wanted it to have the playfulness I love in films like *Robin Hood*, *Monster's Inc.*, and *Charlie and the Chocolate Factory*. We're wrestling with big themes in *Zootopia*. But a sense of humor permeates everything because there are so many elements to play with—the scale, the variety of animals, the parallels between human behavior and animal experiences. It's a rich environment we hope audiences want to immerse themselves in."





# A WORLD DESIGNED BY ANIMALS





**Z**ootopia takes place in an all-animal parallel-universe planet where humans never existed. The city of Zootopia is a modern metropolis created entirely by animals, and it is a vast place. It has elements of New York, San Francisco, and Los Angeles, but also hints of Dubai, Moscow, Brasilia, and Berlin. "There's a richness and variety of architecture," says production designer Dave Goetz. "We included buildings of all ages and styles, because we found that the more we mixed it up, the more it felt like a real place."

The filmmakers thought a lot about how animals would design and build a city that would still be recognizable to humans. "We used organic shapes to soften volumes, and nature-based motifs to embellish environments," says Matthias Lechner, art director of environments. "We tried to incorporate elements that alluded to natural habitats, such as tree structures, rock formations, cave openings and burrow walls. And we added lots of foliage everywhere."

The pendulum swung in different directions as Goetz and Lechner were designing the film's visual aesthetic. "Dave and Matthias did an immense amount of research. They wanted everything to make complete sense for the characters, while also being a milieu we've never seen before," says producer Clark Spencer. "But it still has to be relatable to humans or the audience will be taken out of the film. The more abstract or futuristic it felt, the less it felt warm and friendly and appealing. We had to find the right balance."

Zootopia is home to mammals of all sizes, from enormous elephants to tiny shrews. To accommodate them all, scale played an essential factor in the design process. Sometimes multiple versions of the same object were created, such as small entrances within larger doorways, or multi-level trains. Other times, parts of items were blown up or shrunk down, such as stove knobs and drawer handles. Goetz and Lechner ultimately decided to stick to four main sizes: tiny, for mice; small, for bunnies; regular, which is comparable to human size and works for everything from sheep to cows; and jumbo, for elephants. They discovered that scale is often communicated in the details. "Take a mouse vehicle," says Lechner. "If you use a regular-size car and shrink it down, it just looks like a human car made small, not something created by and for mice. But if you take details like door handles and blow them back up a bit, suddenly it feels mouse-like."

Scale was a factor when designing the look of the characters as well. The filmmakers knew audiences would view Nick and Hopps as equivalent

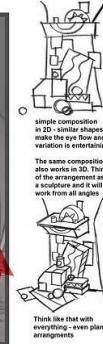
to human-size, so they set them as the standard and scaled everything bigger or smaller off them. One example of this is the characters' clothing. Says Michelle Robinson, the character look supervisor, "Mice are basically wearing doll clothes. But what does a t-shirt on an elephant look like? What's it made of? Do all the animals get their cloth from the same place? Do they have the same size sewing machines? Or do the mice have tiny tailors with tiny sewing machines?"

"Zootopia is a meticulously designed chaos," says Goetz. "Everything has to function properly." Windows have to open. Drawers have to close. Clothes have to fit. "But," Lechner adds, "the overall style of Zootopia is more playful, organic, and imperfect than reality."



**GROUPING AND COMPOSITION**

ZOOTOPIA is meticulously arranged chaos. Don't place items "randomly" - always think of interesting rhythms and ways to support the flow of the composition. Everything relates to everything else - you don't necessarily have to follow the design 100 percent - just keep this in mind: Entertain with Variations, the shapes and the grouping are part of the same composition. Guide the eye. The love you will put into this fills the set with life.



Think like that with everything - even plant arrangements

**A CONSCIOUS WORLD**

ZOOTOPIA is a world where animals evolved to a level of human consciousness. A way to play with the premise of raised consciousness is to also infuse the environment with spirit. Objects are NOT LITERALLY alive, but whenever possible give them ATTITUDE in the form of "line of action" and don't shy away from subtle reference to faces. It's a fine balance - more of a subliminal thing.



I over-emphasized the idea in this drawing for better understanding

When you transform the designs into renderings, you must be aware of the "CHARACTERS" that are hidden in the shapes.  
Do not add obvious faces though. A rendering is successful if the "life" is felt, but the audience doesn't really know why.

(This doesn't relate to such obvious examples only - No matter what the characters are, there will always be an emotion or attitude that should not be lost in translation)

Matthias Lechner / digital

# ANIMALIZING THE WORLD

We used natural shapes and animal patterns throughout Zootopia, like giraffe spots on a building. If you look closely, you'll see lots of animal faces and teeth, multiple horn and tail shapes.  
—Matthias Lechner, art director of environments



Cory Loftis / digital



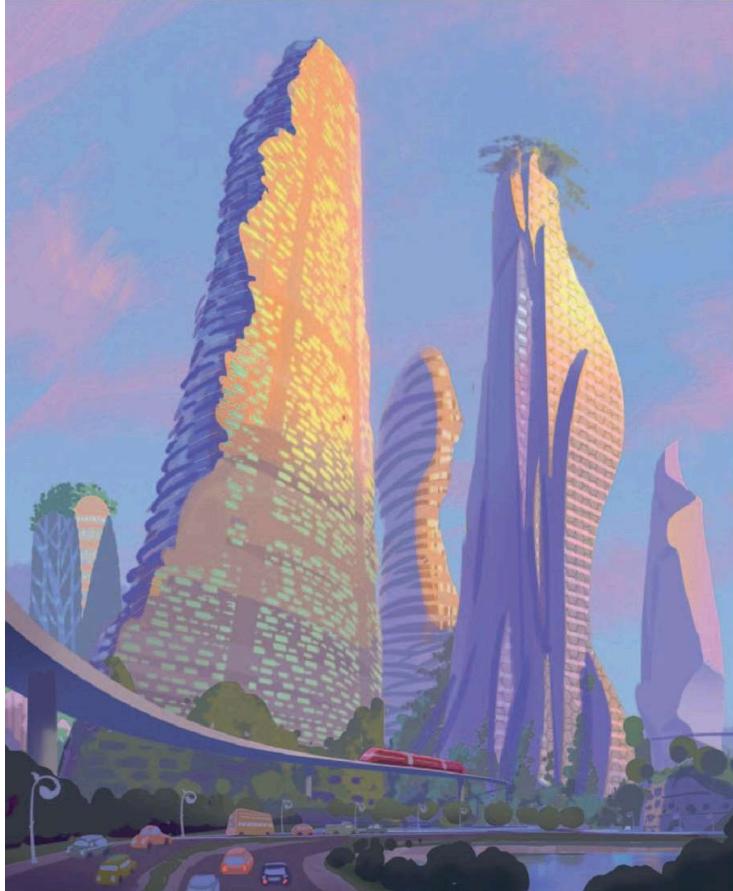
Matthias Lechner / digital

**These animals live harmoniously, but we want to maintain their animal nature. They're not people in animal suits. They have their own animal qualities, and they've built their surroundings in their mindset.**  
—Scott Kersavage, VFX supervisor



Brett Albert / digital

# ARCHITECTURE

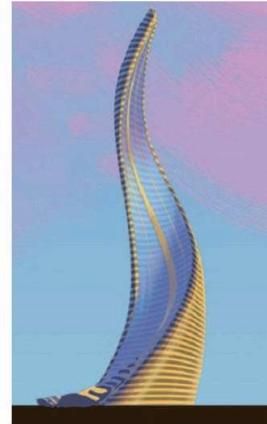


David Goetz / digital

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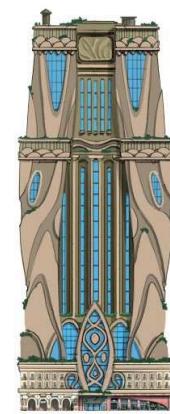


David Goetz / digital



David Goetz / digital

These animals have evolved to a human level of consciousness so we put thought and love into everything surrounding them. That imbues every building and object with an attitude, a soul, which makes it appealing.  
-Matthias Lechner, art director of environments



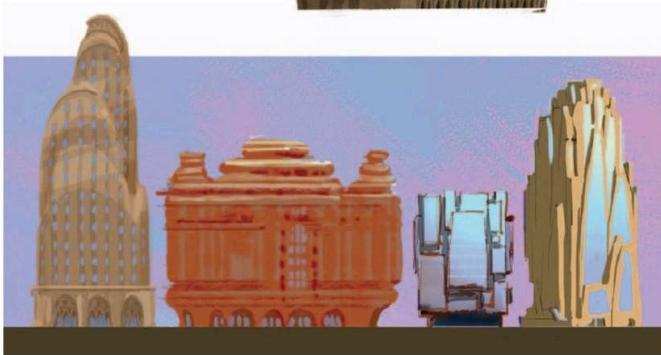
Armand Serrano / digital



Armand Serrano / digital



Mac George / digital



David Goetz / digital



Manu Arenas / pencil and marker

In an early iteration of the film, prey animals were dominant in Zootopia, so the motifs used in buildings reflected their reality. We used vegetable patterns, leaf shapes, and flower murals in the architecture.  
—Dave Goetz, production designer



David Goetz / digital

# ACCOMMODATING ALL SIZES



David Goetz / digital

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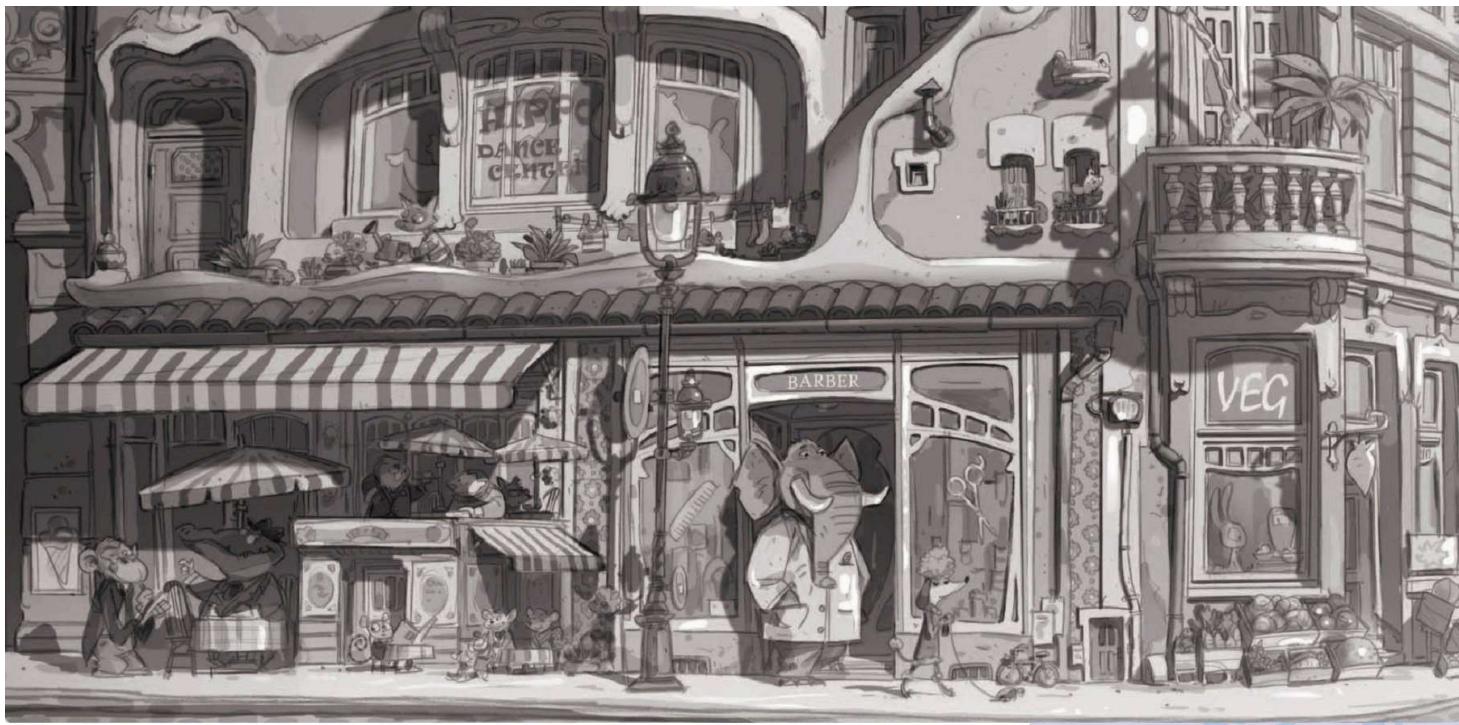


Cory Loftis / digital

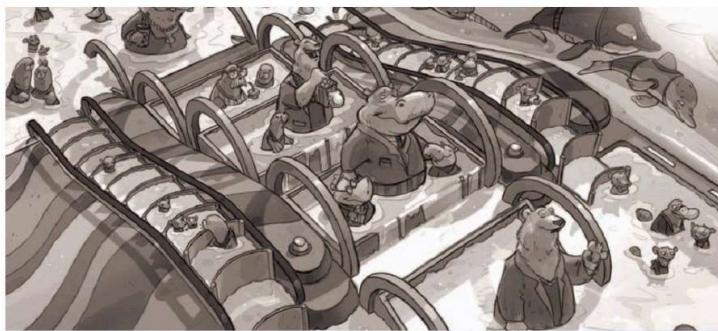
In order to indicate scale, we kept certain details a consistent size, like buttons, zippers, or stitching on clothing. A mouse shirt only has room for one button, but an elephant's has lots of buttons and the stitches are doubled up.  
—Cory Loftis, art director of characters



David Goetz / digital



Cory Loftis / digital



Matthias Lechner / digital



David Goetz / digital



J Mays / digital



J Mays / digital

Former head of design at the Ford Motor Company J Mays designed vehicles with fun solutions to the unique problems of this world. For example, a giraffe's car is very tall. To alleviate the centrifugal force on their necks when changing direction, the upper half of it rotates and leans into the turn.

— John Lasseter, executive producer



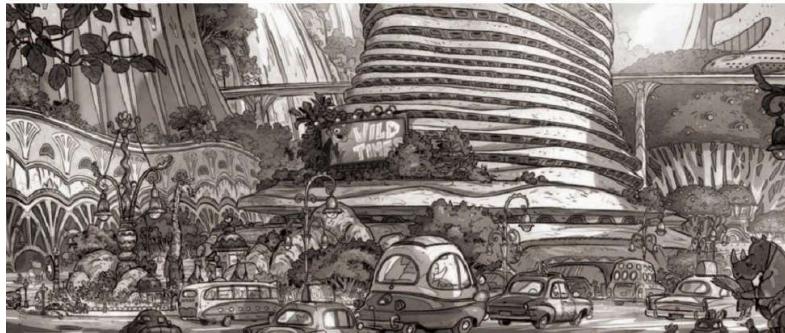
J Mays / digital



J Mays / digital



J Mays / digital



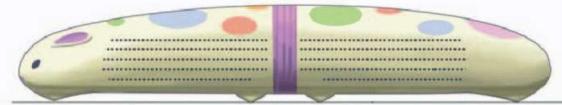
Matthias Lechner / digital



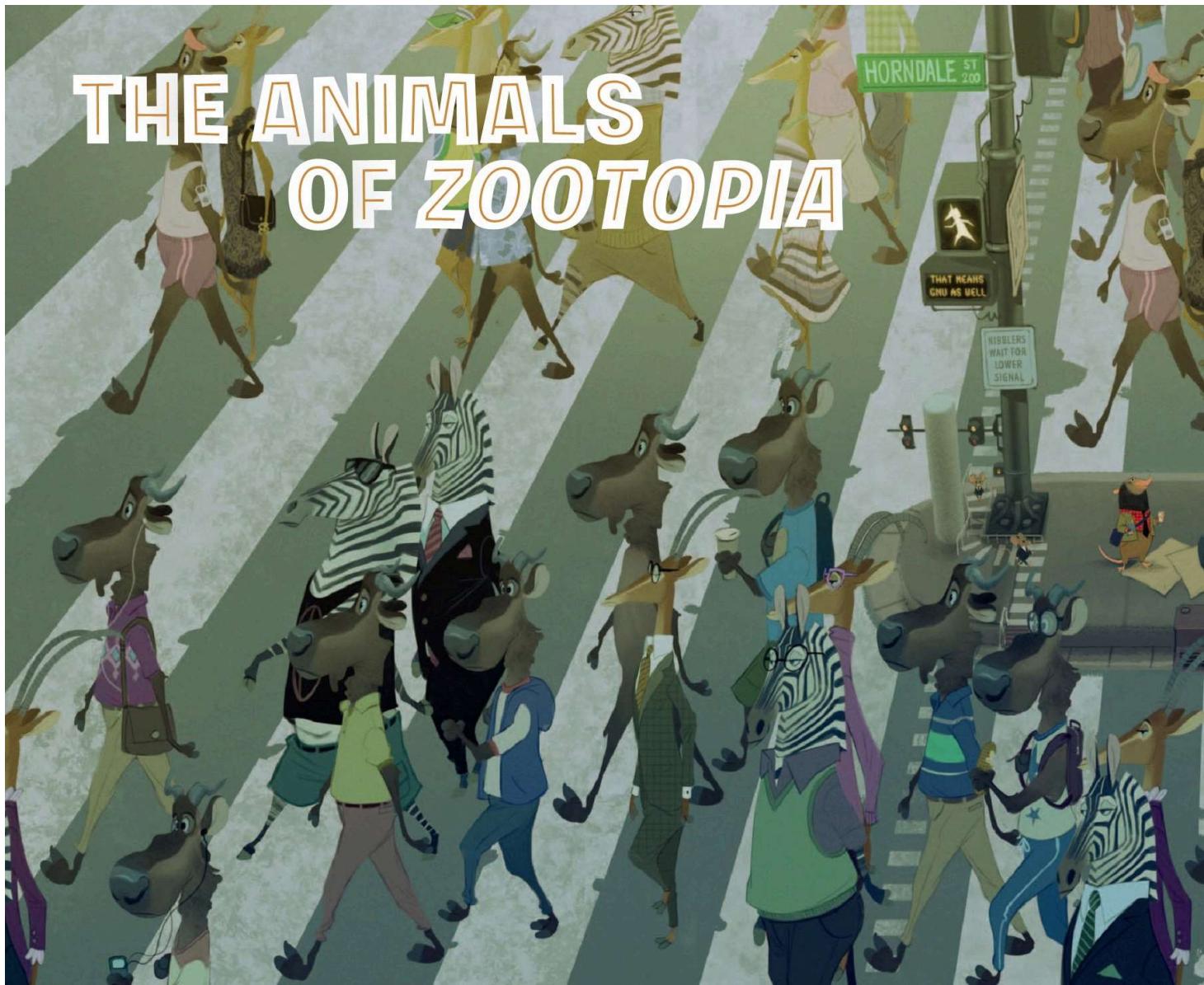
Matthias Lechner / digital



Jim Martin / digital



David Goetz / digital







**28**  
Borja Montoro / digital  
pages 26-27: Cory Loftis / digital

Giraffes are so big that their scale is weird. They look like they're in slow motion when they're running full speed. It's like they're walking on the moon—graceful and silent, really effortless for their size. The animators captured that effect on two feet.  
—Jared Bush, screenwriter and co-director

**E**xecutive producer John Lasseter challenged the filmmakers to create the kinds of unique animal characters that would populate an animal-only world. He encouraged the team to dive deeply into research before they began thinking about story, plot, or characters. "My rule for research is that, if at any point on a subject you think 'oh, wow, that's fascinating,' your audience will think that too. Remember those 'aha!' moments, and let them guide you," says Lasseter.

The team spoke with zoologists, animal behavior specialists, and scientists who study animal evolution. Based on what they discovered, the filmmakers decided to limit the film's animals to mammals, although "reptiles and birds and other animals do exist on this planet. We just don't go to those continents," says screenwriter and co-director Jared Bush. This constraint led to an "aha!" moment that became a central tenet of *Zootopia*—that mammals are divided into two groups: predators and prey, and prey animals outnumber predators ten-to-one.

In early versions of the story, this division was overt, with prey animals exploiting their strength in numbers to dominate predators, who were forced to wear collars that prevented accidental expressions of their natural aggression. "But," says director Rich Moore, "the world was so negative. And [director] Byron [Howard] is such a positive person. We wanted the story to reflect his vision and personality more." So that early concept developed into a more nuanced story of a city torn apart by inadvertent, underlying bias. Adds Howard, "We wanted to see these characters living together happily at first, so the audience roots for the world to return to that harmony. But we also wanted to show how bias and prejudice can so easily divide a culture." So *Zootopia* depicts a city where mammals of all species coexist peacefully until the events of the film shake things up.

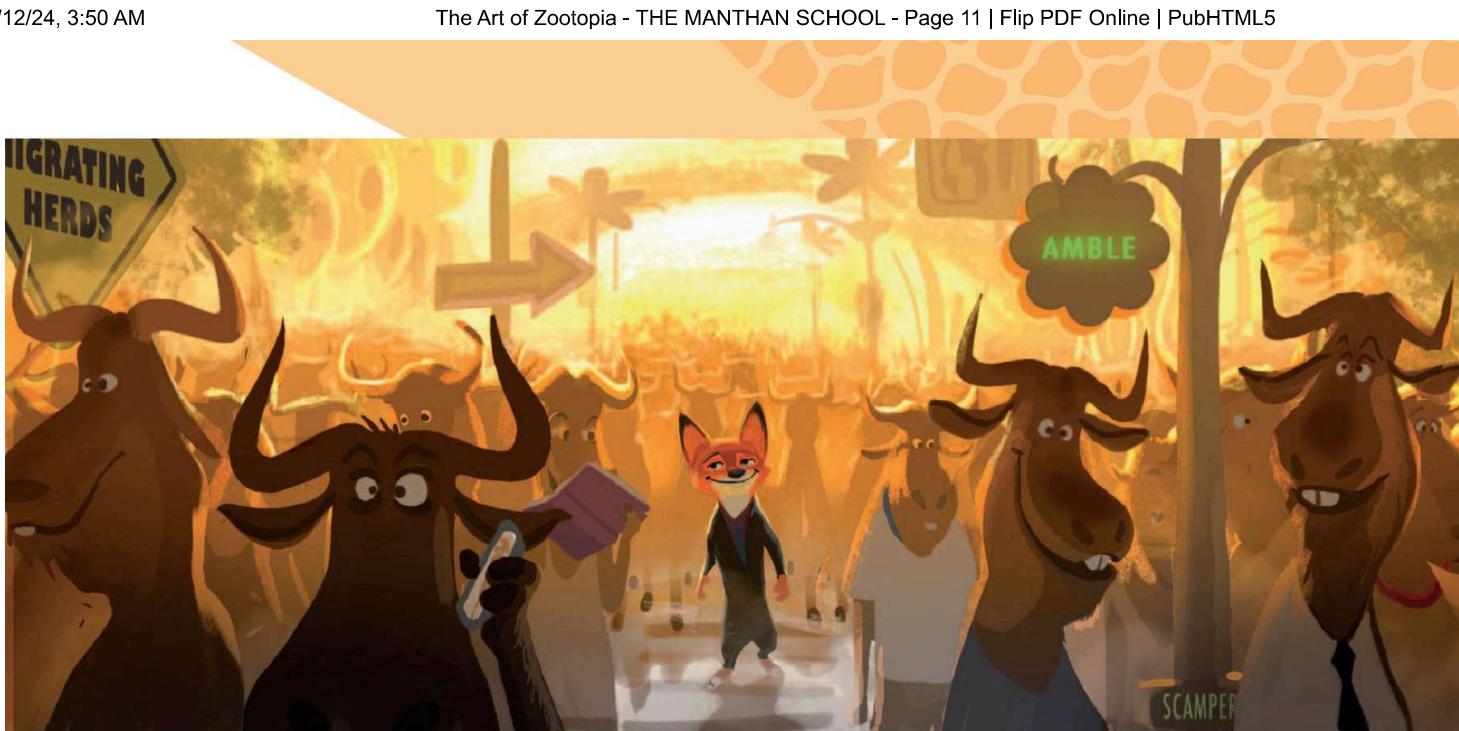
Research also influenced Howard's choice of species for the film's protagonists. "It's a buddy movie, so they had to be in conflict. Bunnies are very clearly prey animals—they're passive, defenseless, and soft. And foxes are their natural enemies." There was some discussion whether the main predator character should be bigger, perhaps a bear or a tiger, but Howard liked that a fox's size allows them to become prey themselves. "It kept Hopps and Nick relatable to each other despite their differences."

Cory Loftis, art director of characters, worked closely with Howard when designing the creatures of *Zootopia*. "Byron's character designs have such an appealing style. They are very charming and instantly funny," says Loftis. "The challenge was to maintain that appeal while also making them seem like real animals, with working skeletons and muscles." However, Loftis did have to stray from reality at times. "All our animals have opposable thumbs because they need to execute too many tasks that require thumbs. So we made it part of the logic of this world—they evolved that way," says Loftis.

Howard had a specific design in mind for each character, which the artists found extremely valuable. "You can talk about design in terms of shapes and proportions, but that is superficial if you don't have the subtext of personality to base it on," says visual development artist Shiyoon Kim. Nick Orsi, the visual development artist who drew the original character lineup, agrees. "When we draw, we're thinking about personality. How is this character going to emote, how will she act? Byron's characters all have strong personalities."

Much of Howard's sense of personality for the characters in *Zootopia* developed during a research safari in Kenya. Their guide, a fourth-generation Kenyan named William Carr-Hartley, gave the team great insight into animal characteristics and personality. "Other experts told us how the brain or physiology of an animal works. But William would say, 'warthogs are prissy and nervous. Wildebeests are big dumb idiots. Cape Buffalo are just grumpy all the time,'" recalls Howard. "He was describing personality, which is what we need for animation." It was another "aha!" moment for the team. Adds Bush, "We had been trying not to put human characteristics onto our characters. But seeing human personalities reflected in these animals led us to thinking about stereotypes in the story—of viewing a whole group as a certain way."

There are an enormous number of animals in *Zootopia*, and each species presented a new design challenge. Loftis recalls the difficulty in getting the balance for each creature just right. "There's a universal aesthetic as



David Goetz / digital

audience members, a communal sense of what's weird," he says. "We had to manipulate each animal's anatomy differently—what would a bunny versus an elephant look like standing upright? A design can become too close to the uncanny valley if it's too realistic, but it can feel like a stuffed toy if the design is too simple." The team worked hard to maintain the believability of *Zootopia*, rather than going for a more cartoony, stylized look. "What if this animal did just stand up on two feet, put clothes on, and groomed himself? That was how we approached each character," says simulation supervisor Claudia Chung Sanii.

Tails were a particular challenge. "How does a tail emerge from a pair of pants? We tried cutting a hole in the pants, but then the tail didn't feel connected to the animal's body. We tried building a fly in the back with a

button, but that looked weird, too. We tucked the tail in but that lost some of its animal nature," Sanii laughs. "Every animal's tail is different so each one was a new problem." Certain types of human clothes also looked odd. For example, the team experimented with shoes but, recalls Howard, "it felt bizarre to put leather or plastic things around their feet. Hooves and claws are part of what makes animals unique."

There were nearly one hundred unique animal species designed for *Zootopia*. Each one moves differently and looks distinct from the others. VFX supervisor Scott Kersavage marvels, "We have such an astonishing cast of characters—not just main characters, but secondary, and tertiary ones—and we gave them all the same love and attention." Loftis agrees. "Every animal was an adventure and a struggle. It was so fun."

# Judy Hopps

PD Officer Judy Hopps begins her journey in Zootopia as an optimistic bunny from Bunnyburrow, a suburban dweller entering the big city. She learns some difficult truths during the film, but she retains her optimistic spirit and even gains an unexpected new friend in Nick Wilde, a streetwise fox.

As the story evolved, Hopps's personality became more optimistic and naïve, which influenced her design. Her face became more open, her eyes got rounder and brighter. "But," says Nick Orsi, the visual development artist who initially designed Hopps, "Judy mostly stayed the same throughout all the versions of the story. She is a small bunny trying to break into this large-mammal-dominated police force, so we really played up the size and scale difference. She's an underdog who has to try way harder than the others, just to prove that bunnies can be cops."

Art director of characters Cory Loftis recalls that the biggest challenge for Hopps was making her look like a tough bunny. "Literally that phrase was the hardest part. Because everything we know about bunnies is cute, soft, adorable." Loftis adapted her anatomy, giving her heavier thighs and arms than real rabbits have, so Hopps can kick things or wrestle a criminal if she needs to. Loftis accentuated her muscle mass rather than hiding it in her fluff. Small details, like the sporty black tip of her ears, helped add some edge.

Overall, though, Hopps's design process was relatively easy for the team. "Hopps is one of those lucky instances where we captured her character in the design early on and have just been refining her ever since," says Loftis. "She hasn't had many problems and has been a touchstone whenever we've had difficulties designing other characters. Everything just worked on her."



Cory Loftis / digital



Cory Loftis / digital



Cory Loftis / digital

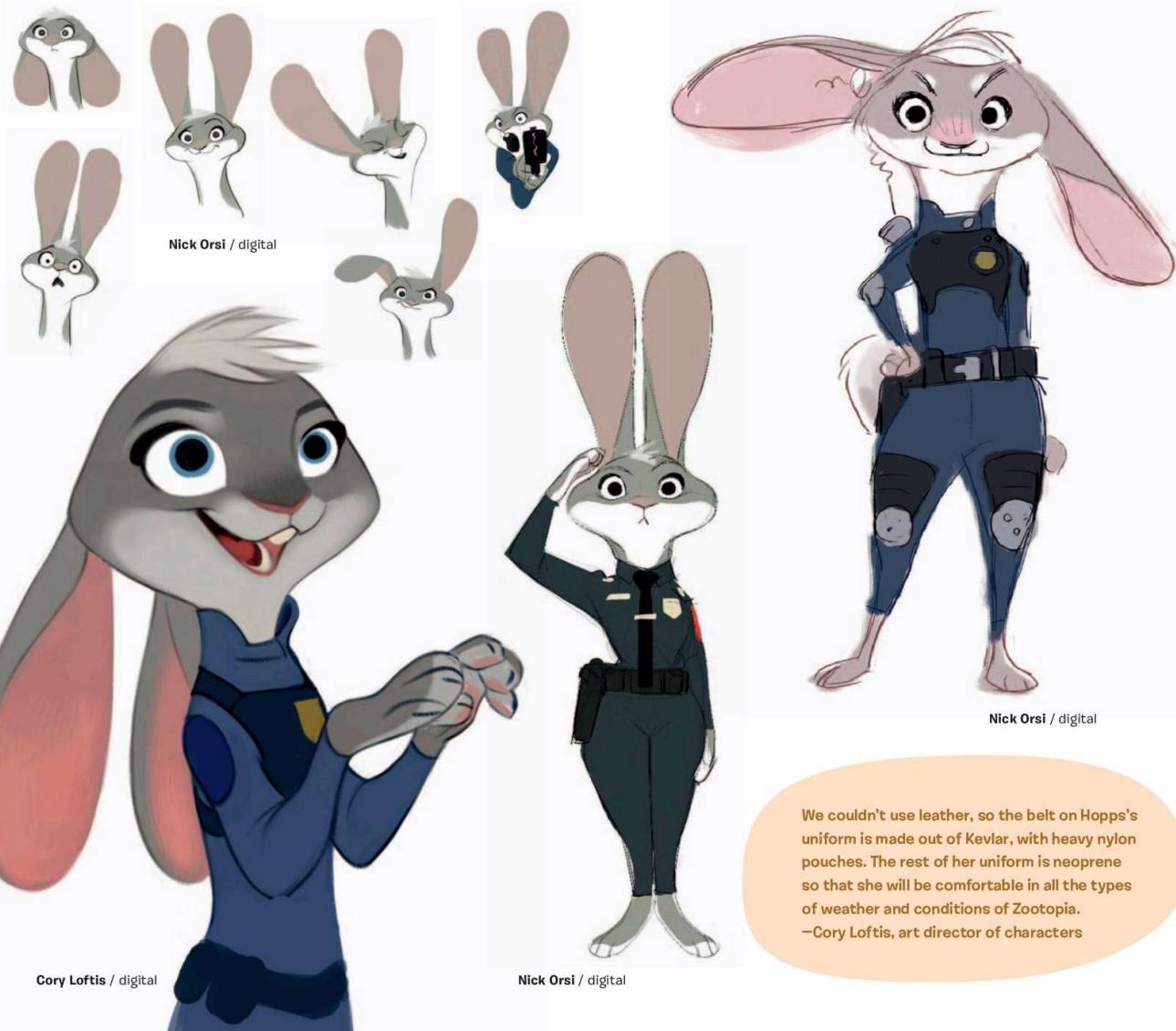


Cory Loftis / digital



Cory Loftis / digital

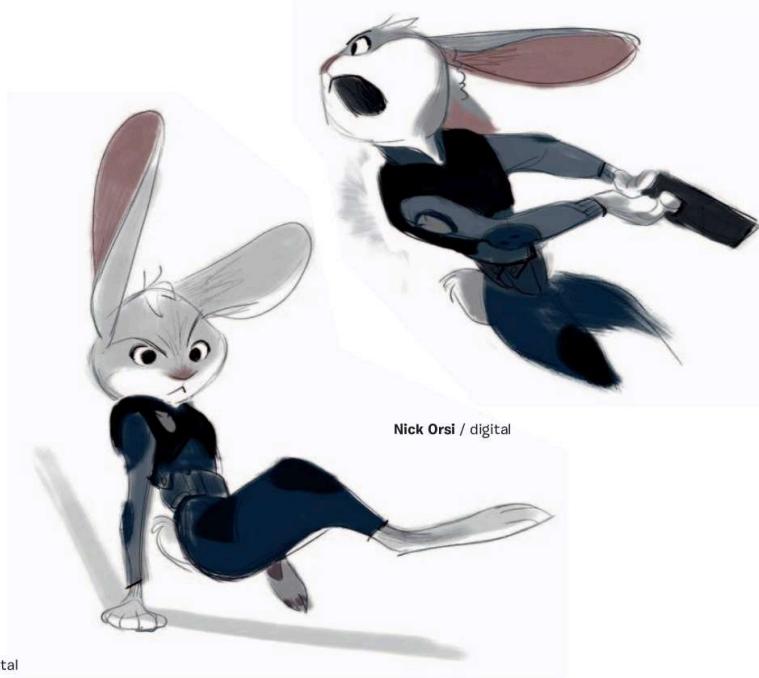
Even in an early pitch, Hopps and Nick had a great buddy dynamic. But I really wanted to tell this story because it's about bias and prejudice. It's important to discuss.  
—Josie Trinidad, co-head of story







Byron Howard / digital

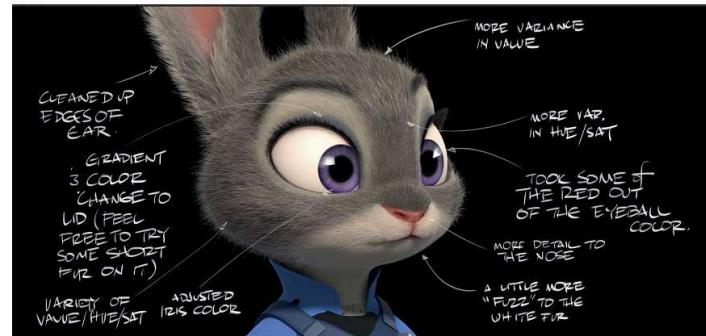


Nick Orsi / digital



Cory Loftis / (draw over) digital

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Cory Loftis / (draw over) digital



# Nick Wilde

**A**t the beginning of *Zootopia*, Nick Wilde seems to wholeheartedly buy into his stereotype as a sly fox. It's not until he tangles with ZPD Officer Judy Hopps that he starts to believe he could be something more than just a conman. "He's an honorable guy," says visual development artist Nick Orsi. "He took to the streets because he had to get by any way he could."

Nick was the first character designed for *Zootopia*, although his look changed quite a bit as the film progressed and his personality evolved. "He started out a slippery, Vegas-style conman, so everything about him was slicked back—sleek head design, sleek ears, snappy suit," says Cory Loftis, art director of characters. As the story developed, Nick became rougher around the edges and more laid-back. "If a character is too slick or too rough, it's hard to feel sympathy for them. We had to find the right balance with Nick. He's a hustler but he has a big heart and he's capable of being a good friend, so we softened him up a lot."

Nick's anatomy set the tone for all the other animals in *Zootopia*, and it was influenced by the reality of what the characters have to do in the film. "He has to wear pants, reach over his head, turn a doorknob, type, use a phone. He has to walk upright, so we had to decide whether his feet should be planted on the ground or if he would walk on his toes. We found middle ground for the anatomy, with some animal and some human aspects," says Loftis.

The biggest challenge for Nick was his fur. "Fox fur is complex. The way it clumps, the quality of the hair, the different colors in it—all that can distract focus from his face, where the emotion is," says Loftis. "We had to find a balance between design and realism."

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Byron Howard / digital



Shiyoon Kim / digital



Cory Loftis / digital



Matthias Lechner / digital



Cory Loftis / digital



Byron Howard / digital

Nick's a little lazy, which shows in his clothes. His shirt and tie are mismatched, the shirt isn't tucked in, and he probably tied the knot in his tie once and then just takes it off still knotted every night.  
—Cory Loftis, art director of characters



Byron Howard / digital



Cory Loftis / digital



Cory Loftis / digital

Real foxes are efficient, quick, and very intelligent. Their thought process overlaps with their action—they think and react almost simultaneously. We tried to get that sense into Nick's animation.  
—Tony Smeed, co-head of animation



Cory Loftis / digital



Cory Loftis / digital



Cory Loftis / (draw over) digital



# ZOOTOPIAN HABITATS





The city itself is a character in *Zootopia*. But how did this animal-created urban habitat come to be? How did the filmmakers determine where each neighborhood would go? "It was a long, wandering process," production designer Dave Goetz laughs. "[Executive producer] John Lasseter is a stickler for logic, so there had to be some rational basis for how this place developed."

Diving into research, Goetz discovered that animals in the wild often gather around a watering hole, an idea that was reinforced during the group's safari in Africa. Screenwriter and co-director Jared Bush was inspired by the sight. "All the animals hung out together. Natural enemies, predators and prey, were at peace. They weren't fighting or eating each other. It made us understand that our city shouldn't be divided along those lines either." The natural division for *Zootopia*'s boroughs became environmental instead of animal-specific. Imagining that historically animals

would have built their city around such a gathering place, art director of environments Matthias Lechner placed the watering hole at the center of the city and began to design the neighborhoods surrounding it.

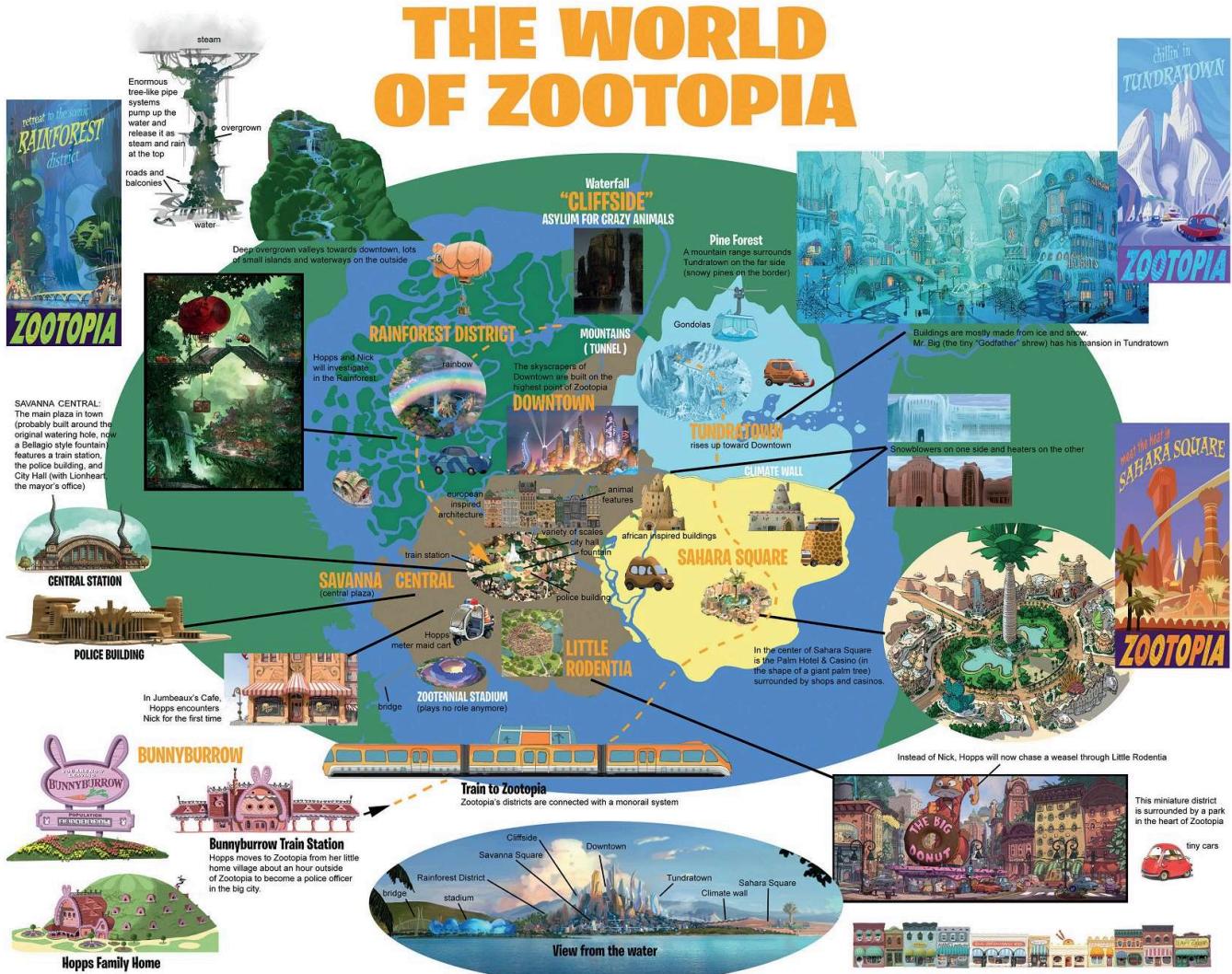
The team visited Disney World's Animal Kingdom and several zoos to learn what an artificially created environment made by animals might look like. "Zootopia isn't a naturally occurring environment. All these animals together built this awesome place and they had the technology we do," says Bush. Director Byron Howard elaborates. "We tried a natural formation when trying to figure out how the city fit together. But that lost the idea that it's an artificially created place. In the end, it's designed almost like a theme park, like Disneyland." Lechner was pleased with the result. "The city center is in the middle, as it should be, with the different boroughs radiating out from it. You can get to any borough quickly but also travel around from district to district easily."

The actual layout ultimately came down to climate logic. Goetz and Lechner tried several different approaches the animals might have taken. Should it be based on precipitation levels? Elevation? Story progression? Nothing seemed quite right until the team landed on the idea of a climate wall. "It's basically a giant barrier filled with enormous heaters that warm the land the heaters point toward. The heaters themselves are powered by the exhaust from the huge air conditioners pointing the other direction to cool that side," explains Goetz. "So the desert of Sahara Square and frozen land of Tundratown always had to be adjacent, in order to share the climate wall."

- Each borough has a distinct feel that the filmmakers hope will delight audiences. "They're animal environments mashed up with a human equivalent. Sahara Square is the desert plus Dubai, with lots of Moroccan architecture. The Rainforest District feels like the jungle plus Southeast Asia. Tundratown has a Russian feel," Bush enthuses. "And the bunnies dwell outside of the city in endless suburbs, because they need room to expand." Howard laughs. "I love every district for different reasons. I wish we could spend more time in each one, to explore even more in this Zoo-niverse."

David Goetz / digital  
background: Matthias Lechner / digital  
pages 42-43: Matthias Lechner / digital





Matthias Lechner / digital

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# BUNNYBURROW

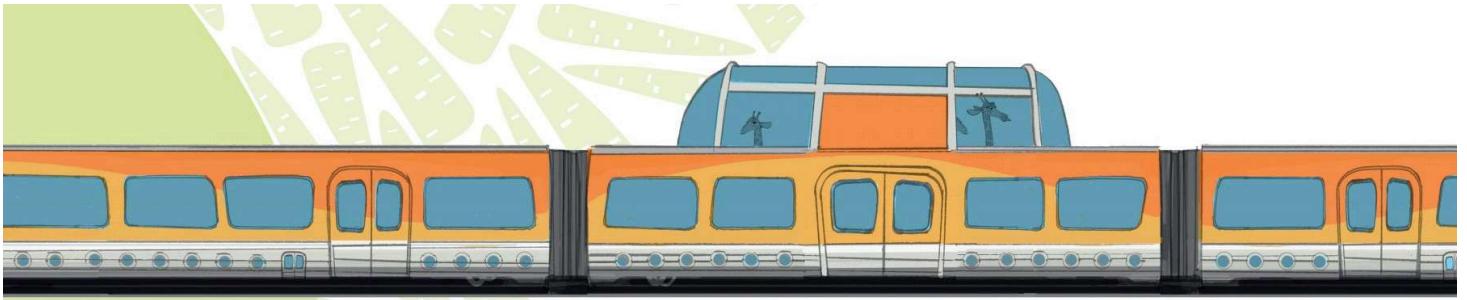
Bunnyburrow is a suburb on the outskirts of Zootopia, full of rolling fields and farmland. It's home to the bunnies, including the Hopps family. In earlier versions of the story, Judy was one of many bunnies in a family so large her father didn't even know her name, so the Bunnyburrow was designed to be a bit faceless as well. When the story evolved, so did the Bunnyburrow, becoming less of a massive mega-suburb and more of a perfect little small town, which Judy leaves behind to follow her dream of becoming a cop in Zootopia.

Production designer Dave Goetz and art director of environments Matthias Lechner initially envisioned a super-cute aesthetic for the area, with everything styled to suit a rabbit's needs, including a bunny-sized train station. "It feels like rabbit warrens, as if they were designed by Antoni Gaudí and Friedensreich Hundertwasser, combined with Sanrio. There are flowery tiles in the walls, no straight lines, and lots of little round holes like every bunny has a cubby," says Lechner. "Even the Easter egg-inspired colors reflect a bunny's point of view."



Cory Loftis / (paint over) digital

Mac George / digital



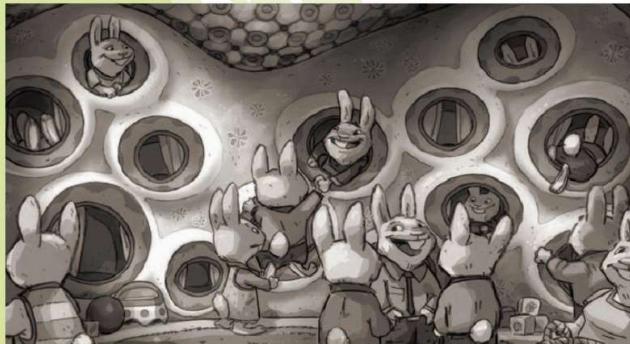
Justin Cram / digital

Trains in Zootopia are multi-scaled for animals of different sizes, with the bigger windows up top and smaller windows at bottom, and little seats underneath the larger seats. Since the Bunnyburrow train station is built for small animals, it only serves the bottom part of the train.

—Matthias Lechner,  
art director of environments



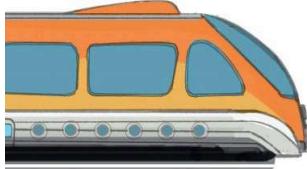
Mac George / digital



Matthias Lechner / digital



Matthias Lechner / digital



Cory Loftis / digital



Matthias Lechner / digital



Matthias Lechner / digital



Armand Serrano / digital

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Nancy Kruse / digital

Matthias Lechner / digital





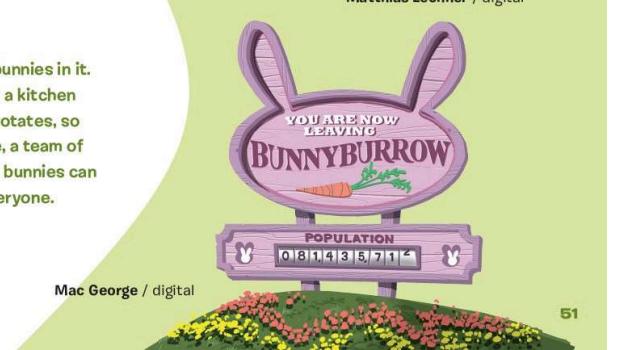
Matthias Lechner / digital



Mac George / digital

I drew a version of Hopps's family home that has 200 bunnies in it. There's a system to it. The interior is organized around a kitchen since they'd constantly have to cook. The dining area rotates, so everyone has time to eat while it turns. As diners leave, a team of children clears plates and sets the next table, so more bunnies can sit down to eat. That continues all day, just feeding everyone.

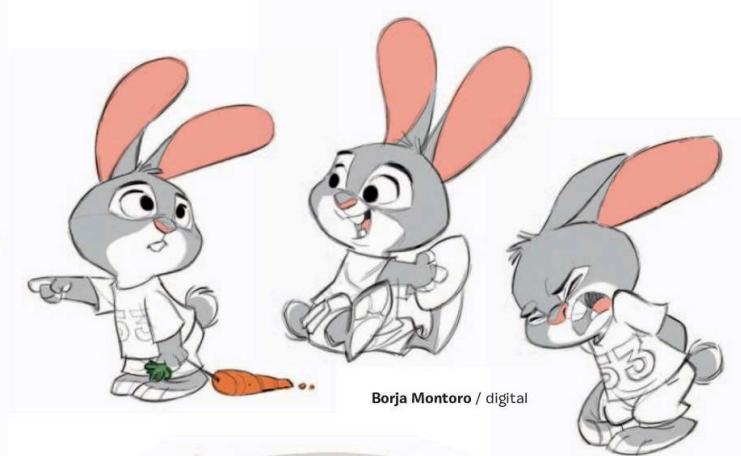
—Matthias Lechner, art director of environments



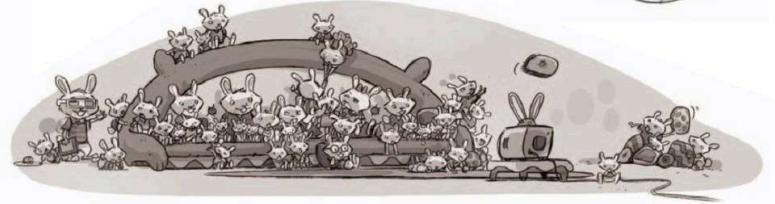
Mac George / digital



Shiyoon Kim / digital



Borja Montoro / digital



Matthias Lechner / digital



Storyboards: Nancy Kruse / digital



Matthias Lechner / digital

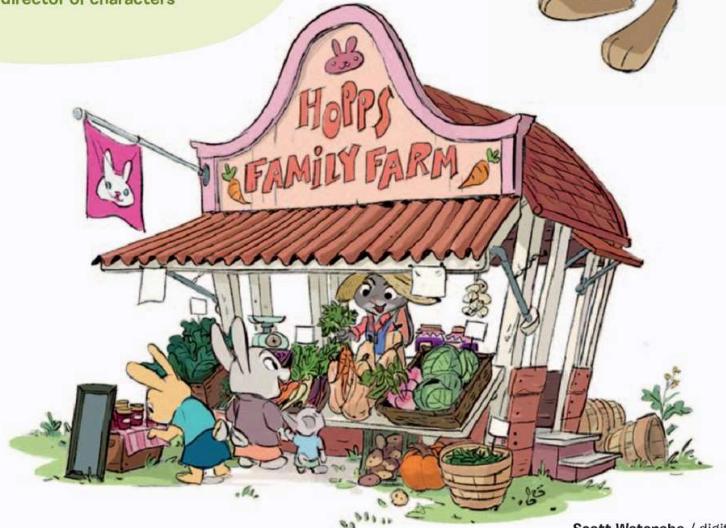


Shiyoon Kim / digital



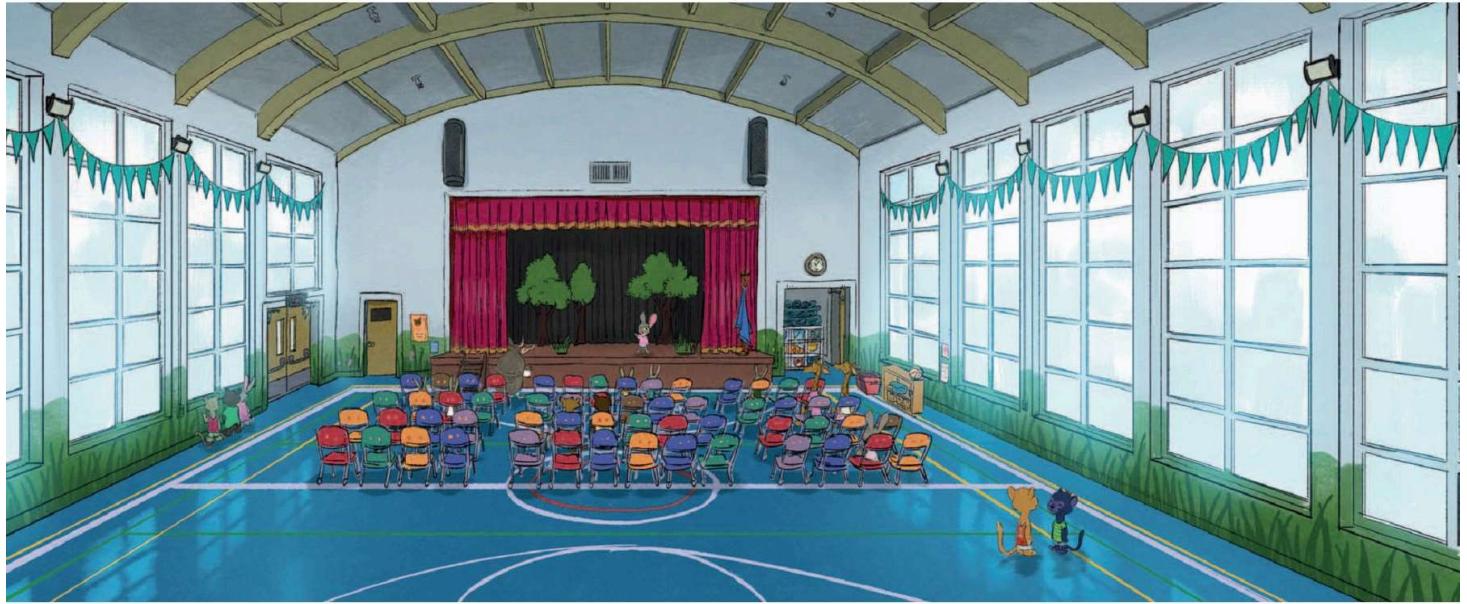
Cory Loftis / (paint over) digital

For Hopps's family we designed softer, more traditional bunnies. They all have the same masking pattern around the face and eyes, and a similar range of colors from gray to light brown to identify them as family.  
—Cory Loftis,  
art director of characters

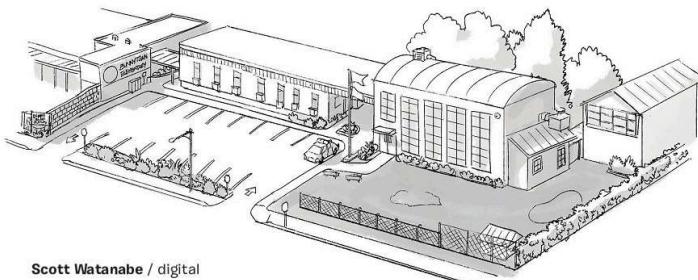


Scott Watanabe / digital

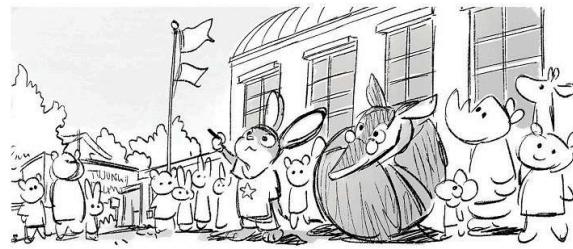
# Woodlands Elementary School



Scott Watanabe / digital



Scott Watanabe / digital



Scott Watanabe / digital







Cory Loftis / digital

Gideon Grey embodies the worst parts of bad children. He's a bully, probably mean to bugs, and carries around a solid stick for breaking stuff.  
—Cory Loftis, art director of characters



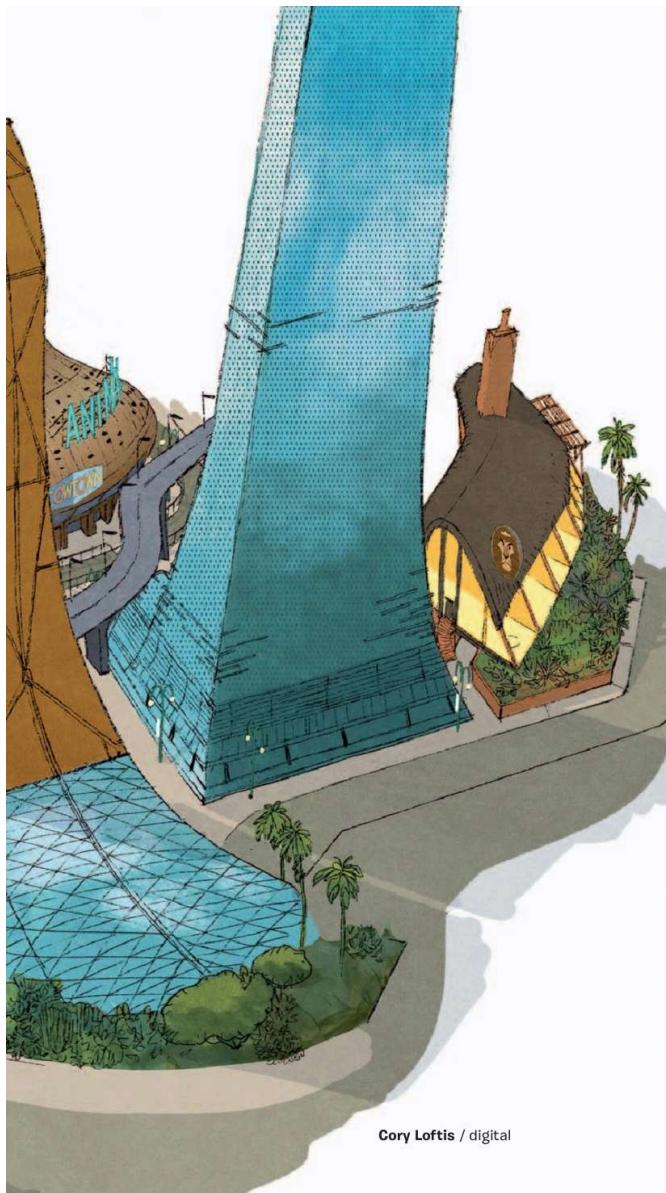
Cory Loftis / digital

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Matthias Lechner / (paint over) digital



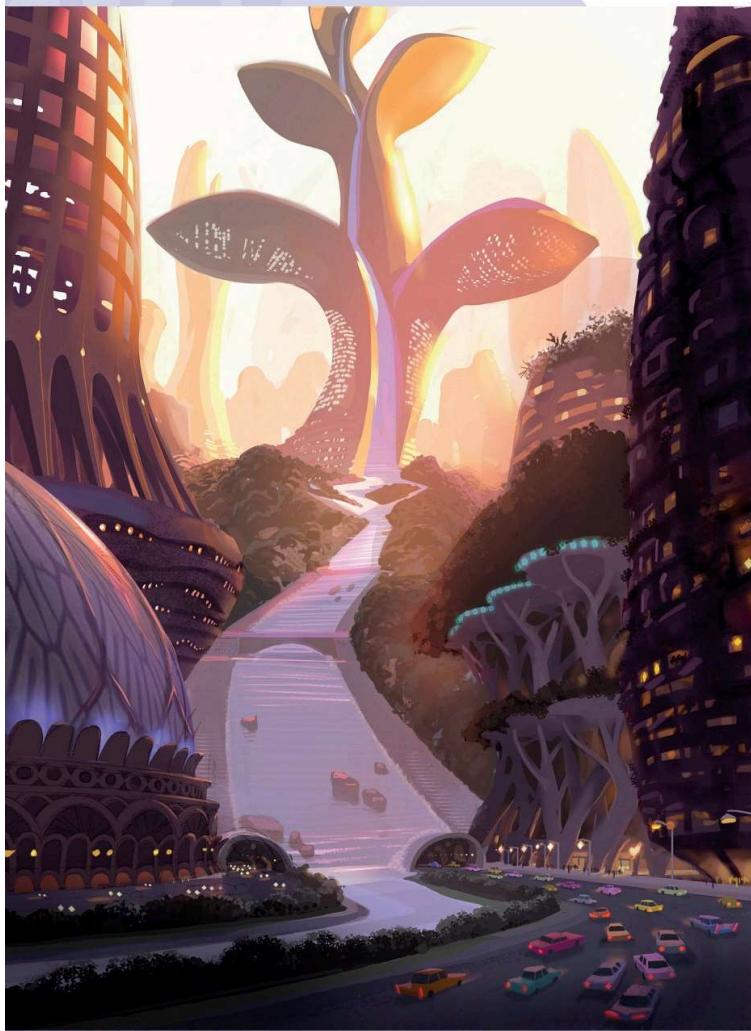


# DOWNTOWN ZOOTOPIA

When Hopps leaves Bunnyburrow for the big city, she glimpses different parts of Zootopia from her train. But it's not until she steps into Savanna Central Plaza in Downtown Zootopia that she really gets her first experience of the metropolis. "It's like she's entered Times Square during rush hour. All the research we did—on climate, light, architecture, animal behavior—it all hits you at once in that area," says Howard. "The size, scale, and sheer volume of animals in one place create a very real, overwhelming experience."

Downtown is the crossroads of Zootopia, where Hopps encounters animals of all types and sizes, from the rhinos and lions of ZPD and City Hall, to the elephants and mice in Jumbeaux's Café and Little Rodentia. To add to the feeling of urban chaos, Zootopia's downtown area has buildings from every era and in every style. "When you're creating a whole metropolis like this, you have to include a sense of history to make it feel rich. There are buildings that are twenty, thirty, even one hundred years old," Goetz points out. "City Hall is ultra modern. The train station has a classic European feel. The police station is a minimalist structure with an almost soviet look to it. That can make designing everything harder, but it ends up feeling more like a real place."





David Goetz / digital

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David Goetz / digital



Manu Arenas / pencil and marker



Matthias Lechner / digital

The Plaza is framed by the biggest buildings. The train station is across from the ZPD, with City Hall on the left, all facing each other. The daily migrations occur in the middle of all of this.  
—Dave Goetz, production designer



Matthias Lechner / digital

# Savanna Central Station

Savanna Central Plaza is one of my favorite environments because everything is mixed together. It's the best combination of Europe and North America, of animals and humans.  
—Byron Howard, director



Matthias Lechner / digital

Matthias Lechner / digital





Cory Loftis / digital

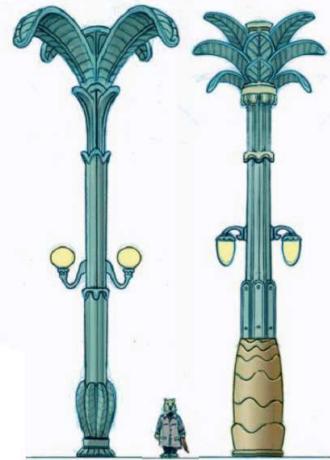


Jim Martin / digital

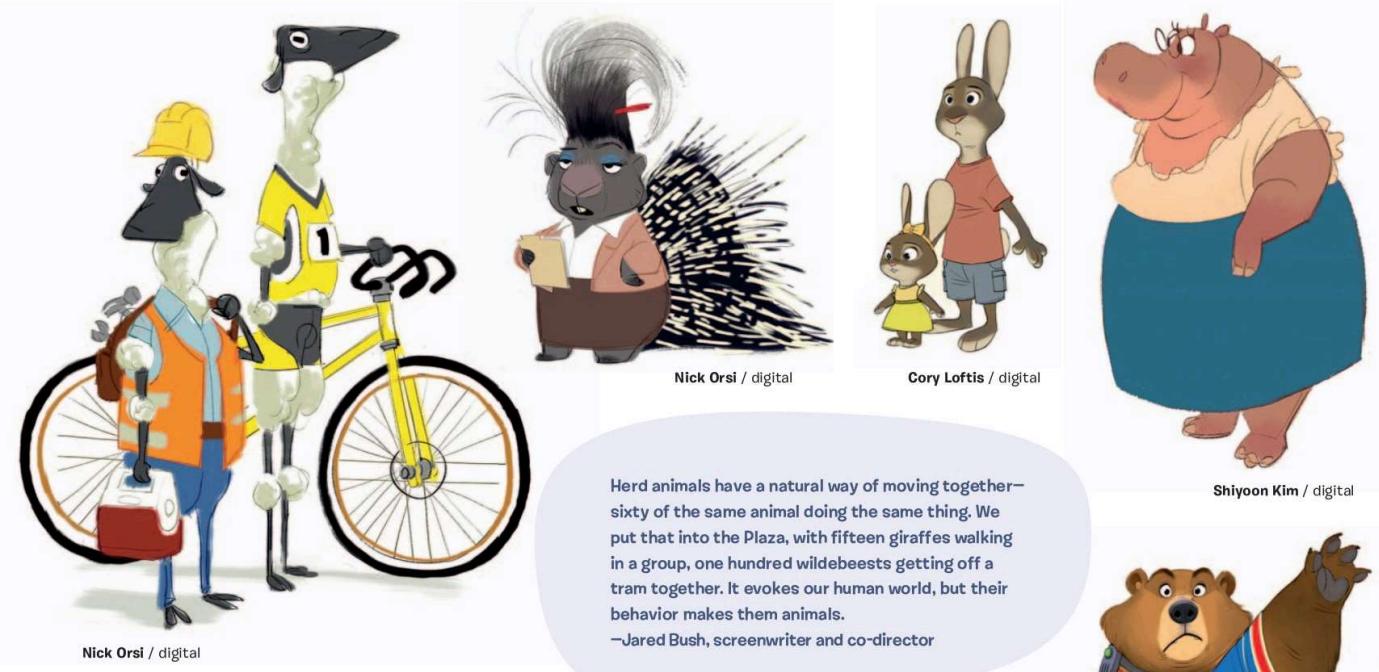
Savanna Central Station's interior is meant to evoke a forest, with pillars and foliage. We used smaller patterns of zigzags and wavy, grass-inspired lines throughout, particularly in the stained glass on the front.  
—Matthias Lechner, art director of environments



Matthias Lechner / digital



Jim Martin / digital



Herd animals have a natural way of moving together—sixty of the same animal doing the same thing. We put that into the Plaza, with fifteen giraffes walking in a group, one hundred wildebeests getting off a tram together. It evokes our human world, but their behavior makes them animals.  
—Jared Bush, screenwriter and co-director



64 Cory Loftis / (draw over) digital



Cory Loftis / digital



Cory Loftis / digital



Cory Loftis / digital



Cory Loftis / digital



Jim Finn / digital



Cory Loftis / digital

You can't apply the same locomotion mechanics to a zebra as a giraffe or a bunny. Each character's rhythm is affected by the way a head moves and flows, by the weight of the animal, by its posture.

—Renato dos Anjos,  
co-head of animation



Borja Montoro / digital



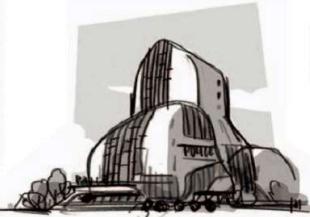




ZPD



Matthias Lechner / digital



Cory Loftis / digital

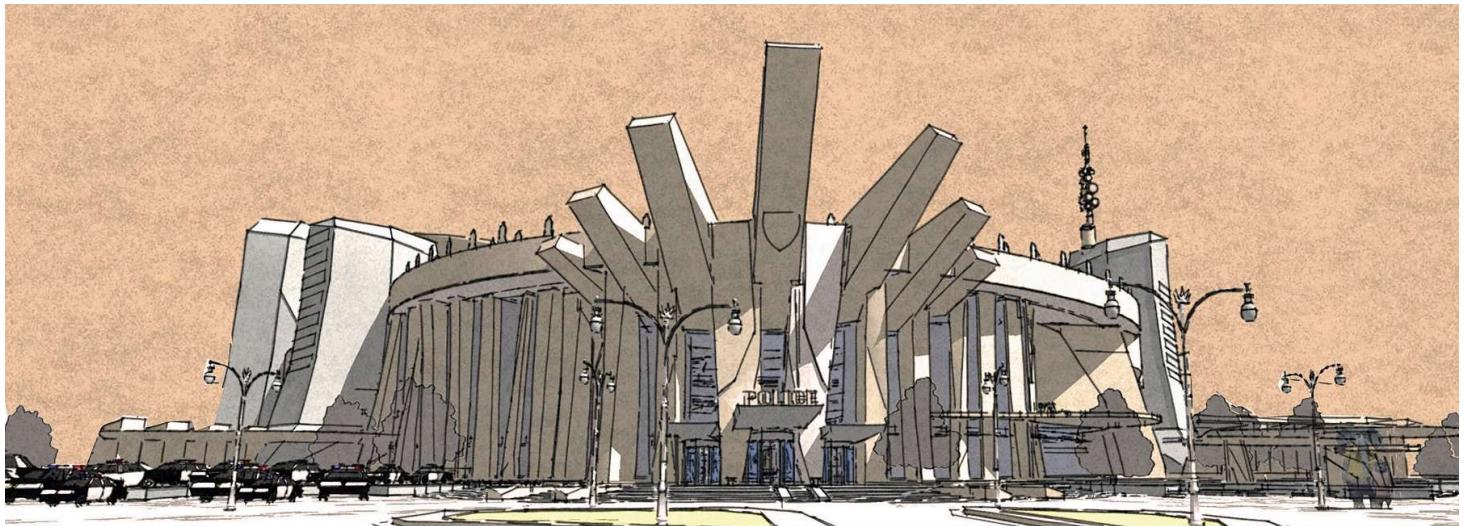
The ZPD is an architectural mix between the crown's rays on the Statue of Liberty and the rock slabs of Stonehenge, representing power and strength in one building. The interior is very utilitarian, and designed for animals much bigger than Hopps.

—Matthias Lechner, art director of environments



David Goetz / digital





Matthias Lechner / digital



Matthias Lechner / digital



Matthias Lechner / digital

In an early version of the story, bunnies were phone operators routing calls for the ZPD. They sent messages in containers pushed by mice through pneumatic tubes. It was like a bunny internet.  
—Dave Goetz, production designer



Matthias Lechner / digital

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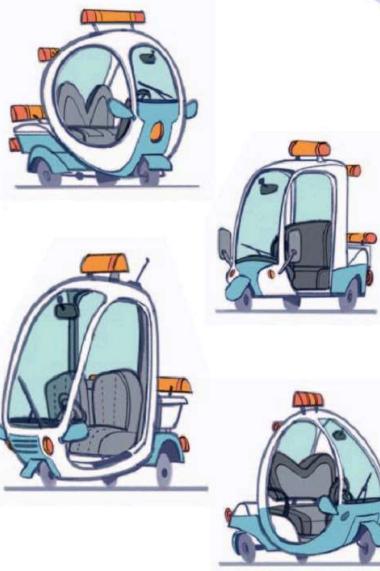
Matthias Lechner / digital



Jim Martin / digital



Jim Martin / digital



Justin Cram / digital



Jim Martin / digital



# Bogo

Bogo is a Cape buffalo and he embodies everything that Hopps isn't. He has horns, scars, a grizzled hide with patches of hair missing. He's all hard angles and sharp expressions. Even his hooves look extra hard and dangerous.  
—Cory Loftis, art director of characters



Cory Loftis / digital



Cory Loftis / (draw over) digital



Cory Loftis / digital



Nick Orsi / digital



Cory Loftis / digital

Bogo is an immovable object. I played up his thick neck and big shoulders—like a cop just out of the Marines. When buff guys get older, everything masses into one brick. And even when they're sixty, they can still lift a refrigerator over their shoulders.

—Nick Orsi, visual development artist

# Clawhauser

Clawhauser's spots are not random. They are crisper than naturally-occurring spots, the yellows punchier, the division between colors more purposeful. He even has a hidden Mickey in his cheek.  
—Cory Loftis, art director of characters



Cory Loftis / digital



Borja Montoro / digital

Cory Loftis / digital



Cory Loftis / digital

Nick Orsi / digital

# ZPD Cops



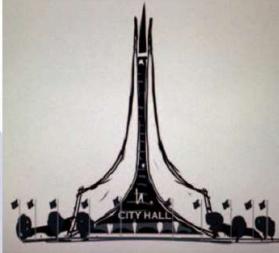
Hopps wears Kevlar, but as the cop animals get bigger, their uniforms get more intimidating.  
Elephants can carry the weight of a 200lb steel vest.  
Rhinos are basically tanks themselves. Why mess around with Kevlar when you can wear plate metal?  
—Cory Loftis, art director of characters



Cory Loftis, Nick Orsi / digital

# City Hall

The waterfall on City Hall originally was a symbol of unity between two pinnacles—predators and prey.  
—Matthias Lechner, art director of environments



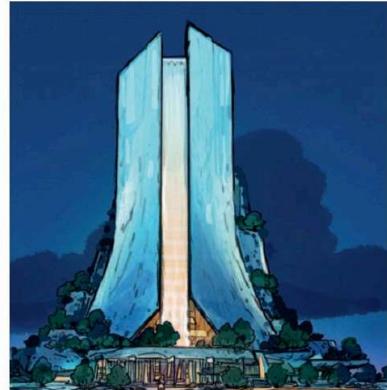
Matthias Lechner / digital



Matthias Lechner / digital

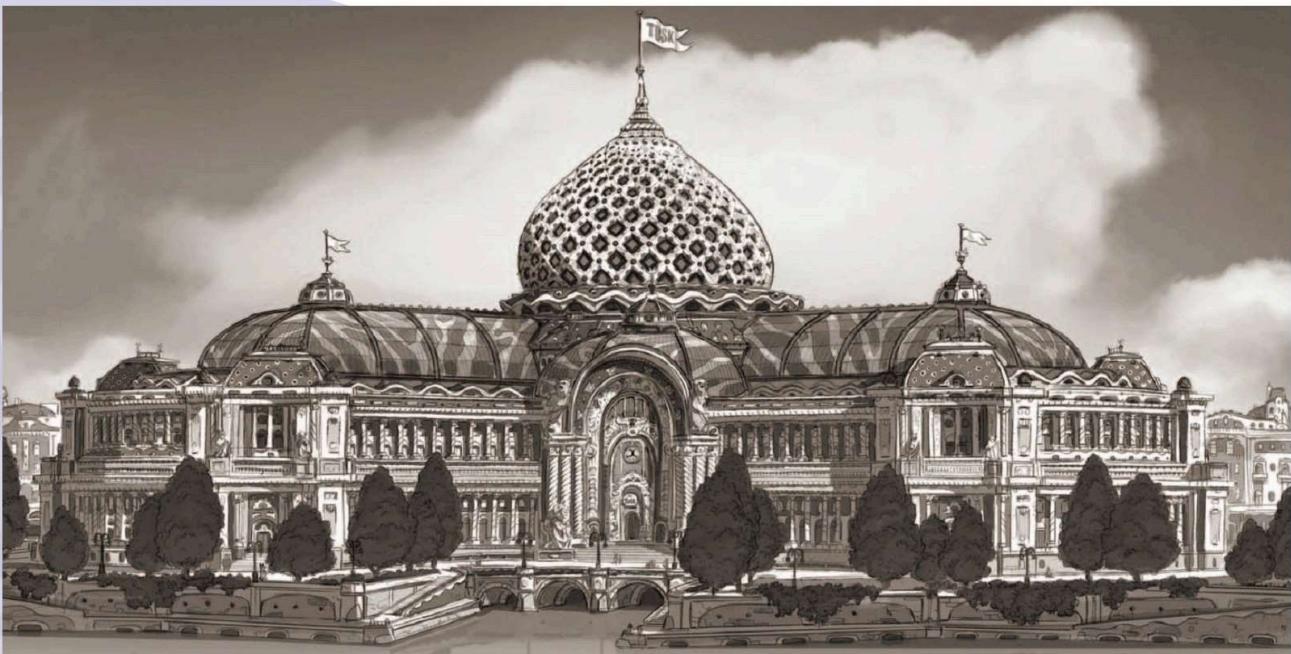


Matthias Lechner / digital



Matthias Lechner / digital

Matthias Lechner / digital





Armand Serrano / digital



Matthias Lechner / digital



Armand Serrano / digital

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# Lionheart



Shiyoon Kim / digital



Shiyoon Kim / digital

Lionheart's big mane covers up his tie and collar, so in early designs he looked like he was wearing a fabric leotard or onesie. It's difficult to design a mane that looks natural since long hair can look crazy. It's styled, but not too combed or slick; it still looks like a lion's mane.  
—Cory Loftis, art director of characters



Shiyoon Kim / digital

Shiyoon Kim / digital

# Bellwether



# Jumbeaux's Café

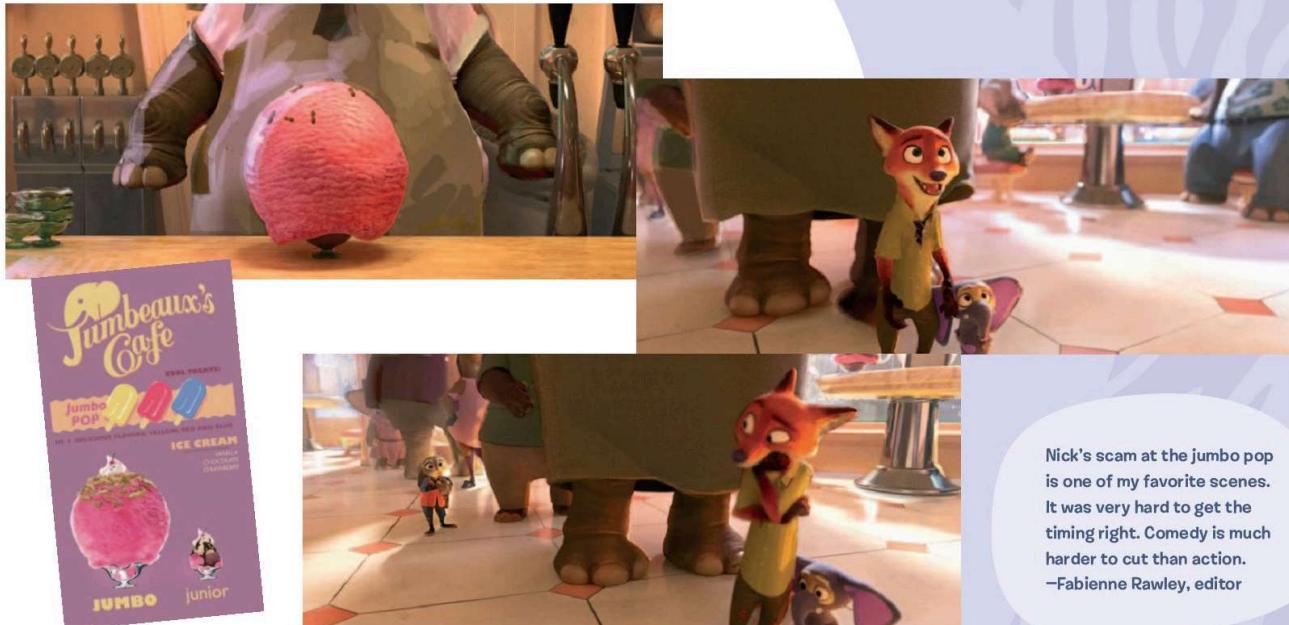
Jumbeaux's Café is set up to cater primarily to elephants. Everything is jumbo-sized. It's an 1890s-style ice cream shop with pachyderm motifs, from the Egyptian-style frieze outside, to the elephant faces, ears, and trunks in the décor.  
—Matthias Lechner, art director of environments



Armand Serrano / digital



Armand Serrano / digital



Matthias Lechner / digital

Dan Cooper / (paint over) digital

Nick's scam at the jumbo pop is one of my favorite scenes. It was very hard to get the timing right. Comedy is much harder to cut than action.  
—Fabienne Rawley, editor



Storyboards: Fawn Veerasunthon / digital



Shiyoon Kim / digital

We caricatured and combined qualities from both African and Asian elephants. African elephants have bigger ears and tusks, while Asian elephants have two distinct bumps on their heads and wider faces.  
—Shiyoon Kim, visual development artist

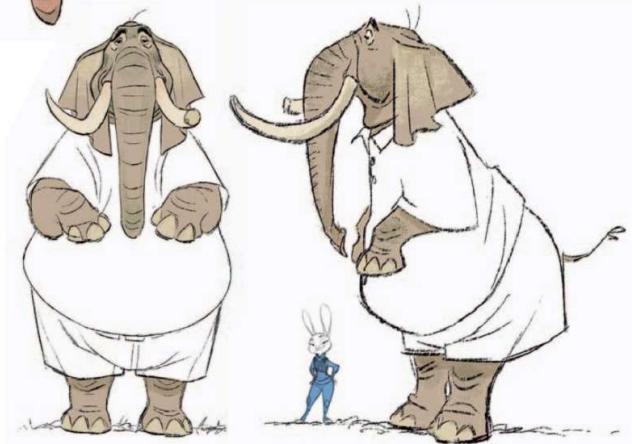
Shiyoon Kim / digital



Shiyoon Kim / digital



Jim Finn / digital



Shiyoon Kim / digital

# Finnick



There is a comedic aspect to Finnick's personality that comes from the way he speaks. We made a choice to match that temperament in his animation, instead of the dispositions of real fennec foxes who are very erratic and nervous creatures, constantly moving around.  
—Renato dos Anjos, head of animation

# Little Rodentia

Little Rodentia is a tiny mammal-only residential park in the center of Downtown Zootopia, surrounded by large buildings. It's a gated community so bigger animals can't accidentally walk in and destroy the place. There's even a sign that says, "You have to be this small to enter."

—Dave Goetz, production designer

David Goetz / digital



Matthias Lechner / digital





David Goetz / digital



Cory Loftis / digital



Matthias Lechner / digital

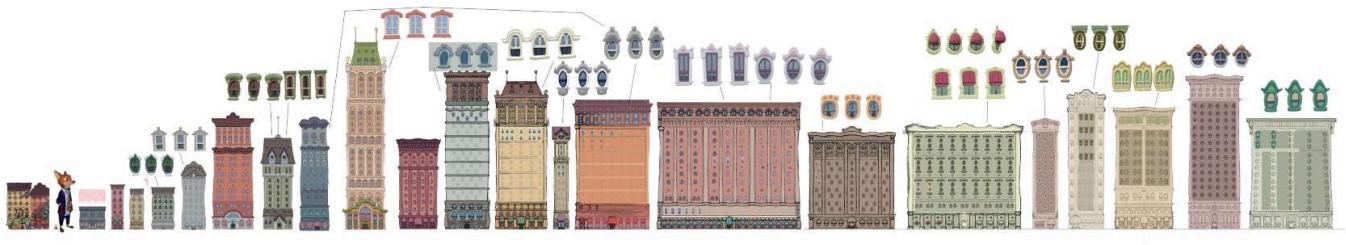
Matthias Lechner / digital



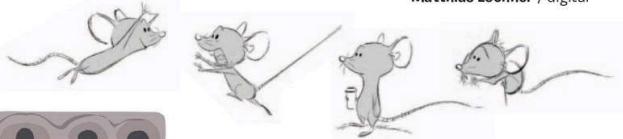
Matthias Lechner / digital

Chez Cheese is a fast food joint in Little Rodentia. In an early version, Nick and Finnick worked there: Nick cleaned the cheese filters and Finnick worked the drive-thru.  
—Byron Howard, director





Little Rodentia is a tiny, tidy mini-city. Everything has a bit less detail. Streetlights are made from a single Christmas lightbulb. Stoves only have one dial.  
—Matthias Lechner,  
art director of environments



Mice: Shiyoon Kim / digital





Armand Serrano / digital



Armand Serrano / digital



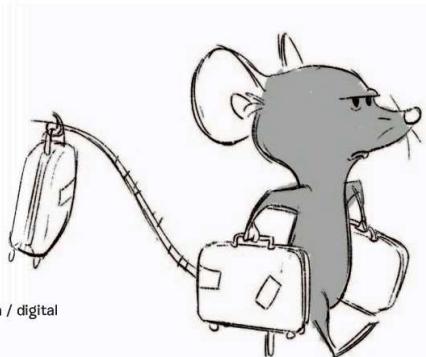
Kevin Hudson / digital



Shiyoon Kim / digital



Andy Harkness / digital





# DMV

We worried the DMV [Department of Motor Vehicles] concept might be too American a concept, but our international friends said they have offices just like that in their countries. Red tape and bureaucracy are universal.  
—Rich Moore, director



Jim Martin / digital



Dan Cooper / (paint over) digital



Jim Martin / digital



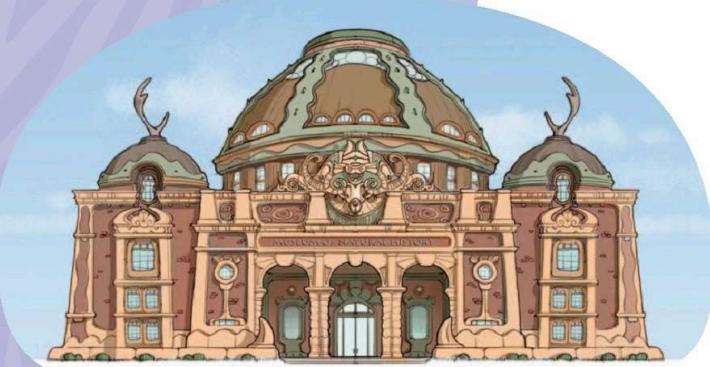
Justin Cram / digital



Dan Cooper / digital



# Natural History Museum



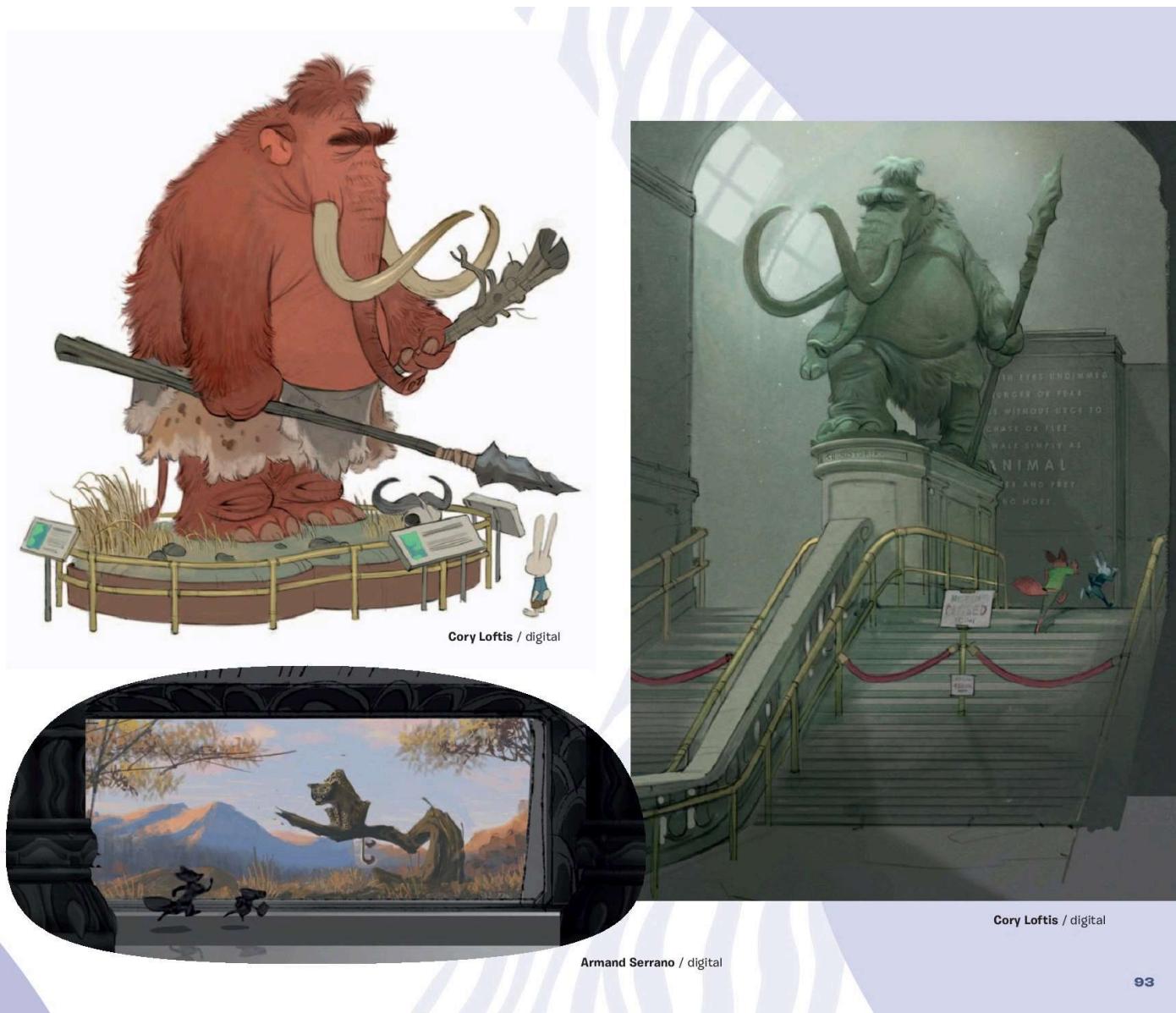
Armand Serrano / digital

The Natural History Museum's exhibits show the evolution of Zootopia's animals. One diorama shows a black panther in its natural, naked state. Another is a sculpture of a huge woolly mammoth in a loincloth, carrying a spear.

—Dave Goetz, production designer

Cory Loftis / digital









# SAHARA SQUARE

After Hopps secures Nick's help in solving the case of the missing Mr. Otterton, they head to Sahara Square. The neighborhood is home to the Mystic Spring Oasis naturalist club, where Nick knows Otterton liked to relax, as well as the Palm Hotel and Casino. It's a desert environment, with large expanses of open space, rolling dunes, and rock cliffs, surrounding a shimmering oasis. "Think Palm Springs meets Dubai," says Matthias Lechner, art director of environments. Director Byron Howard loved that idea. "As soon as Matthias said it's not just a barren desert, it's a swanky, glitzy place, I got it," he says. "It's layering the human equivalent on top of an animal habitat. The buildings are high-end and well-designed. It's a desirable place to live in Zootopia."

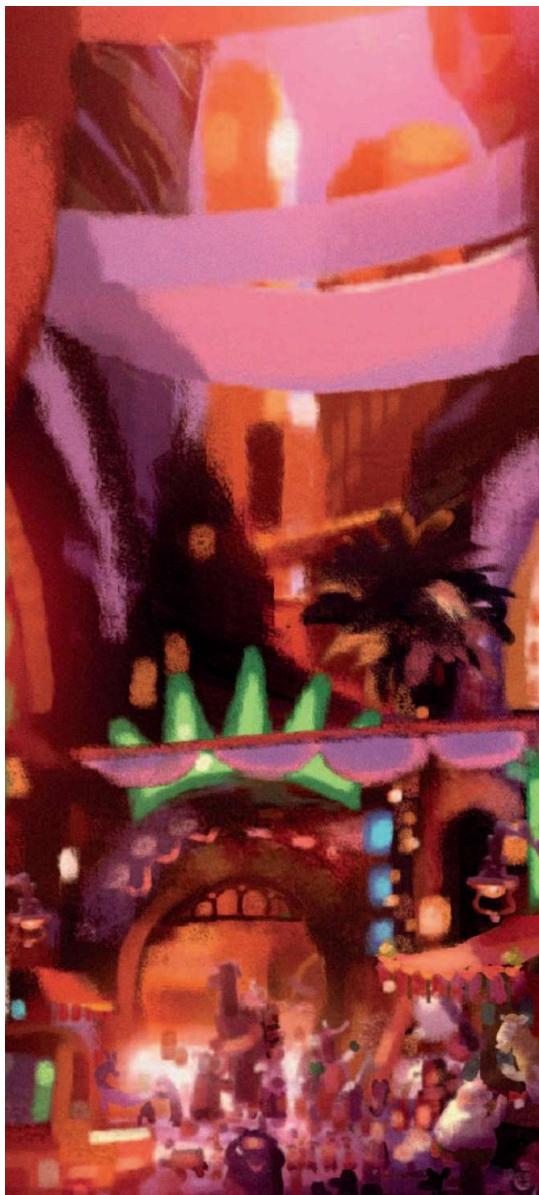
Mirage patterns appear throughout Sahara Square, and dust often fills the air. But since many desert animals are nocturnal, the fun and sun district really comes alive at night. "It's like the Las Vegas strip," says production designer Dave Goetz. "But beyond the strip, there are slot canyons that are more historic, with smaller buildings, residences, and a marketplace."



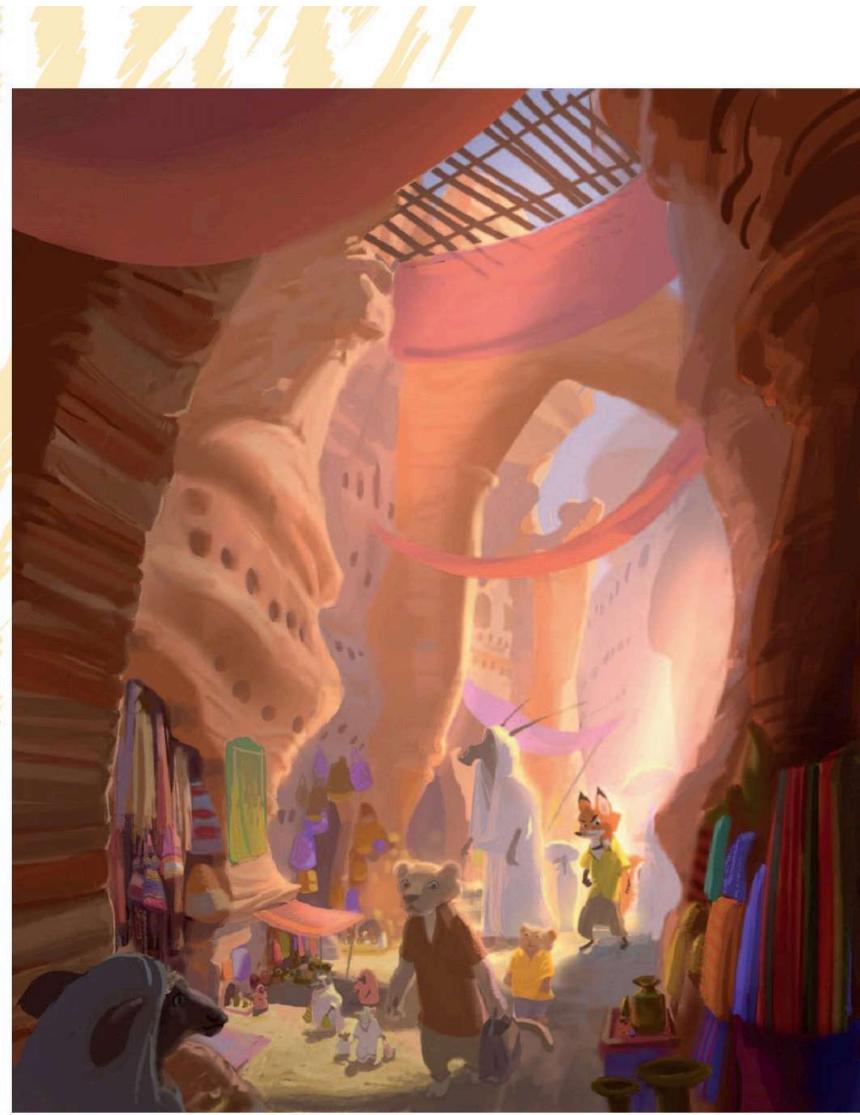
Matthias Lechner / digital

Matthias Lechner / digital

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Matthias Lechner / digital



David Goetz / digital



David Goetz / digital

The mix of architecture, motifs, and patterns comes from the way all these animals live together. Sahara Square is a semi-arid desert with Arabian, African, and American elements in it.  
—Dave Goetz, production designer



Matthias Lechner / digital



Matthias Lechner / digital





Cory Loftis / digital

increase the contrast  
on these patterns

# Palm Hotel & Casino



Nick Orsi / digital

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Scott Watanabe / digital

The Palm Hotel is very classy. It has water features, and a strip around it with all the things a Vegas hotel would have—shopping, casinos, entertainment.  
—Matthias Lechner,  
art director of environments



Matthias Lechner / digital



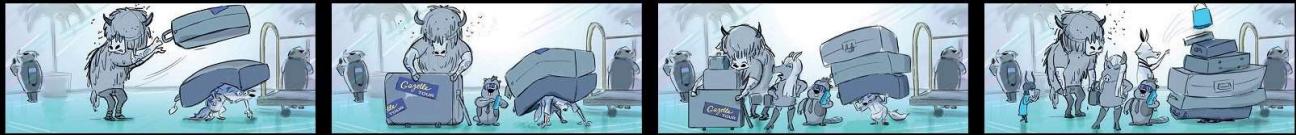
Matthias Lechner / digital

Brett Albert / digital

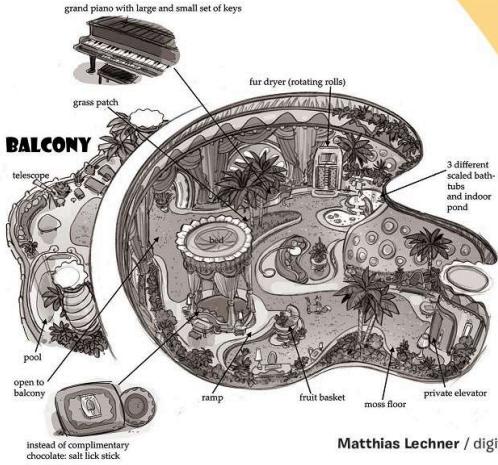
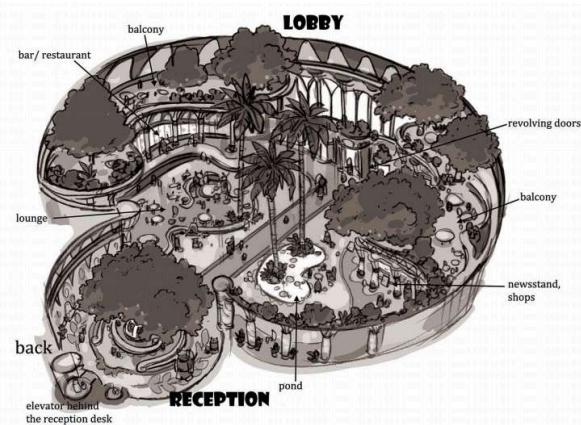


David Goetz / (paint over) digital

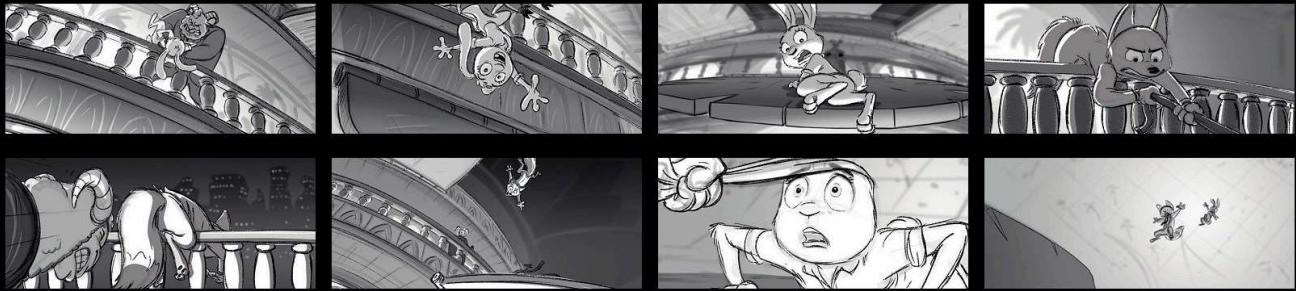




Storyboards: Lauren MacMullan / digital



Matthias Lechner / digital



Storyboards: Steve Markowski / digital

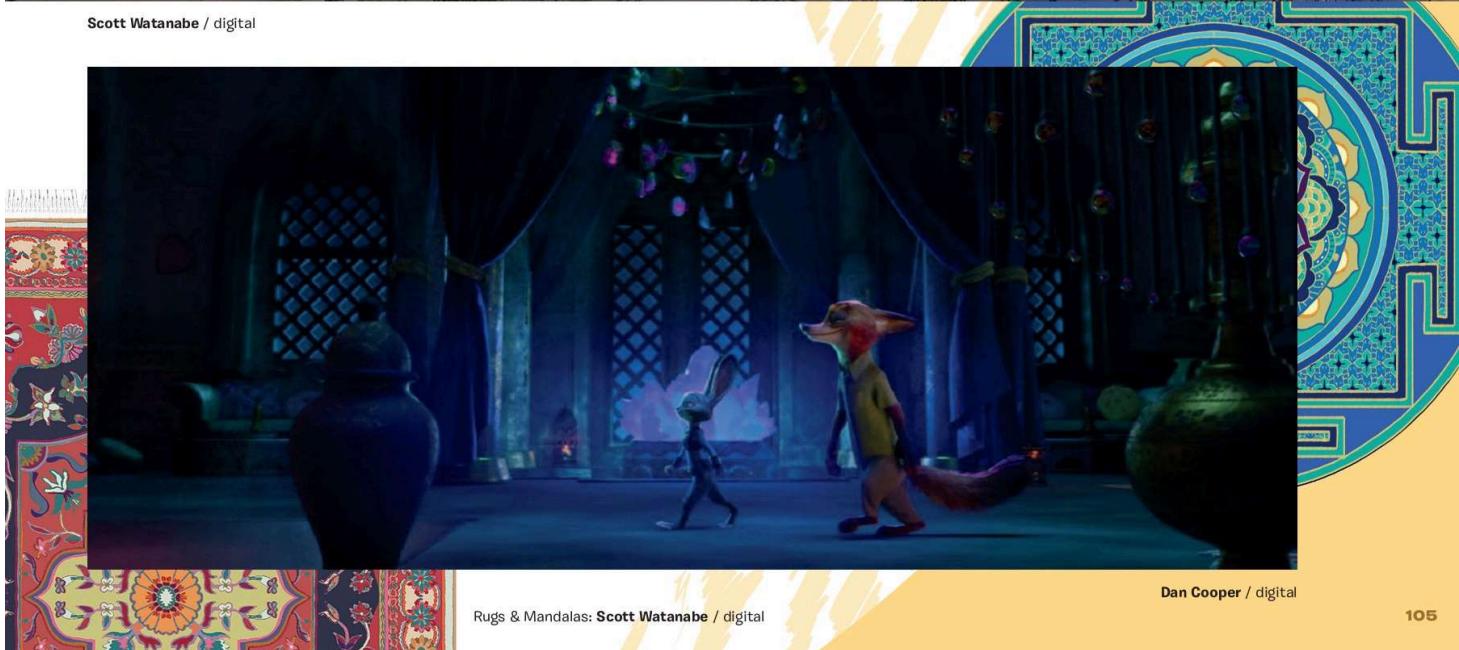


Mystic Spring Oasis has a Moroccan-style palace exterior, with a modernized, hippie interior. It's an animal spa oasis inside, with manicured walkways, back scratching stations, mud pools, hot stone massage, yoga.

—Matthias Lechner,  
art director of environments



Scott Watanabe / digital



Rugs &amp; Mandalas: Scott Watanabe / digital

Dan Cooper / digital

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Shiyoon Kim / digital

I initially designed Yax as a hairy, millennial dude, inspired by skate punks I see around Burbank.  
—Shiyoon Kim, visual development artist

Cory Loftis / digital

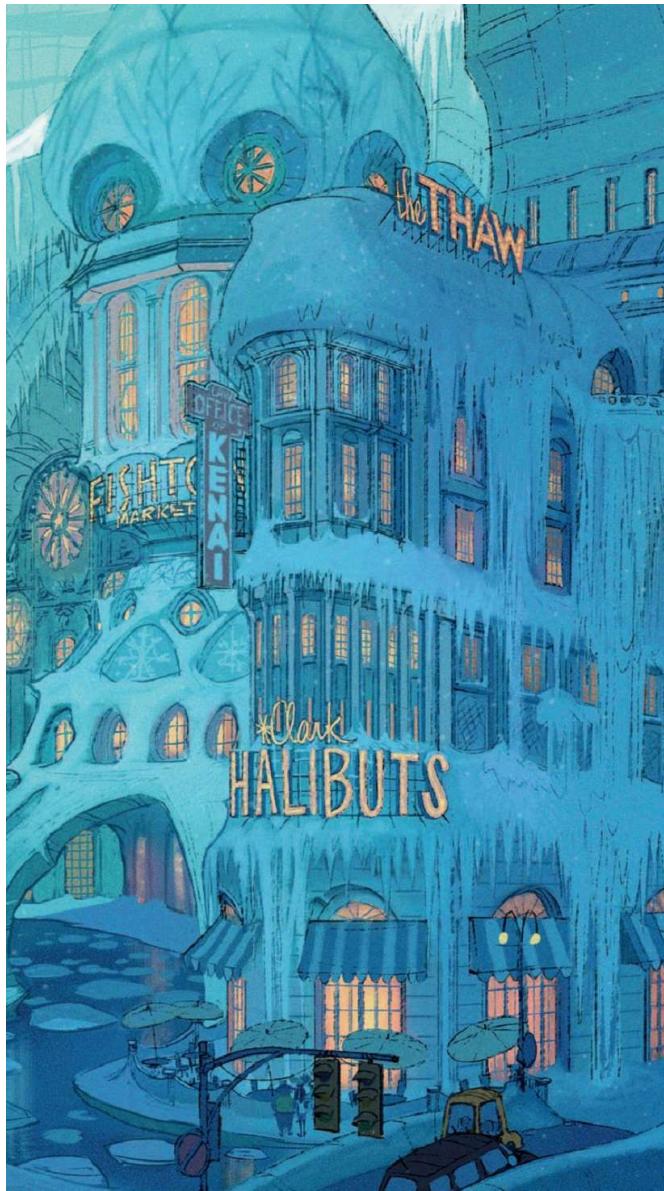
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Otters are bulkier than weasels, and tough, like one big muscle. But Mrs. Otterton needed to seem frail enough to ask a bunny for help, so we gave her a thinner wrist and neck.

—Cory Loftis, art director of characters







# TUNDRA TOWN

Hopps and Nick's next clue takes them to Tundratown, where they encounter the fearsome crime lord, Mr. Big. This neighborhood of Zootopia is made entirely out of snow and ice. Air conditioners and snow blowers run constantly, and everything always has a thick layer of snow on it to keep the reindeer, arctic shrews, polar bears, and moose that live there comfortable. Even the fountain in the plaza spouts snow instead of water. But what would an icy part of the city built by those animals look like?

"Snow and ice present particular challenges," says production designer Dave Goetz. "We were inspired to try Russian architecture, but once buildings are covered with snow, even an onion dome just looks like a normal structure." Eventually the team decided to use the snow itself in the district's construction. "Roofs feel like pieces of glacier that broke off. Streets look like crevasses in a sheet of snow. But structural foundations, like window frames, are made of wood and set into the snow. There's still some Russian influence, as well as Italian flavor inspired by Mr. Big's character, but it's more a decorative touch."



Cory Loftis / digital

Matthias Lechner / digital

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David Goetz / digital



Justin Cram / digital

Much of Tundratown was built directly into big mountains. The gondolas help smaller animals move around the area more easily.  
—Nick Orsi, visual development artist



Justin Cram / digital



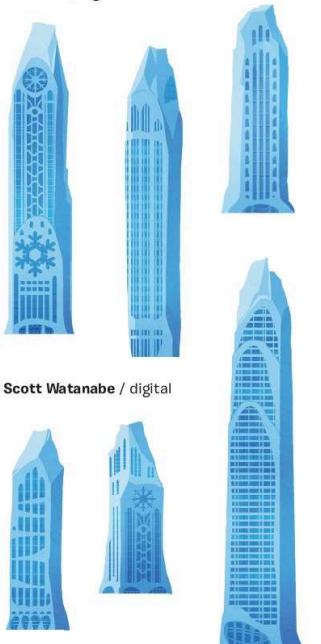
Andy Harkness / digital



Nick Orsi / digital



Nick Orsi / digital



Scott Watanabe / digital



Nick Orsi / digital

# Mr. Big & Fru Fru

Mac George / digital

Mr Big is a homage to *The Godfather*.  
He's like Marlon Brando as an arctic shrew.  
—Cory Loftis, art director of characters



Cory Loftis / digital



Mac George / digital



Cory Loftis / digital



Cory Loftis / digital

Fru Fru is supposed to be aesthetically pleasing but her individual elements are so bizarre—the long nose, scraggly teeth, bouffant hairdo. It amazes me when elements can add up to something cute and appealing.  
—Rich Moore, director



Cory Loftis / digital



Dan Cooper / digital

# Koslov's Palace



Matthias Lechner / digital

Koslov started as a Russian gangster who owned a restaurant that was a front for his criminal activity. Koslov's Palace is a polar bear cave with a Russian-style interior. The tile is made of ice that flashes red, purple, pink, and blue when light flickers through it.  
—Matthias Lechner, art director of environments



Matthias Lechner / digital



Mac George / digital



David Goetz / digital



Matthias Lechner / digital



Matthias Lechner / digital

# Koslov & Morris



Polar bears are one of the few animals that do stand up on two feet at times, so we used that for reference in Koslov's animation. He is a character who knows what he wants, is very certain and to the point, so his movement reflects that.  
—Renato dos Anjos,  
co-head of animation



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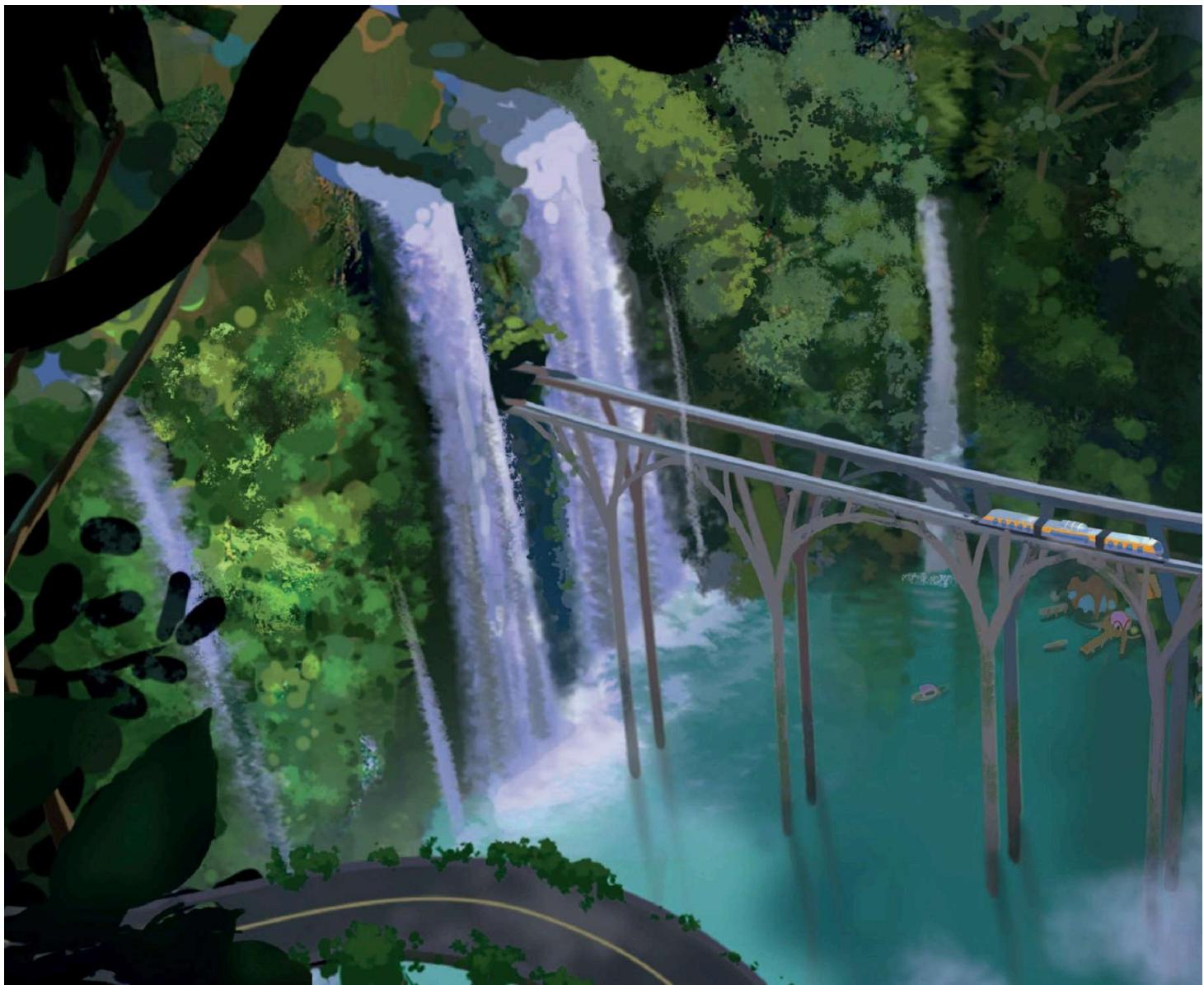




Cory Loftis / digital

Of all the characters that are no longer in the movie, I miss Morris most. He was Koslov's son and it was tough to make him feel soft and cute. Morris's fur is cleaner than Koslov's—the filth of the world hadn't gotten to him yet. His claws look like pearls because he hasn't had to use them.  
—Cory Loftis, art director of characters







# RAINFOREST DISTRICT

Following a tip from Mr. Big, Hopps and Nick venture into the Rainforest District in search of Manchas, the last animal to see Mr. Otterton alive and a witness to his sudden savagery. The Rainforest District is one of the most complex environments in Zootopia, with artificial structures made to look like real vegetation and a pervasive wetness permeating the atmosphere. It's also the only habitat built on a vertical axis, with a sheer drop from the treetop canopy to the river at the bottom, which adds to the sense of mystery and foreboding.

To make the environment functional for its animal inhabitants, art director of environments Matthias Lechner designed huge tree-like structures built around pipes inspired by tree roots. "They suck water from the river and transport it up the tree to sprinklers in the canopy, so there is a constant cloud of steam in the air." Roads are a combination of real trees and artificial branches. Homes are made of wood, with leafy roofs to shed rain, and become nicer the higher up one resides. "Nearer the bottom, it's hot, it's rainy, and stuff is constantly falling down from above," says Lechner.



David Goetz / digital

David Goetz / digital

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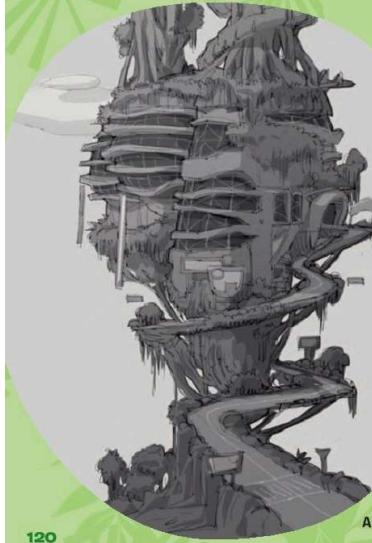


Matthias Lechner / digital

The colors are tropical and South American inspired—vibrant, so they pop out against green.  
—Dave Goetz, production designer



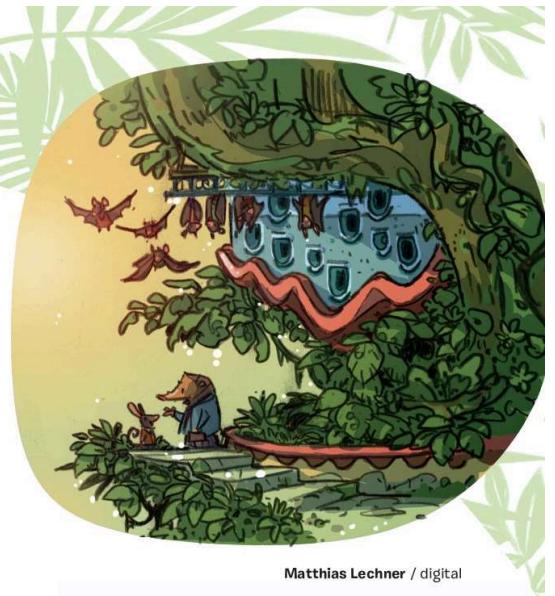
Armand Serrano / digital



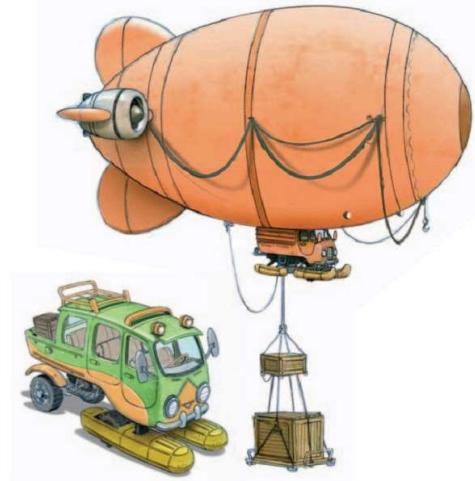
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Matthias Lechner / digital



Matthias Lechner / digital



Jim Martin / digital

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Matthias Lechner / digital



An environment with lots of vegetation is technologically difficult because a forest isn't still. Air moves through the trees and each tree moves differently. To make it feel believable, we had to find clever ways to get unique motion, such as working in layers or grouping branches.  
—Ernie Petti,  
technical supervisor



Justin Cram / digital

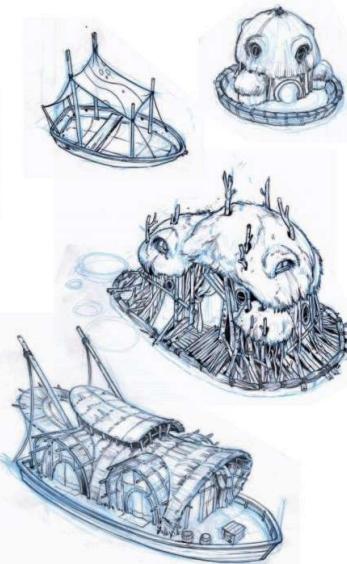


122 Matthias Lechner / digital





Scott Watanabe / digital



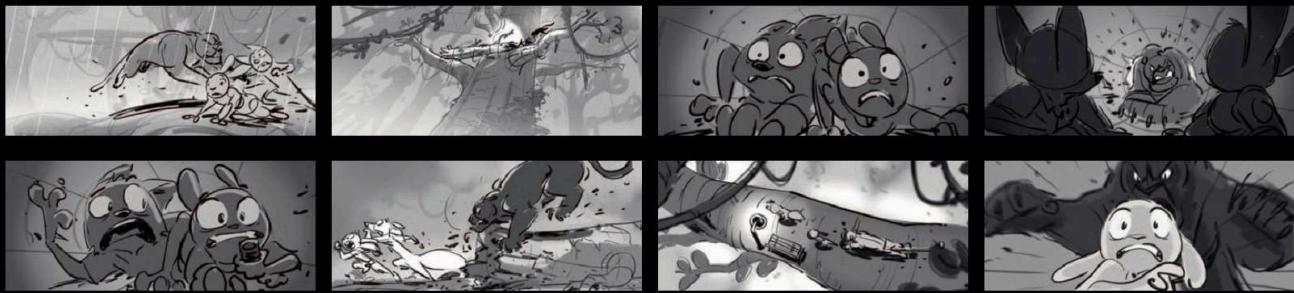
Jim Martin / digital





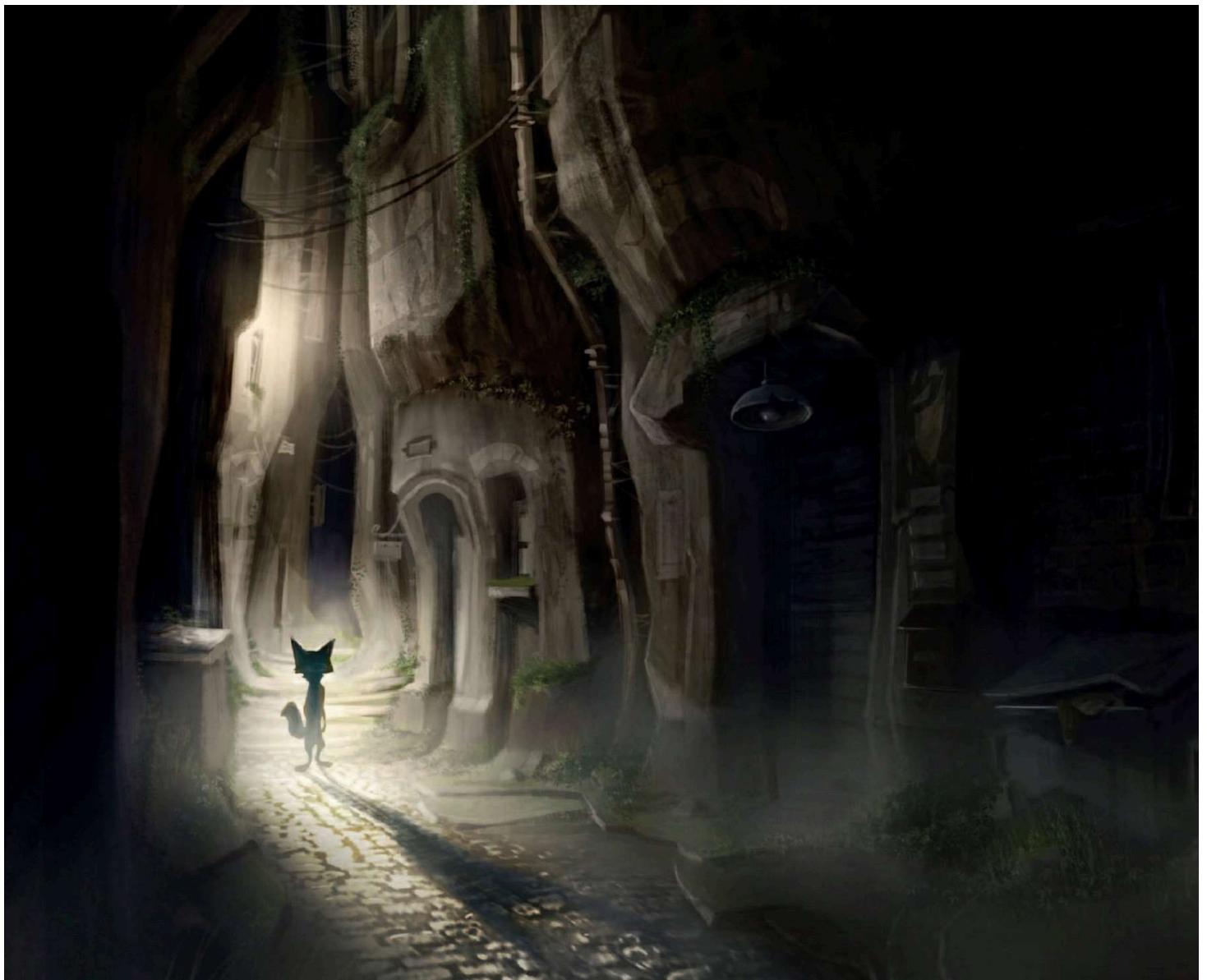


Armand Serrano / digital



Storyboards: Jason Hand, Paul Briggs / digital

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# MEADOWLANDS

Zootopia is an enormous metropolis, with more places in it than can possibly be visited in one movie. As the story evolved, many locations that were created ultimately did not make it into the final film. But as much care and thought were put into their designs as all of the others.

One example is the Meadowlands, an expansive grassland that is home to sheep and other grazing animals. In an early version of the movie, when predators were the minority and prey ran the world, there was a grand conspiracy involving sheep wearing wolf suits trying to make predators seem dangerous. "It was overly complicated and utterly silly," says screenwriter and co-director Jared Bush, "and ultimately the story shifted enough that we had to lose that plot. But the sheep still needed a place to live."

Hopps and Nick do briefly encounter the Meadowlands when they discover Cliffside Asylum, where Mayor Lionheart quarantines the animals going savage. "It's a creepy old hospital, all by itself on the edge of the Meadowlands," says Matthias Lechner, art director of environments. "It's a dark contrast to the rest of the area around it."



Armand Serrano / digital

Armand Serrano / digital



Jim Martin / digital

# Cliffside Asylum

Cliffside Asylum is a gloomy, creepy, desolate place. We added rock striations and textures, so it feels like a structure that's partially made out the rocky cliff it's built on.

—Jim Martin, visual development artist

Jim Martin / digital





Storyboards: Jeremy Spears, Normand Lemay / digital



Shiyoon Kim / digital



Cory Loftis / digital

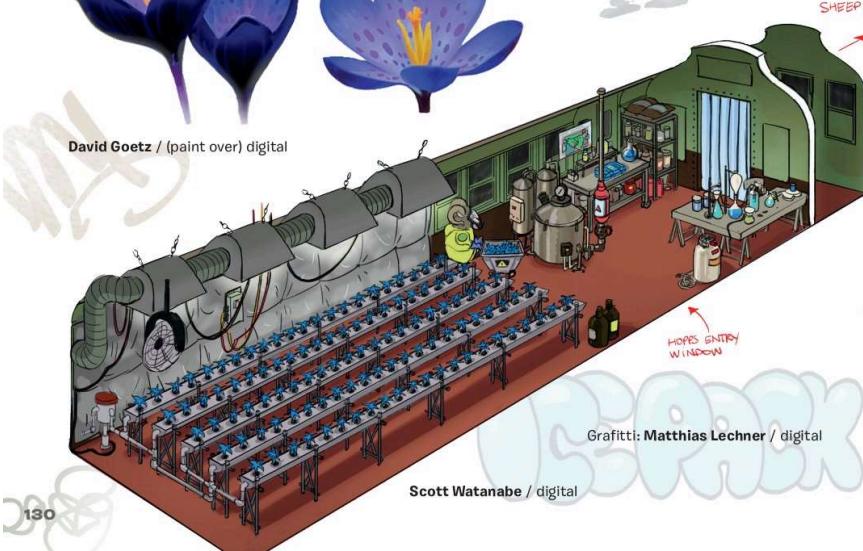
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## The Lab



David Goetz / (paint over) digital



Scott Watanabe / digital

Graffiti: Matthias Lechner / digital



Cory Loftis / digital



Scott Watanabe / digital

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# Wooly

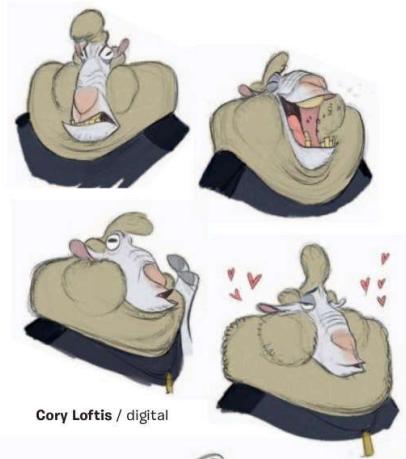
Wooly started out as the mayor's henchman, doing the dirty work. At first he seemed to be this bumbling, funny character, always eating paper out of cans. Later you'd find out he was shredding important documents.  
—Nick Orsi, visual development artist



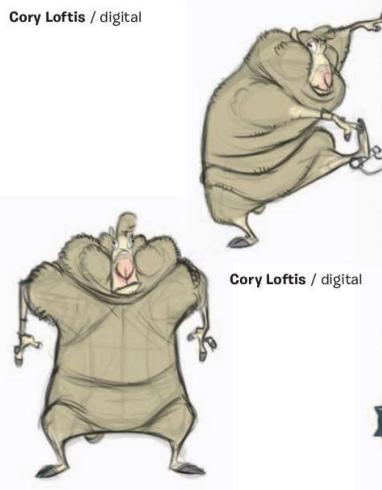
Cory Loftis / digital



Cory Loftis / digital



Cory Loftis / digital



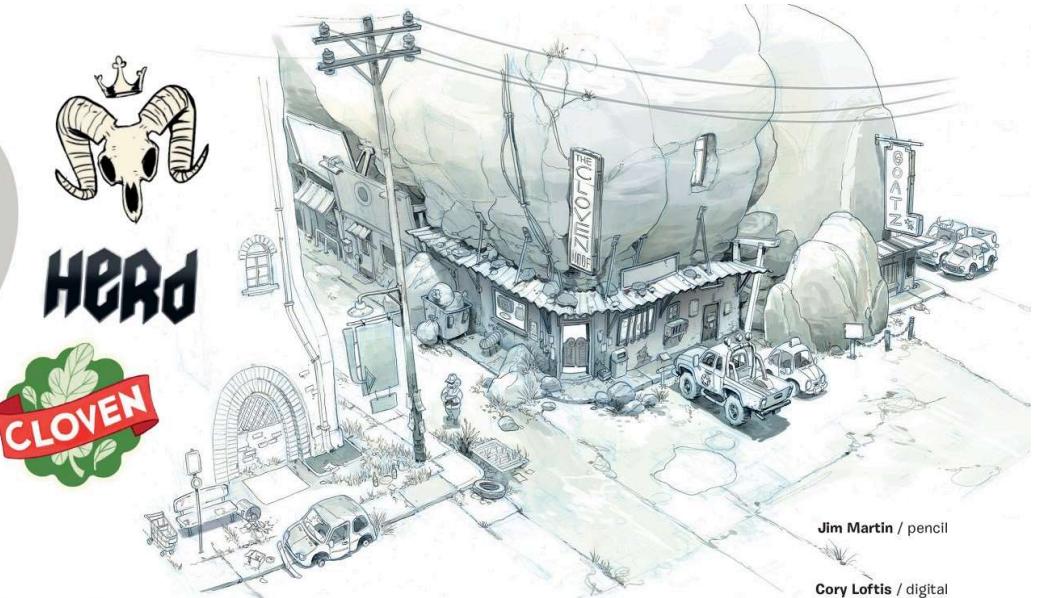
Cory Loftis / digital



Cory Loftis / digital



Cory Loftis / digital





Cory Loftis / digital



The Cloven Hoof was like a biker bar where the sheep hung out, in the seedy part of town. There are so many fun details in it.

—Jared Bush,  
screenwriter and co-director

Cory Loftis / digital

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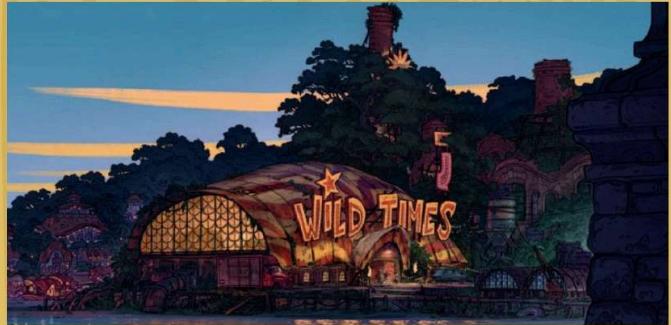


Matthias Lechner / digital

## FUN AND GAMES

Two entertainment venues for *Zootopia* were designed but did not make it into the final film—*Wild Times* and *Zootennial Stadium*. Both were integral to an earlier version of the story, when predators and prey were sharply divided from the outset. Though the story evolved, the concept inspired one of the filmmakers' favorite unused environments—*Wild Times*, a clandestine playground refuge for predators, run by Nick. “It was an arcade where predators could indulge their animal natures,” says production designer Dave Goetz.

*Zootennial Stadium* featured in the climax of that earlier version of the film. In an elaborate show meant to demonstrate unity and equality among predators and prey, pop superstar Gazelle, a prey animal, performed fearlessly alongside her tiger backup dancers. Titled *Animalia*, the show conveyed the history and evolution of the film’s animals and their universe.



Matthias Lechner / digital

# Wild Times

Matthias Lechner / digital



Matthias Lechner / digital



Mac George / digital





David Goetz / digital

Wild Times was initially decrepit—at one point there was a tree growing through a hole in the roof; later it had a ramshackle blues club feeling with a bunch of materials patched together. At different times it was located under a bridge, or next to an old factory, or behind the front of a doctor's office.  
—Dave Goetz, production designer



Manu Arenas / pencil and marker



Dan Cooper / digital



David Goetz / digital



Matthias Lechner / digital

We invented games that predators might enjoy playing. There was laser tag for cats. A Roar-A-Coaster. There was Log Rolling, where a bear balanced on a plank that rotated in the water, causing plastic salmon to shoot up to him to catch.

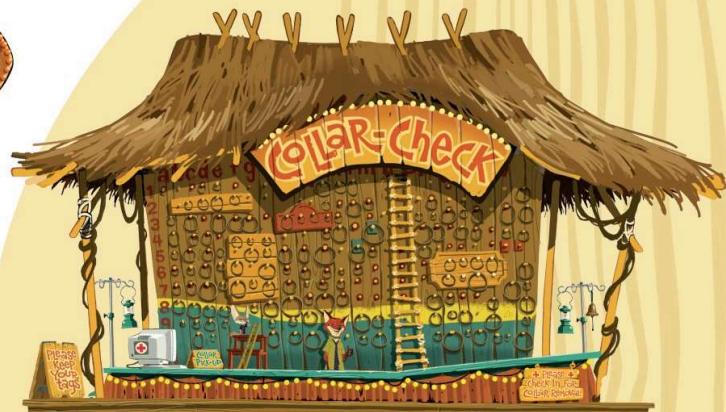
—Matthias Lechner,  
art director of environments



Matthias Lechner / digital



Mac George / digital



Mac George / digital



Signage: Mac George / digital



Matthias Lechner / digital

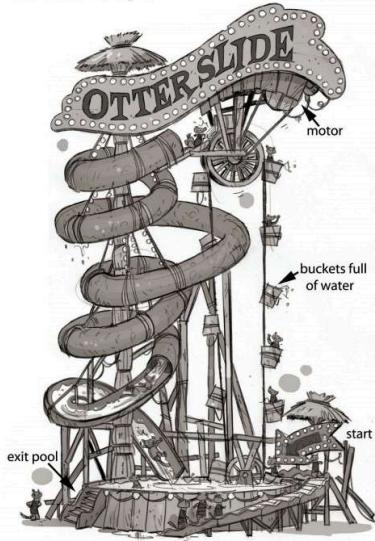
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David Goetz / digital



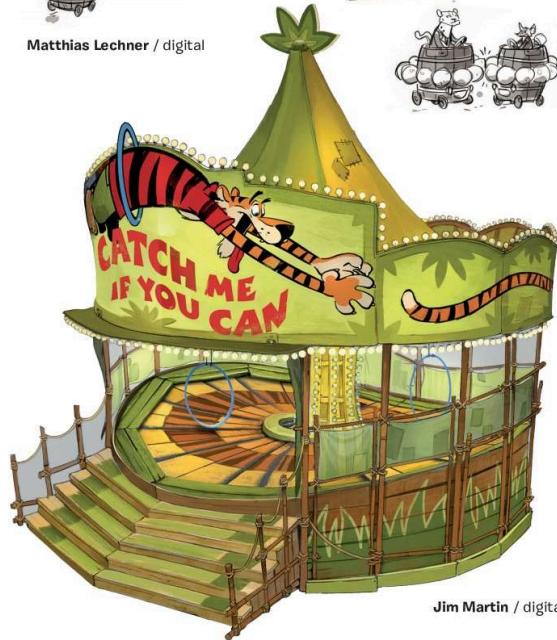
Matthias Lechner / digital



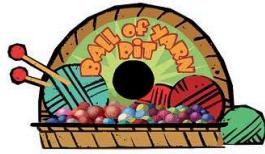
Matthias Lechner / digital



Mac George / digital



Jim Martin / digital



Matthias Lechner / digital



Matthias Lechner / digital



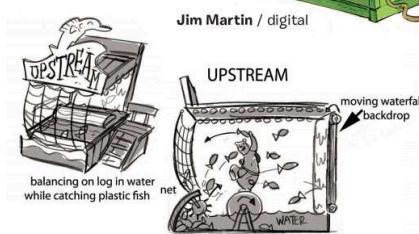
David Goetz / digital



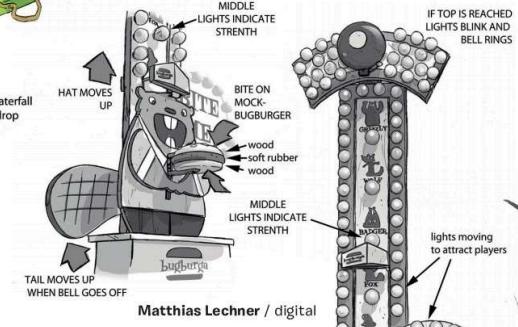
Matthias Lechner / digital



Matthias Lechner / digital



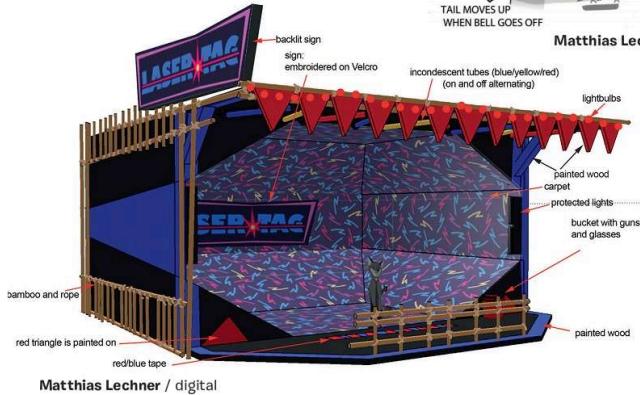
Matthias Lechner / digital



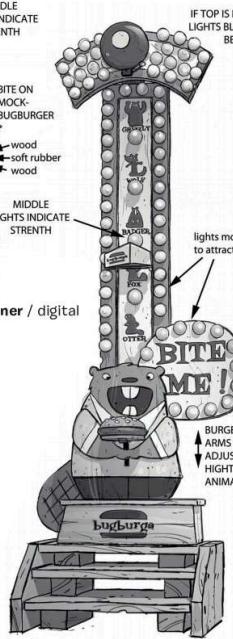
Matthias Lechner / digital



Jim Martin / digital



Matthias Lechner / digital



Mac George / digital



Matthias Lechner / digital

# Honey Badger

Honey was Nick's friend in an earlier version of the story. Honey badgers are extremely tough, so she was a heavier, stouter character. She was also a conspiracy theorist and a bit nuts. So we put crumbs in her hair, stains on her clothes, made one eye bigger than the other; she's clearly unstable.  
—Cory Loftis, art director of characters



Nick Orsi / digital



Nick Orsi / digital

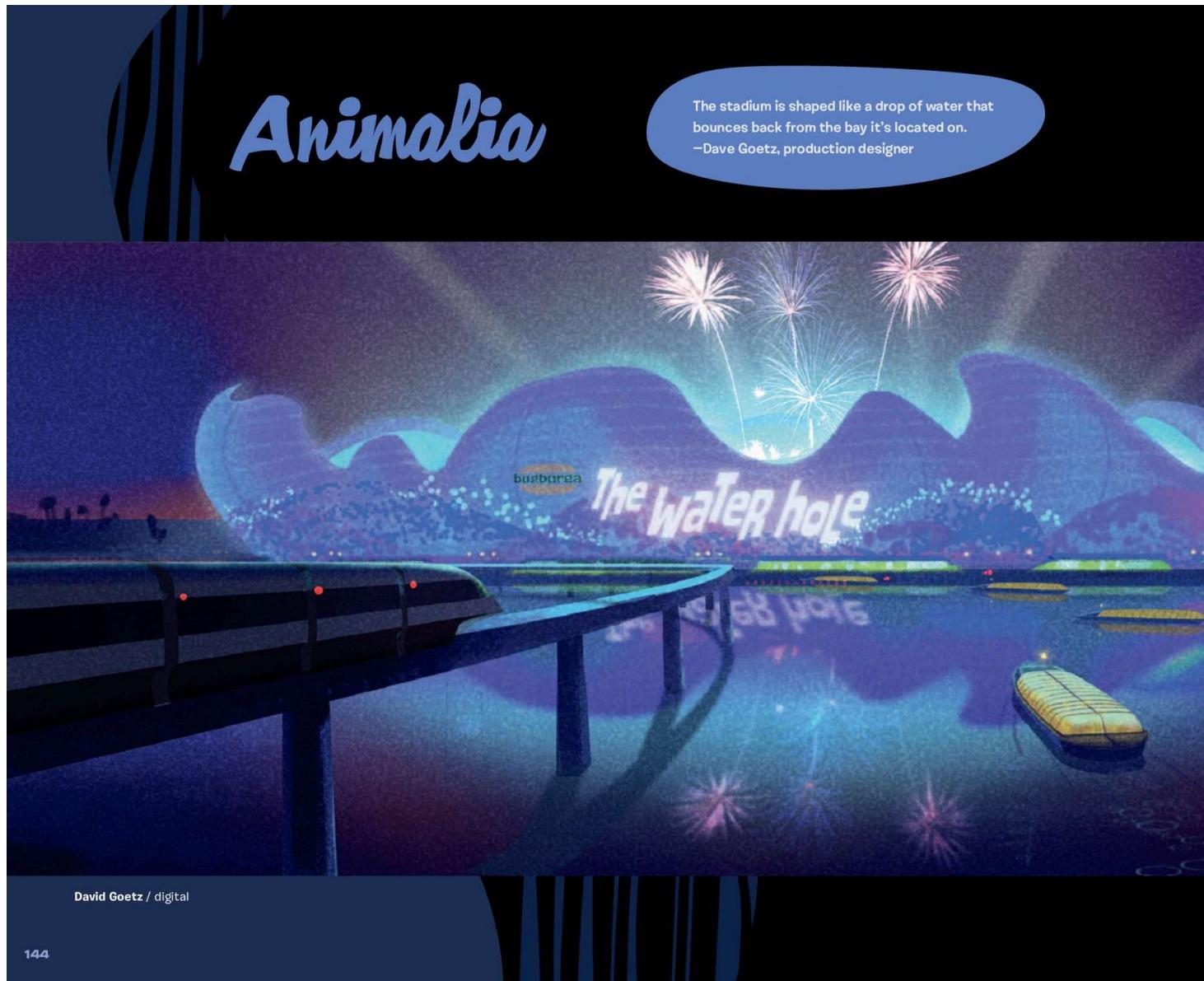


Nick Orsi / digital



Cory Loftis / digital



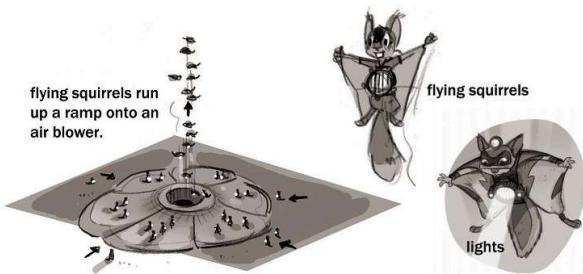






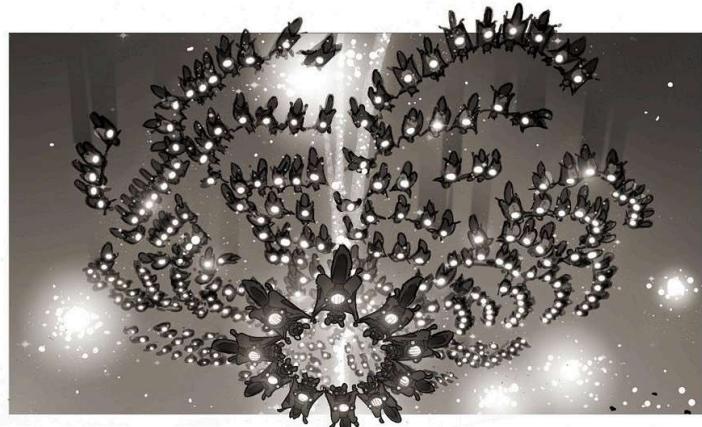
Matthias Lechner / digital

Gazelle's show was an extravaganza. Squirrels were shot into airstreams and then fell in formation. There were flying pigs, confetti cannons, and lots of lights.  
—Matthias Lechner, art director of environments



Matthias Lechner / digital

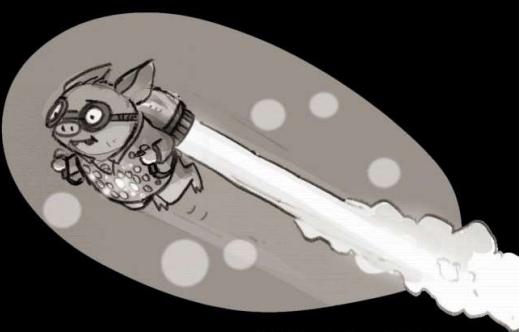
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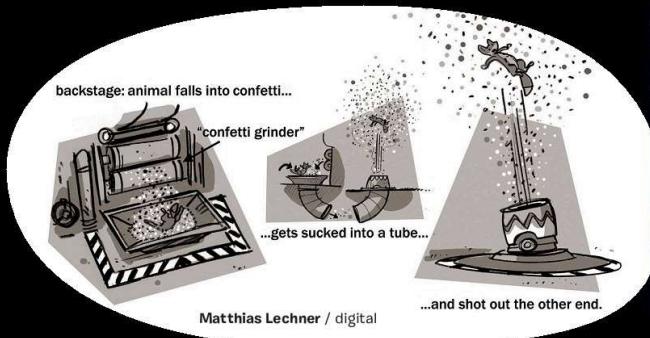
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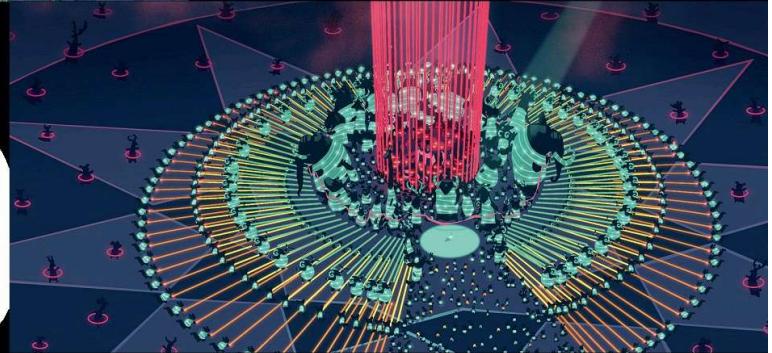
Matthias Lechner / digital



Matthias Lechner / digital



Matthias Lechner / digital



Matthias Lechner / digital



Storyboards: Byron Howard / digital



Yax the Yak's fur is short and tight in places, wavy and matted in others. His mane is more flowy and drifts than dreadlocks are on humans. We slowed down that motion to help viewers sense how much taller he is than Hopps and Nick.  
—Claudia Chung Sanii, simulation supervisor



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# FILMING ZOOTOPIA





**T**he filmmakers faced several technical challenges during *Zootopia*'s production. One of the first and most immediate problems was creating believable fur. "Fur is very different from human hair," says Ernie Petti, the film's technical supervisor. "Its physical structure is different, which affects its movement, its lighting, its grooming.

We had to create brand new tools for the animation, simulation, and look departments to use, just for the fur." In addition, each type of fur—fox versus bunny versus sheep—is completely unique. Decisions about color, texture, and volume had to be made anew for every animal species the team designed. "Each animal is utterly distinct," says Petti. "But they all had to feel as if they belong in *Zootopia*."

The crew spent more than eight months researching the physical properties of fur to solve this challenge. Among other things, "we went to the Natural History Museum to look at pelts," recalls Michelle Robinson, the character look supervisor. "We examined how the hair changes color from root to tip, and felt the textures of each animal. We observed how fur moves in the wind, and even took photos of its structure at the microscopic level." Each department grounded its work in this research, so the fur behaves as audiences expect it to and light refracts through its fibers in a way that feels true to life. "But we also tweak it away from reality when we want to, since ultimately we're making a stylized film with a specific vision. It's not a documentary," says Robinson.

The interaction between fur and clothes, and the immense variation in body size, presented further challenges on *Zootopia*. "We wanted to retain

the scale of real animals, even though in the film they are bipedal and wearing clothes," says simulation supervisor Claudia Chung Sanii. "We had to figure out how to dress characters ranging from enormous elephants to tiny shrews and still make them feel like they're living in the same world." Beyond just attire, however, the animals are also covered in fur, and have layers of muscle and fat beneath the hair. "All of the elements had to interact correctly. Garments aren't sitting directly on skin, as they do on humans. The fur gives the clothes a unique volume and movement."

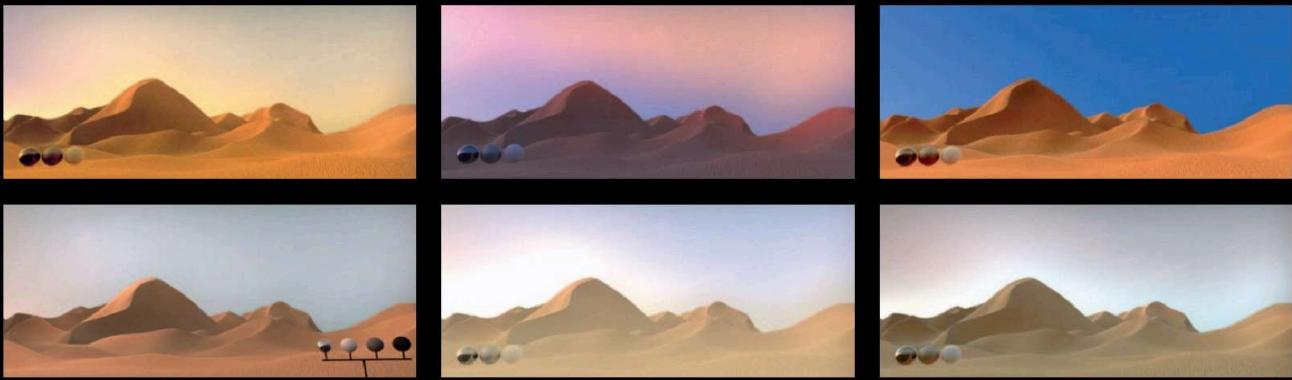
Cinematography helped solve another inherent challenge of *Zootopia*'s all-animal world. With the wide variety of creatures living in diverse habitats, the team had to create and light a unique climate for each area. "We have a rainforest with lots of rain and trees, a desert with heat and dust, an arctic tundra with snow and ice," says Petti. The team consulted a climatologist for insight into generating an accurate sense of atmosphere for each neighborhood. "We were interested in what makes a place feel like it does," says Brian Leach, director of cinematography, lighting. "The most influential element is the presence of particulate, such as dust or water vapor, in the air. The more particulate, the more atmosphere you perceive, almost like a haze. We tried to capture that in the lighting."

Nathan Warner, director of cinematography, layout, wanted to push the camera language as well. "In animation, the camera is always perfectly exposed and moves smoothly. But in live-action, the camera operator sometimes makes mistakes," he says. *Zootopia* was the ideal film to employ a less-than-perfect technique. "[Director] Byron [Howard] described a looser style, more National Geographic-like. *Zootopia* should feel like there is a cameraman behind the camera, trying to track the action." The team also experimented with different camera lenses. "We based it off a 35mm camera like you might have at home. We played with distortion and depth of field. We tried to make the onscreen action feel as real as possible."

Layout and lighting worked in parallel to achieve the best results for both departments. "The goal was to make a beautiful-looking film, while challenging and pushing the boundaries of an animated film," says Leach. Warner agrees. "Hopefully audiences will perceive cinematography that is different than a typical animated film," he reflects. "But it's more important that it feel natural onscreen and becomes another tool in the storytelling."

Dust gets kicked up from all the daily activity, which is partly why there are warmer colors at sunset than at sunrise. Arctic poles are so cold that any water vapor in the air freezes, creating an effect like diamond dust—sparkling bits of sunlight refracting through ice crystals in air.  
—Brian Leach, director of cinematography, lighting

pages 150-151: Matthias Lechner / digital

**DESERT CLIMATE ENVIRONMENT LIGHT TEST****TUNDRA CLIMATE ENVIRONMENT LIGHT TEST**

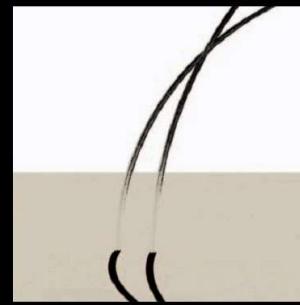
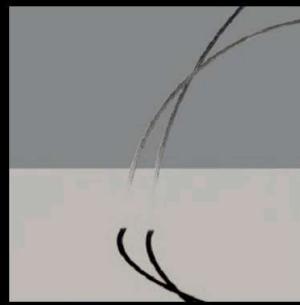
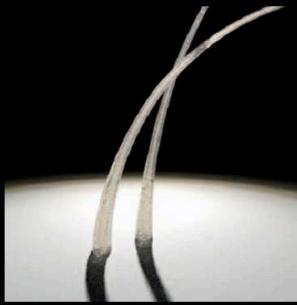
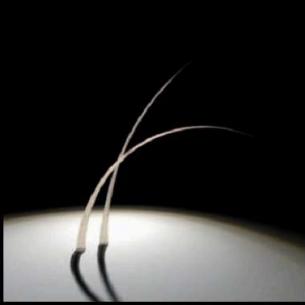
Gina Lawes / digital

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Every type of fur is different. Polar bear fur looks like fiberglass; it's nearly transparent and has a little sparkle. But honey badger fur is really coarse, wiry, and stiff. Bunnies have thinner hair and more of it, which gives it that softer feel.  
—Michelle Robinson, character look supervisor

Photography on pages 154-155: Brian Leach, Alex Nijmeh, Michelle Robinson



Alex Nijmeh / digital

Computer-generated animals can look like taxidermy if you don't imbue their fur with enough warmth. We allow skin to show through the fur in places, like around mouths and the interior of ears, to get a sense of blood running through their veins.  
—Cory Loftis, art director of characters



# Color Script





David Goetz, Dan Cooper / digital

The color script sets the palette and mood for a sequence. Zootopia's have a sense of believable outdoor light and appealing environmental clues. Keys for Sahara Square have strong sunlight and heat. The Rainforest District is damp and dark. Tundratown is all cool colors.  
—Dan Cooper, associate production designer





## ACKNOWLEDGMENTS

The hard work that goes into creating a Disney animated feature film is surpassed only by the love that imbues every moment in its journey of creation. I am deeply grateful to Clark Spencer, Byron Howard, Jared Bush, and Rich Moore for trusting me to recount part of *Zootopia's* journey.

I am sincerely indebted to the individual artists who took time from their nonstop schedules to sit and talk with me for this book. I learned so much from each of you, and I hope I've done justice to your deeply thoughtful creative process and amazing talents. Particular thanks to Stevi Carter, Albert Ramirez, Eileen Aguirre, Claire Smith, and the entire *Zootopia* production management team—you are marvels of grace under pressure.

Extra special thanks to Renato Lattanzi, who always calmly keeps things in perspective; my editor, Beth Weber, who improves every draft immeasurably; Glen Nakasko, whose design brought this book to beautiful life; and Scott Hummel, my trusted transcriptionist. I love working with each of you!

To Maggie, Mom, and Shannon: your belief, encouragement, and support inspire me more than I can possibly express. I wouldn't be where I am today without each of you. Thank you, always and forever.

—Jessica Julius

Cory Loftis / digital

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Nick Orsi / digital

# ABOUT THE AUTHORS

**Jessica Julius** is a senior creative executive at Walt Disney Animation Studios. She was the story production supervisor on the Academy Award®-winning film *Frozen* and worked on the Academy Award®-winning feature *Big Hero 6*, as well as Oscar®-nominated films such as *Wreck-It Ralph*, *Tangled*, *The Princess and the Frog*, and *Bolt*. She is the author of *The Art of Big Hero 6* and several children's books. She lives in Los Angeles with her husband.

**John Lasseter** is a two-time Academy Award®-winning director and chief creative officer of Walt Disney, Disneytoon and Pixar Animation Studios, and principal creative officer of Walt Disney Imagineering.

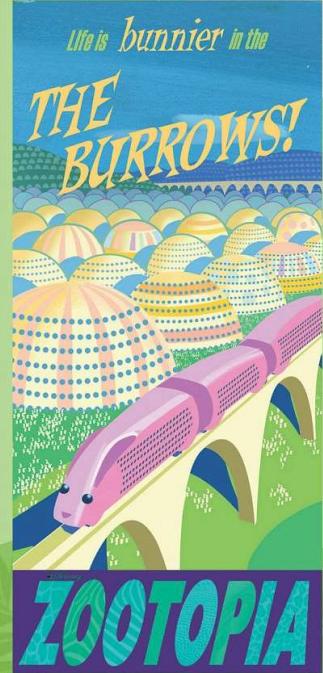
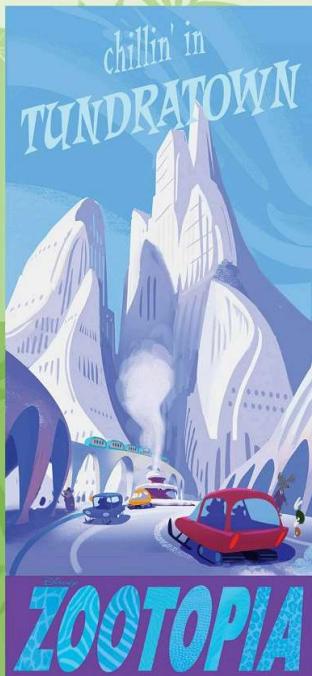
**Byron Howard**, director of *Zootopia*, directed Walt Disney Animation Studios' 2010 feature *Tangled* with Nathan Greno. Howard joined Disney in 1991, hosting the animation tour at Disney-MGM Studios in Orlando. By 1994, he officially joined the Walt Disney Animation Studios as an in-betweener and clean-up artist on *Pocahontas*. He went on to become an animator on *Mulan* and a supervising animator and character designer on *Lilo & Stitch* and *Brother Bear*. After relocating to California, Howard worked as a story artist and character designer before directing 2008's Oscar®-nominated feature *Bolt* with Chris Williams.

**Rich Moore**, director of *Zootopia*, joined Walt Disney Animation Studios in 2009 and directed 2012's Oscar®-nominated feature *Wreck-It Ralph*. A graduate of California Institute of the Arts' (CalArts) renowned Character Animation Program, Moore was one of the original three directors on *The Simpsons*, directing numerous episodes over the series' first five seasons, including two Emmy® Award-winning episodes, and was a sequence director on *The Simpsons Movie*. Moore oversaw the creative development and production of Matt Groening's *Futurama*, and was awarded the 2002 Emmy® for Outstanding Animated Program.

**Jared Bush**, writer/co-director of *Zootopia*, served as co-creator, executive producer, and writer for Disney XD's animated comedy adventure series *Penn Zero: Part-Time Hero*. A Harvard University graduate with a degree in English and American literature, Bush began his career as a script reader for director Robert Zemeckis, and went on to television as a staff writer on the series *Baby Bob*. He also served as executive story editor and co-producer of Will Smith's series *All of Us*. Bush has developed original television series for Revolution Studios, Fox, and NBC, and feature film projects for New Line Cinema, Columbia/Tristar, and 20th Century Fox.

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Disney's newest animated feature, *Zootopia*, is a comedy-adventure starring Officer Judy Hopps, a rookie bunny who has to team up with fast-talking scam-artist fox Nick Wilde to crack her first case in the all-animal city of Zootopia. This lushly illustrated book offers a behind-the-scenes view of the elaborate artistry involved in creating the film.



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