



THE ART OF

 DREAMWORKS

KUNG FU PANDA 2

FOREWORD BY DUSTIN HOFFMAN
WRITTEN BY TRACEY MILLER-ZARNEKE

\$39.95 U.S.

THE ART OF
DREAMWORKS
**KUNG FU
PANDA 2**

THE ADVENTURES OF PO, THE DRAGON WARRIOR, and the Furious Five continue in DreamWorks Animation's *Kung Fu Panda 2*, as these legendary heroes face Lord Shen, a volatile and ambitious new villain. *The Art of Kung Fu Panda 2* goes behind the gates of DreamWorks Animation to showcase the rich and vivid creativity that crafted this timeless tale.

More than 150 pages of meticulously reproduced art feature action-filled storyboards, vibrant visual development art, clever character design, and stunning effects concepts. Also included is exclusive commentary from the producer, director, production designer, and crew about the unique journey they embarked upon to take Po and his friends beyond the Valley of Peace.

A meditation on the art of awesomeness, *The Art of Kung Fu Panda 2* is a study of the amazing journey involved in the making of this remarkable film.



LOOK FOR
THE ART OF KUNG FU PANDA 2
APP ON ITUNES!











(Previous Page) **Sequence 25 - Prologue Early Concept** • Mike Yamada - digital paint

(Above) **Gongmen City Harbor** • Chris Brock - digital paint



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FOREWORD



For the last several years, I've had the privilege of voicing the character of Shifu in the *Kung Fu Panda* films. This process has been one of the most interesting and challenging of my career. For an actor, there is an immense joy to inventing something literally out of thin air—to venture into a recording studio and bring a character to life for the first time.

But I was hardly alone in this endeavor. Each time I stepped into the sound booth, I found inspiration in the dynamic storyboards and detailed character designs achieved by the artists at DreamWorks Animation. These illustrations were microcosms of information, and they unveiled a clear picture of who Shifu is. This communal and imaginative vision helped me to interpret the character more fully, and to say that I am greatly impressed by their talent, drive, and creativity would be an understatement.

I hope that this dazzling art collection helps you appreciate the ambitious cinematic journey that was undertaken in order to bring this fantastical world into reality.

—Dustin Hoffman







INTRODUCTION: AN EPIC JOURNEY

Following the success of a film such as *Kung Fu Panda* is an exciting and challenging task. But with such success comes a wish to learn more about the characters the audience has come to love and a desire to further explore the world they've come to appreciate. "The next story had to be bigger, but not bigger for bigger's sake, or that would just feel hollow," says producer Melissa Cobb. Thus the production team of *Kung Fu Panda 2* set out on a creative journey that would end up taking them to higher levels of character development, location design, and technology in order to develop a natural progression to Po's tale, "like unrolling another scroll to tell a new story," says Bill Damaschke, Chief Creative Officer for DreamWorks Animation.

Kung Fu Panda 2 is a deeply emotional story, as Po tries to piece together his past in order to figure out who he is in the present—while concurrently having to battle Lord Shen, the greatest enemy to China. Director Jennifer Yuh Nelson served as head of story on the original *Kung Fu Panda*, so the fact that she has had Po in her heart, mind, and drawing board for over seven years makes her the perfect guide as his life is further unscrolled.

"This is a journey, a quest for truth, for Po," Damaschke continues. "What he comes to learn is that the truth of who we are is not based on what we have, or how we are raised, but what our actions reflect upon ourselves." Aware that this theme is weighty subject matter, the filmmakers did not want audiences to miss the essence of Po and his personality, so there is a

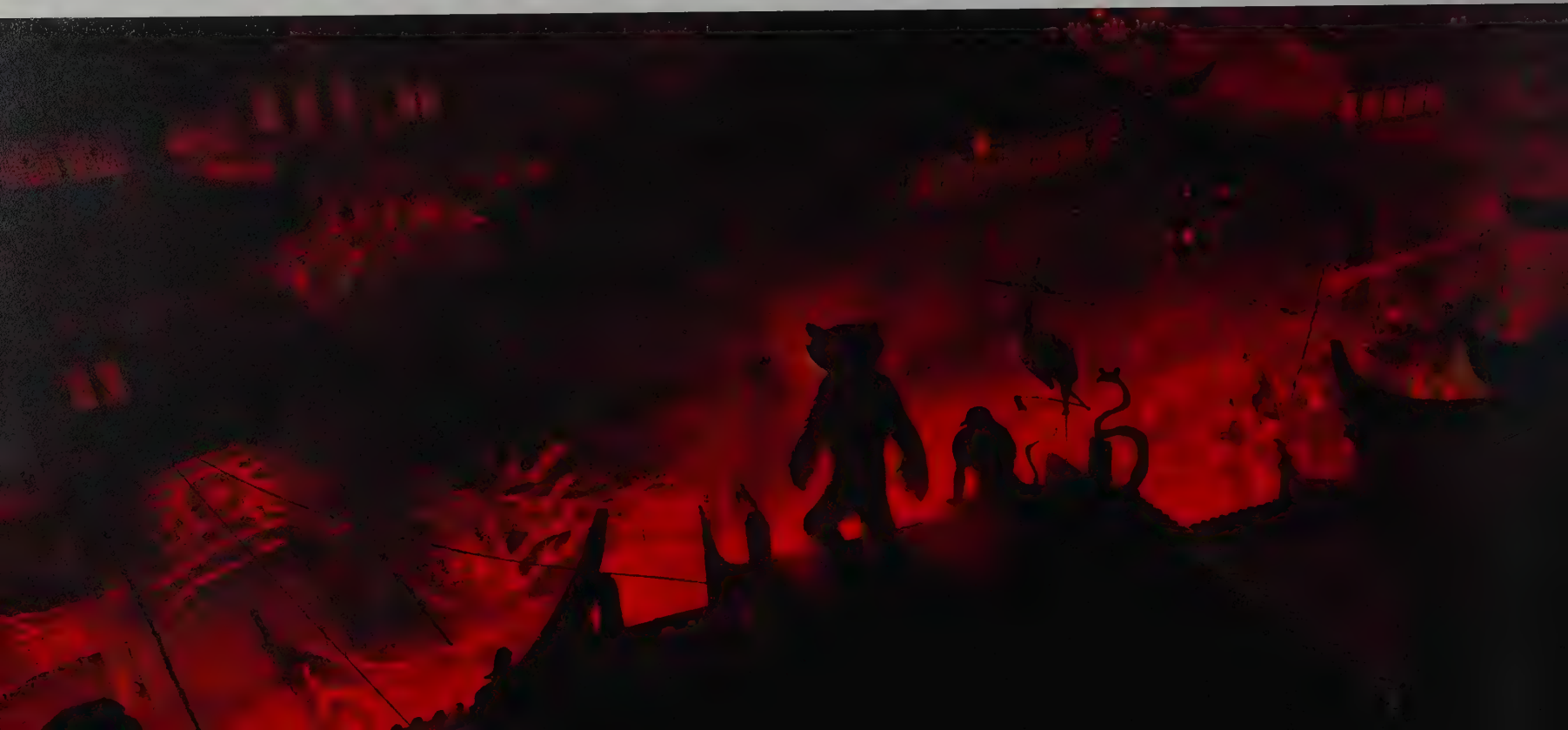
delicate balance of the serious and the comedic in his performance. For Po, it is a time of seeking answers about his past, and for the audience, it is a time to discover the answer to one of the most-asked questions from the first film: "So, is the goose really the panda's father or what?"

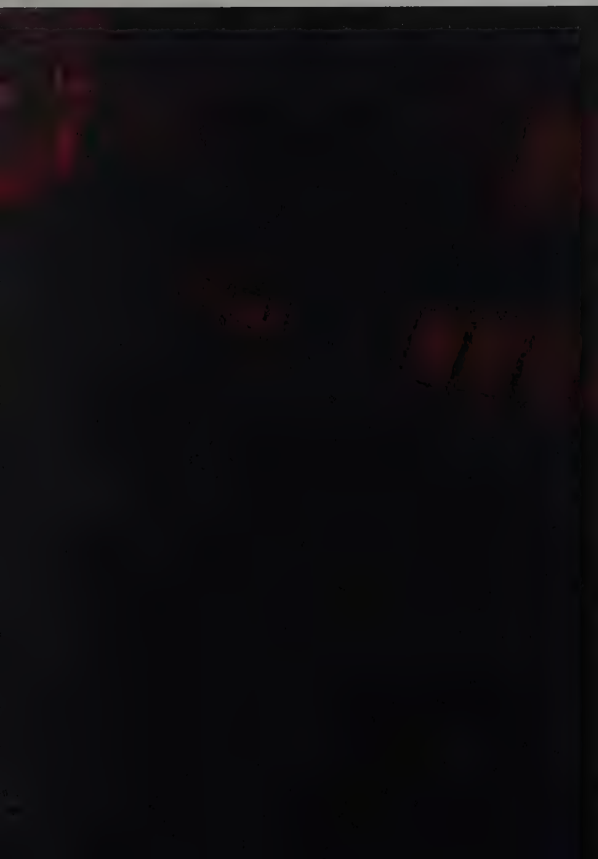
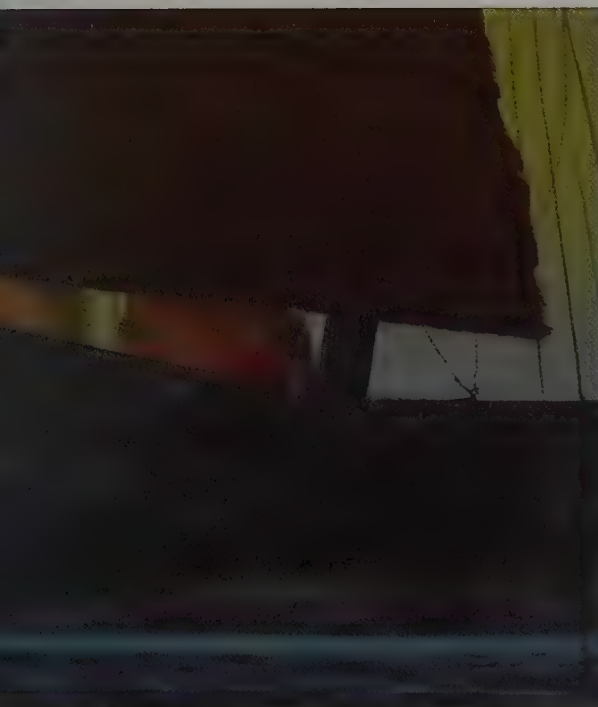
Artistically speaking, with both production designer Raymond Zibach

and art director Tang Kheng Heng at the helm again, *Kung Fu Panda 2* was able to go further and faster into mapping out the ideal environments for this epic journey. The shared vision and understanding of this team propelled them to reach new levels of detail in the design while still paying homage to the Chinese philosophies of color and architecture that were embraced

**This story deals a threat to Po's
identity and to kung fu as well.**

— Jennifer Yuh Nelson, Director





The environmental scope of *Kung Fu Panda 2* reflects the emotional scope of the film, taking Po to places he's never been and challenging him with things he's never seen before.

— Raymond Zibach, Production Designer

in the first film. The locations in this journey are clearly Chinese-inspired but are “completely foreign to Po and his Valley of Peace existence, meant to take him out of his comfort zone and into unknown territory,” explains Zibach. From the tile work on Shen’s palace to the snowy mountaintops that Po and the Furious Five cross in their quest to defeat their new nemesis, the world of *Kung Fu Panda 2* is a testament to the art team’s thoughtful, balanced visual effort, all enhanced by the latest 3D stereoscopic technology.

These well-crafted environments also complement the character lineup from Nicolas Marlet, who returned to share his vision of the *Kung Fu Panda* world. While Po, Mr. Ping, Master Shifu, and the Furious Five are all familiar, a menagerie of new characters joined the cast to showcase the graphically stylized talents of this distinctive character designer.

Advances in technology provided further momentum in realizing this next chapter in Po’s personal journey. New layout capabilities gave the production

(Top Left) Harbor Early Concept • Tang Kheng Heng - digital paint

(Bottom Left) Final Battle Early Concept • Mike Yamada - digital paint

(Above) Sequence 600 - On the Trail Color Key • Tang Kheng Heng - digital paint

(Below) **Sequence 1900 - Po Finds the Truth Concept** • Raymond Zibach - digital paint

(Top Right) **Sequence 25 - Prologue Early Concept** • Jason Brubaker - digital paint

(Bottom Right) **Sequence 25 - Prologue Early Concept** • Tang Kheng Heng - digital paint



team a more detailed previsualization of what effects and lighting could bring to each sequence by capturing the cinematographic goals earlier and more clearly than ever before. This allowed a more pointed focus for every department in the pipeline, from animation through final lighting, which also meant more freedom to explore and maximize the look and action within each shot.

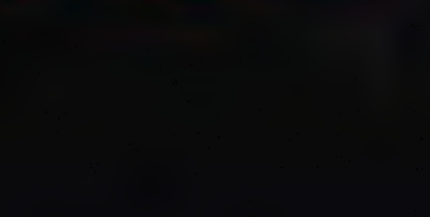
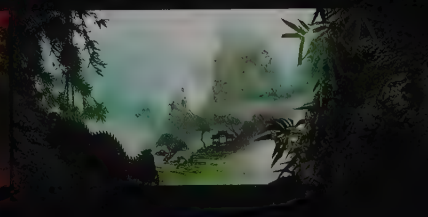
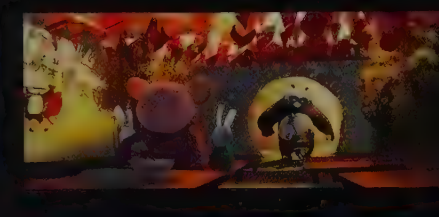
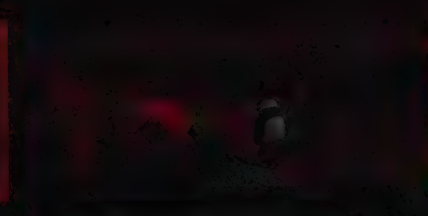
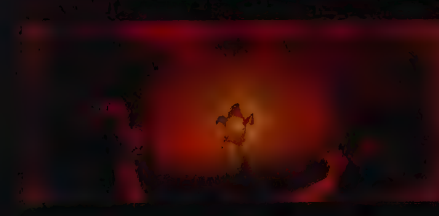
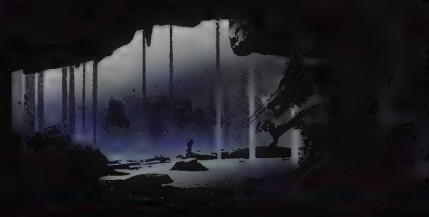
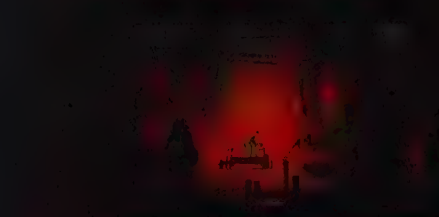
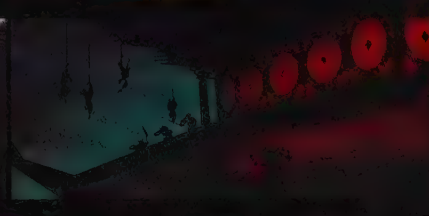
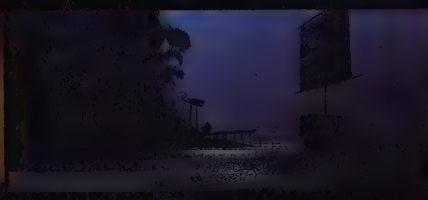
Rendering a huge location such as Gongmen City alone would have been a great technical challenge during the making of the first *Kung Fu Panda* movie, “so even if there had been such a grand vision in that movie, it would have been nearly impossible to achieve,” notes visual effects supervisor

Alex Parkinson. This time, the vast city rises to the screen as an amazingly intricate and expansive set. Having a stereoscopic pipeline solidly in place for *Kung Fu Panda 2* also added to the “wow” factor, as the filmmakers went into the project thinking about how to best utilize this medium from the earliest phases of development to achieve stunning 3D results in the final presentation.

Going deeper, going further—this film does just that in terms of character growth, art direction, and technical achievement. It is an astounding journey on all levels as shown by the hundreds of conceptual drawings, paintings, and renderings collected within the pages of *The Art of Kung Fu Panda 2*.









CHARACTERS





FISTS OF FURRY

With a good number of characters returning from the first film, the lineup once again reflected the appealing and unique designs of character designer Nicolas Marlet. Strong silhouettes, graphic line work, and unexpected details abound, making the characters seem very much alive even when they are standing still.

Due to advances in technology since the original Po was built in 2003, all of these potentially “reusable” models had to be rebuilt, rerigged, and resurfaced for the making of *Kung Fu Panda 2*. So, as familiar as these characters may seem, they are actually newly constructed.

The animation crew “had to be careful about working with new rigs and their greater capabilities,” recalls head of character animation Dan Wagner. Luckily, about two-thirds of the animation crew had been part of the original *Kung Fu Panda* team, and their experience behind

the wheel gave them the confidence to drive the characters’ performances skillfully in terms of the balance between broad gestures and subtlety. “We really needed to see what was in Po’s head more than what he was doing at times” continues Wagner, “and this animation team truly understood what that meant in terms of acting.” But when big action was required, the production team made sure to give it the proper foundation from which to leap. “We intentionally gave the world an authentic physicality with regard to animation,” explains visual effects supervisor Alex Parkinson. “When a character hits the ground, there’s a puff of dust or a ground shake. Having this sense of reality makes things that should be remarkable actually feel remarkable.” Thus, such

fantastical moments as when the characters run across rooftops or dive down eight-story atriums are all the more breathtaking in their scope when set against action that is well-grounded in realism.

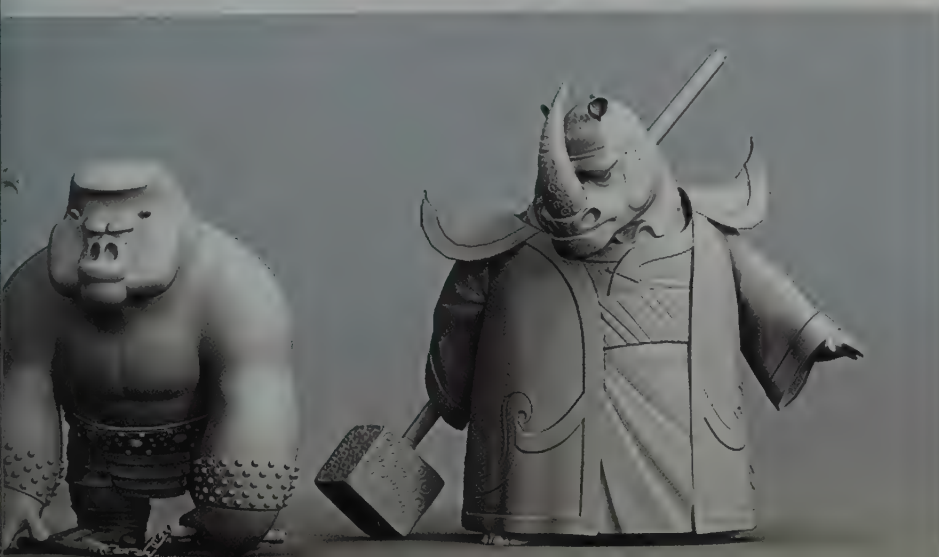


(Above) **Sequence 100 - Po Lives the Dream Color Key** • Chns Brock - digital paint

(Right) **Villian Character Lineup** • Nicolas Marlet - character design, Raymond Zibach, and Bill Kaufmann - digital paint







It was both a blessing and a curse to be working on a sequel; we had great reference to match when setting up new rigs, but then we had to actually match it!

— Kevin Ochs, Character Technical Direction Supervisor

(Top) **Character Lineup** • Nicolas Marlet - character design, Vy Trinh - digital paint

(Bottom) **CG Character Model Lineup** • Jason Turner, Hyun-Huh, Haeng Sook Oh, Ken Yu, Sean Choi, Hong Suh, Charles Ellison, and Jeff Hayes - Maya



(Above) **Antelope Early Concepts** • Nicolas Marlet - pencil and marker

(Below) **Gongmen City Townfolk Costume Designs** • Raymond Z. Bach - digital paint

(Far Right) **Master Rhino Concepts** • Nicolas Marlet - pencil and marker







(Above & Right) **Po** • Nicolas Marlet - pencil and marker

(Below) **Sequence 100 - Po Lives the Dream Early Color Keys** • Raymond Zbach - digital paint





PO

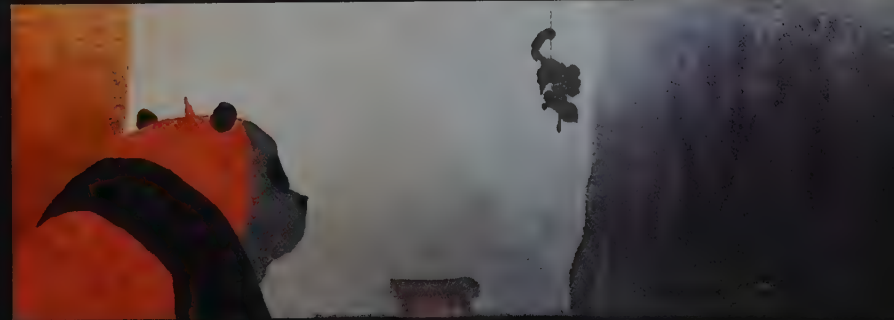
Po is a perfect balance—a true embodiment of Yin Yang. At his very essence, Po's existence as a panda portrays the harmony of softness and strength in the animal world.

In a visual sense, Po's black and white coloration is a clear reflection of the Chinese graphic representation for Yin-Yang. While character designer Nicolas Marlet captured a completely readable animal silhouette in Po, his basic shape language is essentially circular, echoing that symbol further. On an even deeper artistic level, Po's design provides balance to the tone of the film. Dropping this soft, round ball into an environment bursting with sharp, concise physical action is a conscious decision that lightens a potentially heavy cinematic experience. "Part of the conceit of this film is that it's a hardcore kung fu world with hardcore kung fu characters, and then there's a big cuddly panda in the middle of the action," explains director Jennifer Yuh Nelson. "It's a visual contrast, playing into the fact that Po has a sweetness to him: he's not the bad-ass you would expect to find in a martial arts movie."

FLASHBACKS

Po's emotional state in *Kung Fu Panda 2* displays a balance that's teetering upon the fulcrum of his identity. He is a combination of confidence and doubt. While he portrays strength and skill as a kung fu master, he is also riddled with confusion as he embarks on a journey of self-discovery.

At the most surface level of self-awareness, Po is completely content in a state of Yang—with who he is as the hero of the Valley of Peace. "Po's dream in the first film is his life in the second," explains head of story Phil Craven. While he has honed his kung fu techniques, he is not egotistical about his newly acquired skill set in any way. "He's still the same guy, humble and self-doubting," continues Craven. "Now he



Po has a big round belly that's almost
pettable for a good reason—to give our martial
arts film an unexpected sweetness.

— Jennifer Yuh Nelson, Director

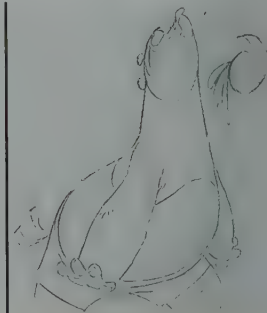


(Left) **Po** • Nicolas Marlet - character design, Bill Kaufmann - digital paint

(Above) **Sequence 750 - Radish Dream 2D Frame** • Pierre Perifel - rough animation, Helen Michael - cleanup pencil

(Below) **Sequence 750 - Radish Dream 2D Rough Animation** • Rodolphe Guenoden - pencil

(Right) **Po** • Nicolas Marlet - pencil and marker



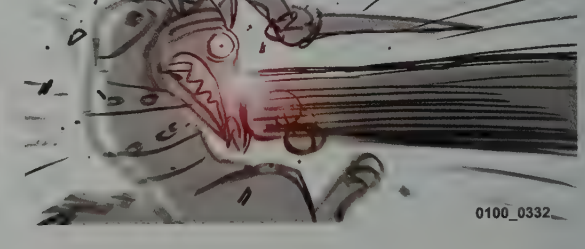
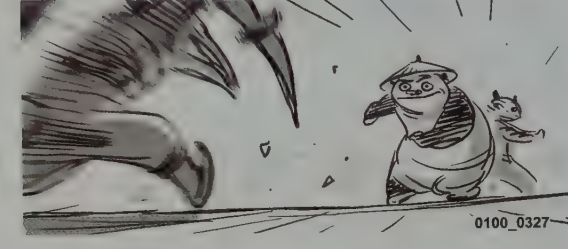
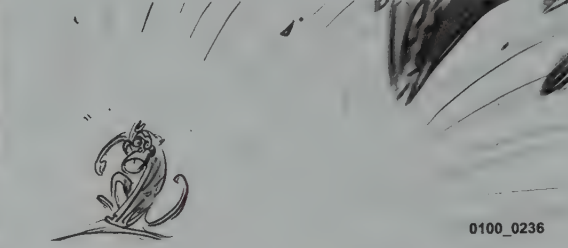
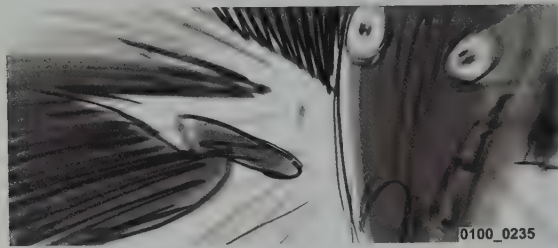
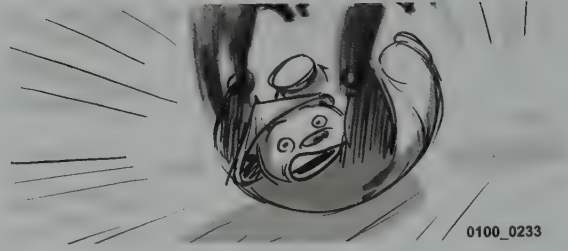
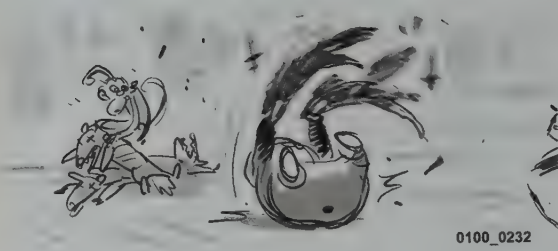
is part of the cool team, but he'd be the last to say he is good at it." He is simply doing what he has been called to do as the Dragon Warrior, responsible for utilizing his kung fu skills to right any wrongs in his generally quiet community in the Valley of Peace.

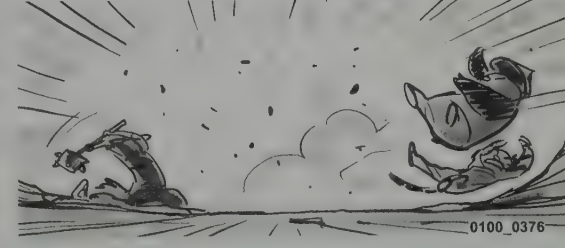
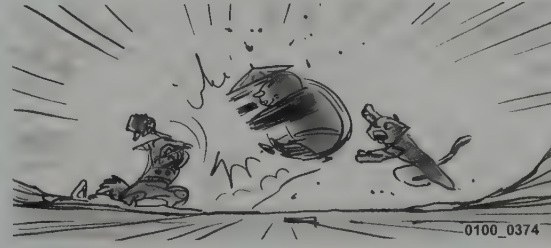
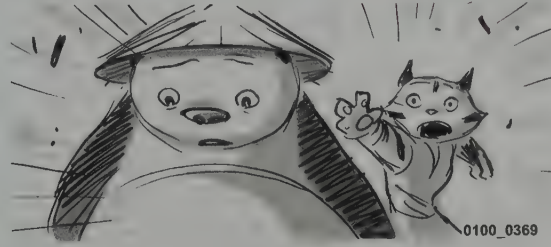
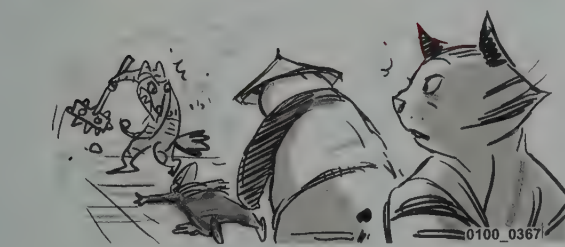
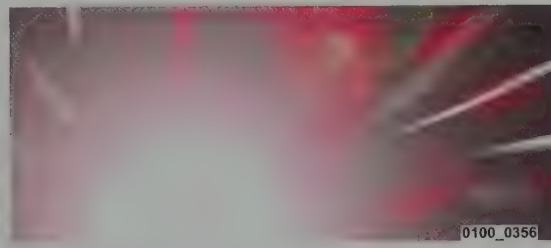
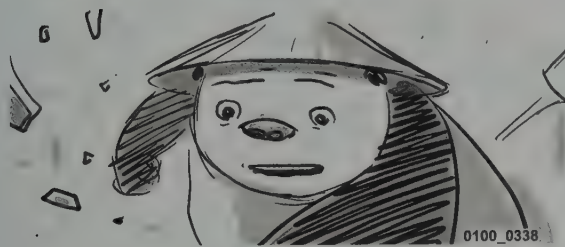
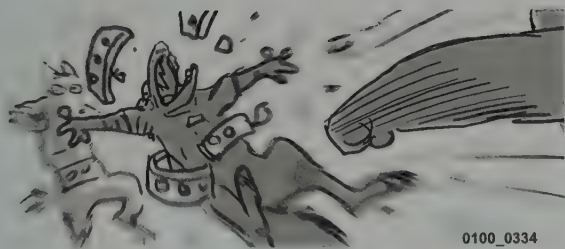
But what is not quiet is Po's subconscious memory, which is starting to creep into the forefront of his mind in the form of disturbing flashbacks from his youth. Po experiences confusion and turmoil—a state of Yin—over what these unsettling visions from his past mean to him in the present. Cinematographically speaking, these flashbacks are reminiscent of the “Dream Sequence” Po had in the first film, but now they portray subconscious memories. Their depth and drama is amped up by combining a 2D graphic style with 3D stereoscopic means. “The imagery is distorted by a warping and twisting created in After Effects,” explains head of layout Damon O’Beirne, “and this distortion is lessened as Po comes back to the flashbacks time and again, as he is making more sense of these memories.” In a narrative sense these flashbacks act as a trigger, forcing Po to “delve beyond the shallow thinking,” Nelson adds, “setting him on a journey to see what it all means and see who he is.”









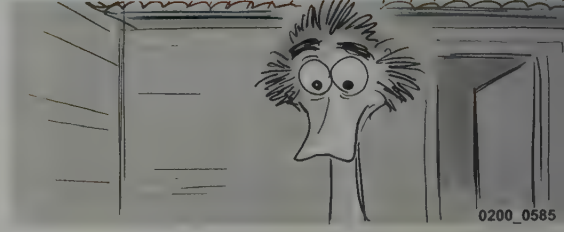




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MR. PING

Charming and cordial to his guests, Mr. Ping plays the quintessential Chinese father who obviously loves his son more than anything in the world, with his passion for noodles running a close second place in his heart. “I love that Mr. Ping greets his son with ‘Have you lost weight? Let me get you some soup!’ when he sees Po,” recalls art director Tang Heng. “This is very typical culturally, but also very clearly shows how much he cares for Po.” Mr. Ping’s posture and movement also makes his love for his son quite evident: Standing up taller when Po enters his restaurant, Mr. Ping beams with fatherly pride and embraces him with full-winged hugs.

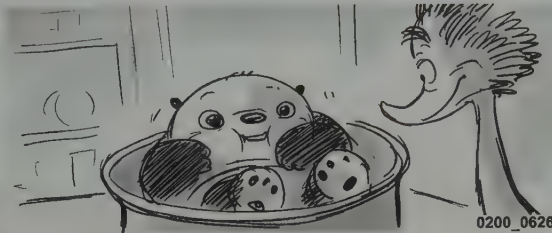
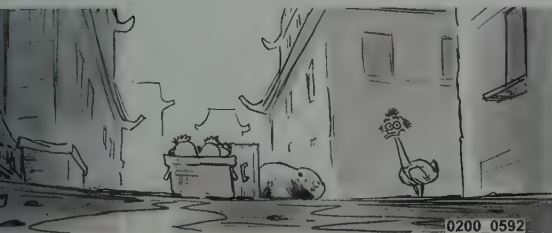


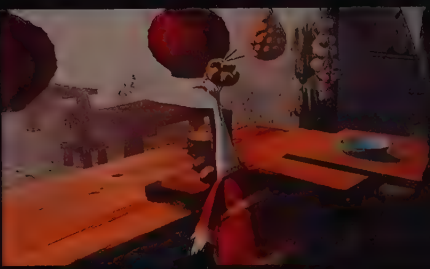
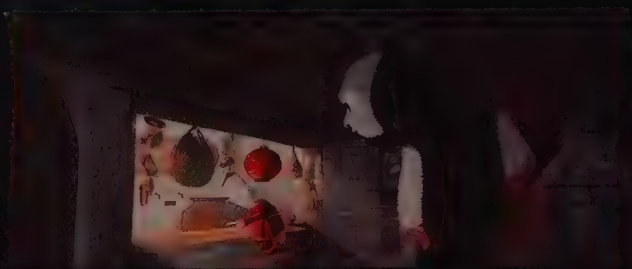
When answering Po’s questions about “where did I come from?” the audience gets to meet the younger Mr. Ping in a walk down memory lane. In these flashback scenes, during which Mr. Ping explains the elephant—or rather, the panda—in the room, character designer Nicolas Marlet designed slightly flashier clothes to suggest the self-described “young and crazy days” that Mr. Ping had when he discovered Baby Po. This look involved a shinier, purple overcoat to clothe Mr. Ping, who also sports a swinging braid in the back of his head instead of a noodle hat on top of it. Rather than expressing an aura of being “young and crazy,” however, Mr.

(Left) **Young Mr. Ping** • Nicolas Marlet - pencil and marker

(Above) **Baby Po and Mr. Ping** • Nicolas Marlet - character design, Bill Kaufmann - digital paint

(Below) **Sequence 200 - Po and Dad Talk Storyboards** • Phil Craven - digital





We tried to go deeper into our exploration of the father role with Mr. Ping, but we didn't want to lose the comedy of his almost equal love of both noodles and his son in the process.

— Phil Craven, Head of Story

Ping's animation in these scenes suggests a tenderness and generosity that only a father can give, even if the recipient is not his biological son.

BACKPACK

Taking the father-son relationship to a new depth in this story, an awkwardness grows between Mr. Ping and Po after Po learns he is adopted. "It was a tricky challenge to have them finally talk about something pretty significant that both had avoided talking about their whole lives, and to keep them in character and do it with humor," explains producer Melissa Cobb. When Po must set out upon his mission to defend against a new enemy with some unresolved issues still hanging in the air at home, his father "stuffs Po's backpack with all sorts of symbols and reminders of their relationship to keep their shared history top of mind for Po," notes director Jennifer Yuh Nelson. This care package includes all of Po's favorite foods, his Furious Five action figures, and painted "snapshots" of precious moments that Mr. Ping and Po have shared as father and son.



(Left) **Noodle House Alley Early Concept** • Bill Kaufmann - digital paint

(Right) **Baby Po and Mr. Ping** • Nicolas Marlet - character design, Bill Kaufmann - digital paint

(Below) **Sequence 200 - Po and Dad Talk Color Keys** • Bill Kaufmann - digital paint





(Above) **Sequence 100 - Po Lives the Dream Final Frame** • Dorian Bustamante - layout, Dave Weatherly - animat, on Andy Sivestro - CFX, Steve Wood - FX, Scott McKee, Jeff Kasunic, and John Lee - lighting

(Right) **Final Battle Color Key** • Chris Brock - digital

(Bottom) **Final Battle Early Concept** • Tang Kheng Heng - digital





THE FURIOUS FIVE

TIGRESS • CRANE • MONKEY • VIPER • MANTIS

Now that the Dragon Warrior has joined their ranks, Tigress, Crane, Monkey, Viper, and Mantis work with Po as a team of protectors for the Valley of Peace and beyond. “The team really works in tandem now,” explains director Jennifer Yuh Nelson, “understanding and supporting one another in battle and in

friendship.” When they first confront the wolf army in the Artisan Village, this battle serves as “a good showcase of their iconic styles of kung fu fighting,” notes supervising animator Rodolphe Guenoden. More important, it’s a clear display of their well-choreographed interplay as a cohesive fighting force.



While the Five still exhibit their familiar personalities, Master Tigress alone evolves emotionally from her previously established “hard style” over the course of this film. “At the end of *Kung Fu Panda*,” explains head of story Phil Craven, “we glimpsed Tigress showing respect to Po with her bow to him. But their personalities still clash—she’s hardcore, by the book, perfect in her form and technique, while Po is definitely *not*.” Yet, notes head of character animation Dan Wagner, when Po “envies her ‘show no emotion’

ability when he is in the midst of dealing with unsettling news about his past and uncertainty about who he is, this admission puts up a red flag for Tigress.” This perception of being cold and unemotional triggers her own introspection, since, adds producer Melissa Cobb, “she truly does empathize with Po, having had her own personal disappointments in the past.” It allows her to let her guard down and to show a softer side of her otherwise intimidating presence.

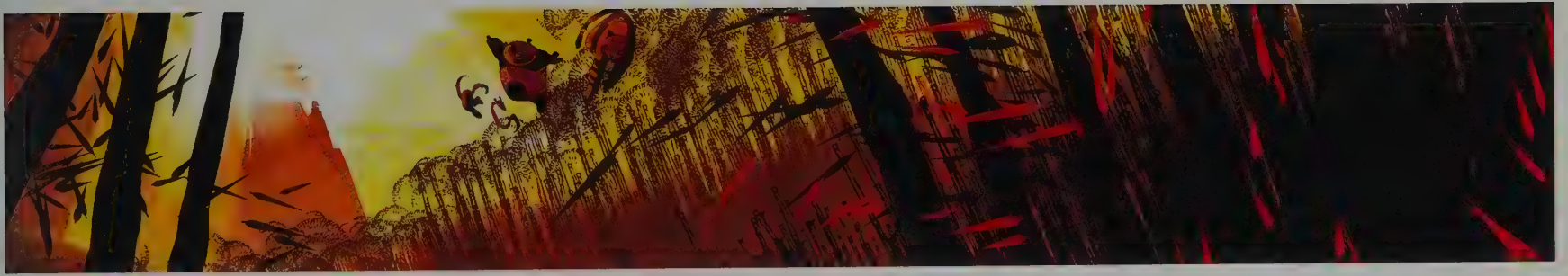


THE EYE OF THE TIGER

The emotional scenes between Po and Tigress are a good opportunity to recognize how important character eyes are in *Kung Fu Panda 2*. As production designer Raymond Zibach explains, “Eyes in CG need to be believable in texture and depth.” To achieve this, the proportion of the pupil to iris is locked at 70/30, which serves three purposes: “giving the eye a darker feel; keeping the animals from being too human; and getting a quick read more like Marlet’s drawings, which have no pupil and iris color separation.” Zibach also makes sure “the texture is radial but simplified, and the eye has a much more defined highlight, usually on the edge of the pupil and iris, to keep the look consistent and a little more graphic.” The texture of the eye is always very clean and shows very little reflection, if any at all.

Even the pupil and iris show reflection only on rare occasions.

To further support the important role eyes play in connecting the characters and story, layout artists utilize close-ups in key emotional moments. Additionally, the stereoscopic element is also used to enhance such connections. “By keeping the stereo convergence on the characters,” says visual effects supervisor Alex Parkinson, “you get a feeling of being right there with them. Along with proper lighting, this allows the background to drop back, increasing the focus on the character’s micro-expressions. The result should be that you *can* really know what they are thinking.” The evidence of all this effort is best seen in the conversation Tigress shares with Po just before they reach Gongmen City.



Tigress is very aware of how she is perceived — as hardcore, and just hard. However, she is capable of more. She is grappling with this perception . . . trying to find who she is and how to express a softer, more emotional side as well.

— Jennifer Yuh Nelson, Director

OUT OF PICTURE: FEMALE MANTIS

This lovely lady mantis was drawn to appear in a bar scene at one point during the storyboarding of *Kung Fu Panda 2*. Perhaps the chance that she might end up eating her potential mate, as the mantis is known to do—leaving only a Furious Four to do battle alongside Po—is what edited her out of the story line.



(Left) **On the Boat Final Frame** • Damon O'Beirne - layout, Willam Salazar - animation, Andrea Paolino - CFX, Scott McKee and Rupali Parekh - lighting
 (Top) **Po and Five to the Rescue Early Concept** • Raymond Zibach - digital paint
 (Above) **Female Mantis Early Concept** • Nicolas Marlet - pencil and marker
 (Below) **Factory Early Concept** • Ritchie Sacilloc - digital paint





Above: **Shifu** • Nicolas Marlet - pencil and marker

Right: **Sequence 550 - Dad Says Good-Bye Storyboards** • Januel Mercado - digital

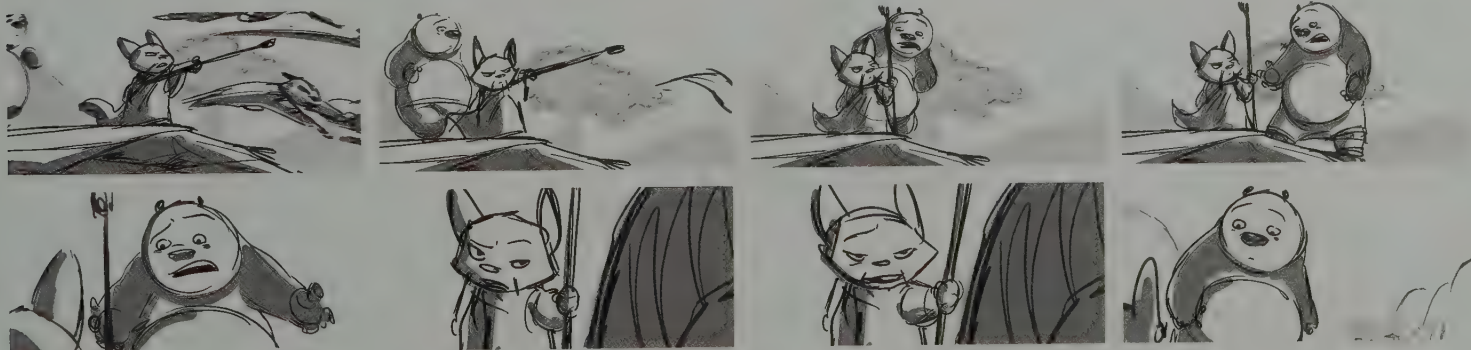


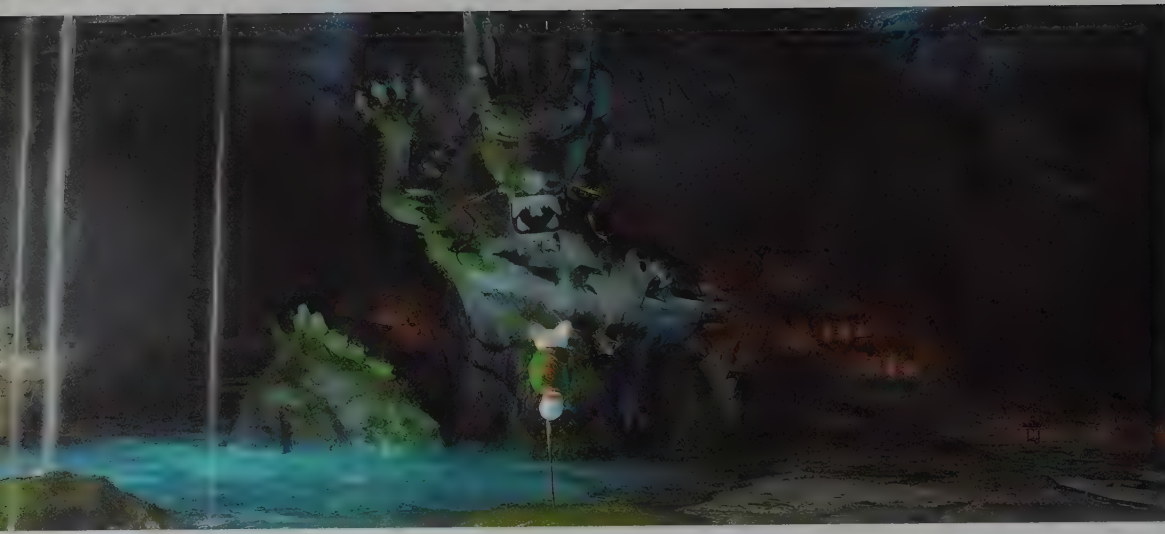
MASTER SHIFU

Small in stature yet large in presence, Master Shifu has assumed a role as an enlightened guru. Tasked with training the most skilled kung fu artists in China—and to his frustration, those less skilled yet so destined, such as Po—Shifu has achieved inner peace and has essentially taken over the role of spiritual advisor to the Valley previously held by Master Oogway.

“Shifu now has an ‘older and wiser’ look,” explains Nicolas Marlet, “and he wears a new robe with a symbol on its back that is reminiscent of Oogway’s.” His new garment, a beautiful jade green that suggests wisdom and peace, was quite complicated in a technical sense. “Placing a shawl over a robe and draping those materials over a furred character adds multiple levels of complexity in more ways than just the literal count of layers,” notes character effects supervisor Christian Hatfield.

Shifu has overcome his suffering from the physical loss of Oogway and the extended guilt he harbored over the spiritual loss of previous student, turned evil adversary, Tai Lung, and his movement reflects this sense of healing. “His limp is lessened, and he no longer walks with a hunch as he did in the first film, suggesting he no longer carries that weight on his back,” says supervising animator Rodolphe Guenoden, who once again served as a consultant on all kung fu-related action in the film. On the other hand, Shifu’s new rig made him a little too healthy and robust, especially in his facial expressions. “More advanced brow controls allowed too much animation of his furrows,” recalls character technical direction supervisor Kevin Ochs, “which looked great, but got the director’s note that ‘it was too much to be Shifu.’”



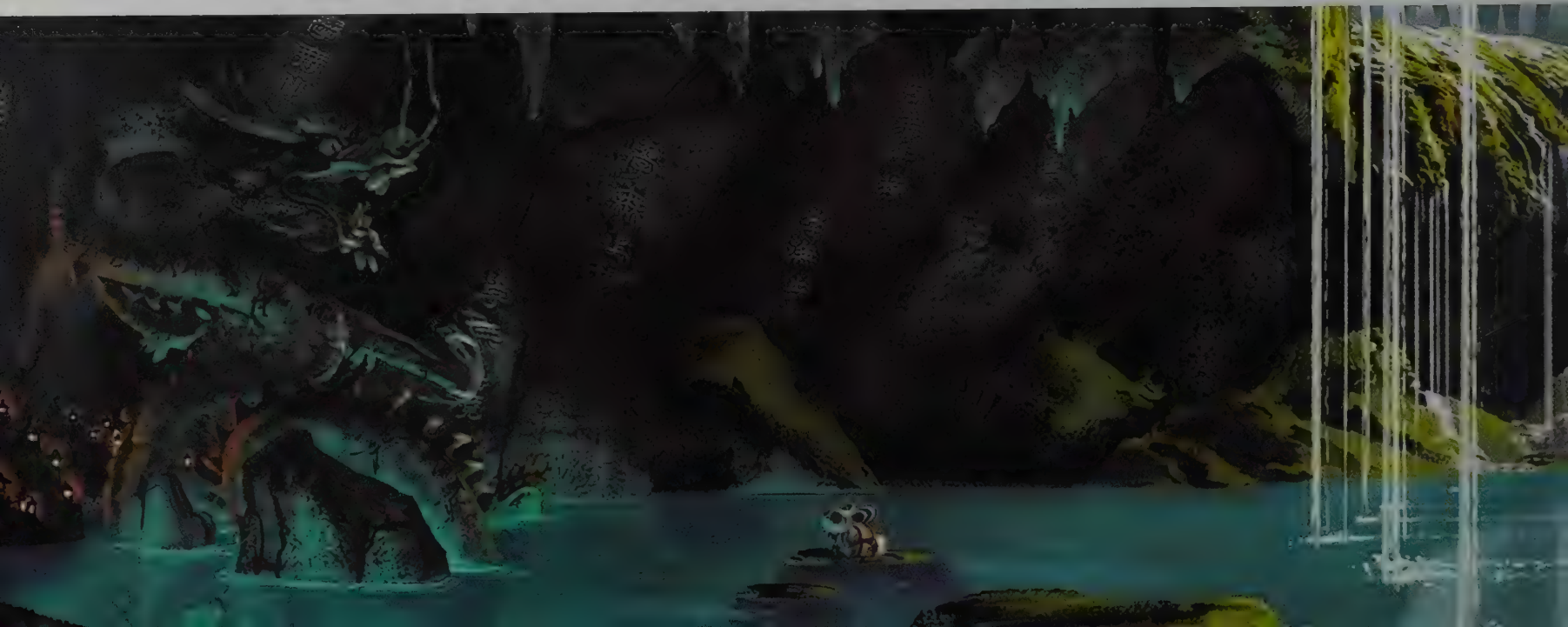


(Above left) **Sequence 400 - Shifu's Lesson Final Lighting** • Dave Walvoord and Stanley Kwong - Lighting, David Tidgwell and Richard Thompson - FX, Gary Lee - layout

(Above right) **Shifu** • Nicolas Marlet - pencil and marker

(Above right) **Sequence 400 - Shifu's Lesson Storyboard** • Phil Craven - digital

(Below) **Grotto** • Raymond Z. Bach - digital paint

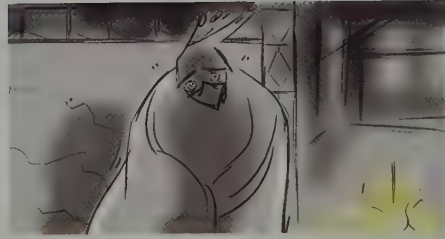
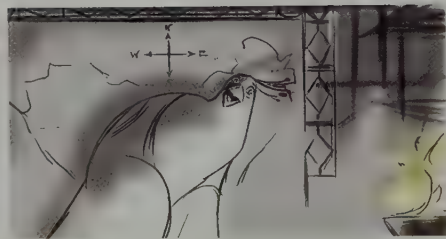
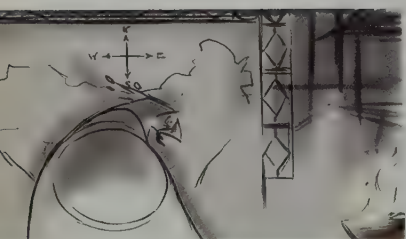




Shifu guides Po in the next level of kung fu training, which requires more of a spiritual than physical focus in the search for inner peace.

— Jennifer Yuh Nelson, Director







LORD SHEN

At first glance, one might think that an albino peacock cannot pose much of a threat to the likes of a tiger, a panda, a rhino, or any other substantial kung fu master. But that miscalculation is the essence of Lord Shen's villainy: he is a mysterious, unpredictable, devious creature who carries weapons hidden beneath his feathers, as well as an attitude that he has been deeply wronged in the past. The concealed weapons aptly demonstrate Shen's calculating, complex persona. He now seeks revenge upon nearly everyone within reach, and, to facilitate that effort, he readily draws upon his access to explosives.

*Shen has chosen to follow a dark path,
taking what was once a source of honor
for his family and turning it to evil.*

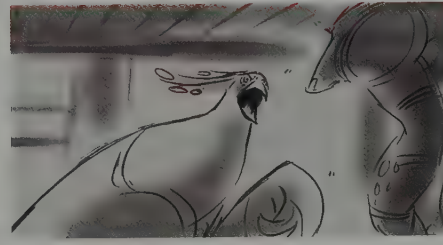
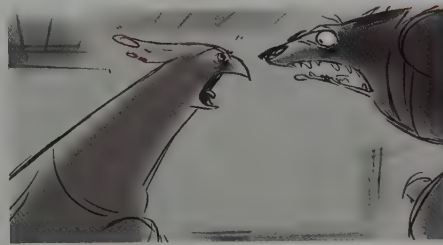
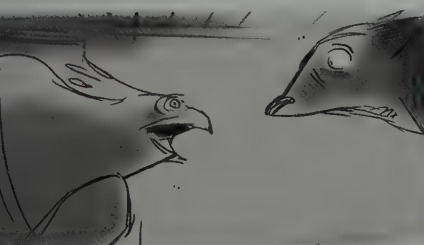
— Phil Craven, Head of Story

Coming up with the design for an ominous peacock was quite fun for character designer Nicolas Marlet, who enjoyed “finding the balance between elegant and evil.” Earlier versions of Shen had a bigger beak and smaller eyes, but these proportions were eventually reversed to allow for more facial expression.

“Beaked characters, or any character with a large snout for that matter, are difficult to model to appear correct when they are looking straight at the camera” notes modeling supervisor Jason Turner. “Getting the beak and eyes in the right positions is crucial to delivering the needed silhouette and expression.”

(Left) **Lord Shen** • Nicolas Marlet - character design, Raymond Zibach - digital paint

(Below) **Sequence 1751 - Peacock Calls in the Wolves Storyboard** • Sharon Bridgeman - digital



Trying to nail down the insanity underneath Shen's regal yet threatening exterior was challenging. A few twitches in the face here and there and having a "dead behind the eyes" stare gave him the creepy feel we were looking for.

— Dan Wagner, Head of Character Animation

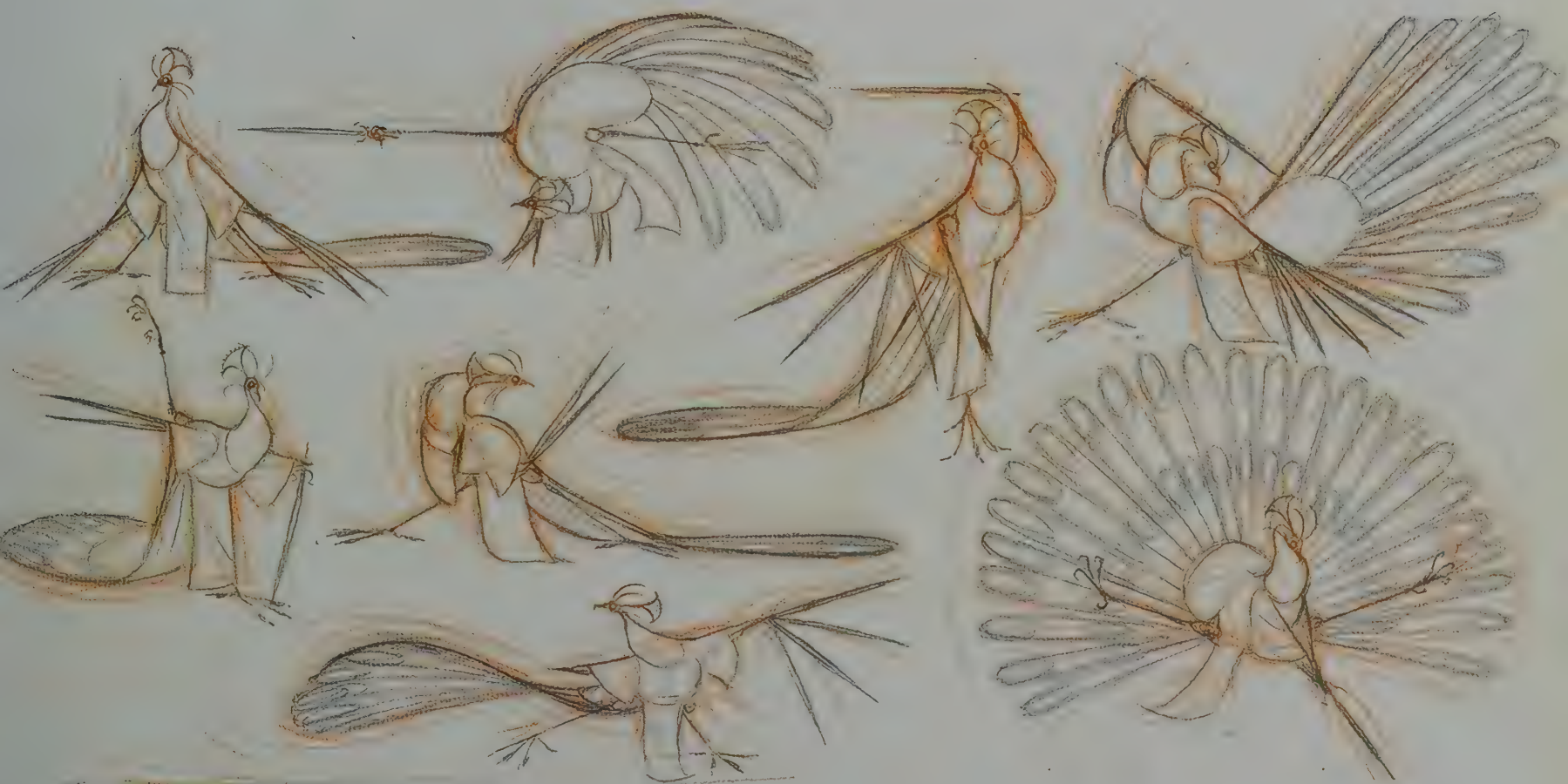
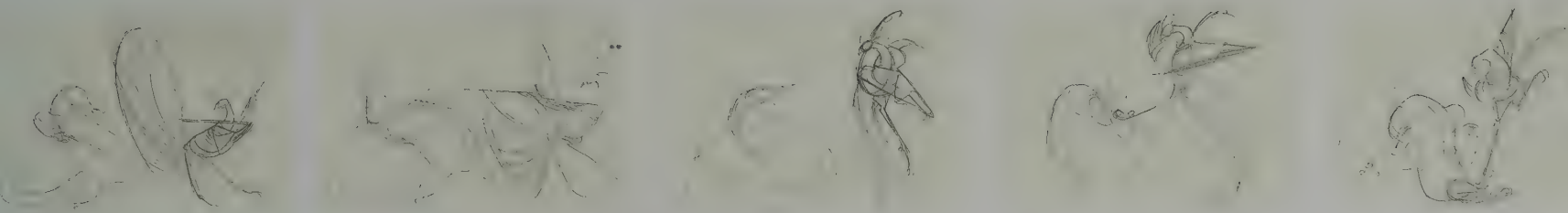
A great deal of Marlet's design time was spent exploring Shen's silhouette, especially his tail, as this appendage is almost its own character. Shen uses his tail to obscure things, much like a matador uses a cape when doing battle with a bull, and to achieve such involved motions, the modeling and rigging teams had ambitious tasks to accomplish. "The tail has four layers of feathers to it," explains Turner, "each layer has fourteen to twenty-three feathers on it, for a total of seventy; and each feather is made of a shaft with two barbs alongside of it." The main layer of feathers houses what are "essentially five 'Viper' rigs," adds visual effects supervisor Alex Parkinson, "giving the tail the ability to raise and lower, or twist back and forth, all while keeping the feathers separate." Notes character technical direction supervisor Kevin Ochs, "Each of these five rigs had forty-seven controls within it, which added up to an astounding 235 controls to give Shen's animators incredible flexibility and freedom to move the tail any way we imagined." The rigging team also took great effort to figure out how to neatly collapse the tail into one compact cluster during the occasions it follows Shen like a train. Similarly, they took great care in contriving how to

gracefully raise the tail into its full display pose, positioning the feathers into a slightly cupped arc to best reflect lighting when open.

Putting all that rigging effort to the test, the animation team sought to convey a balletic creepiness in Shen's walk and fight maneuvers. To that end, supervising animator Rodolphe Guenoden "aspired to incorporate moves from rhythmic gymnasts and contortionists, but some of those extraordinary poses were easier to pull off in 2D animation tests than in 3D reality," he recalls. The character effects team had plenty of work to do with Shen after animation, considering the complexity of a fully feathered and clothed character. Their focus controlled the motion of the covert feathers (on the arms) and instance feathers (on the face and neck) after the animation team did its work with the finger and tail feathers. This team also managed a network of springs within the robe to control the cloth movement, and they "created a map to direct feather movement under the robe, so that even seeing up a sleeve of Shen's robe plays nicely," explains character effects supervisor Christian Hatfield.

Nicolas Marlet put thoughtful touches into Shen's wardrobe and feather





(Left) **Lord Shen Early Concept** • Nicolas Marlet - pencil and marker

(Top) **Sequence 325 - Rhino Is Killed Fight Choreography** • Rodolphe Guenoden - pencil and paper

(Above) **Lord Shen** • Nicolas Marlet - pencil and paper





patterning, transforming the well-recognized “eye” pattern from a peacock’s tail into a flaming, spooky, red emblem. Shen’s fire theme is also evident in the details of his robe, striking in its contrast to the white silk from which it is hewn. As the surfacing team discovered, white is hard to make look interesting. So the robe was “crafted by using panels of silk,” explains head of surfacing Wes Burian, “woven in an anisotropic direction [where the weave of material runs one way, causing the highlights to run that same way] that are sewn as squares

Tai Lung was a dangerous villain who would stop at nothing to get the power and respect he felt entitled to. Shen’s issues are even deeper: he won’t be satisfied until all of China bows before him.

— Melissa Cobb, Producer



alternating in their pattern.” This gives the white surface visual interest without having color or value changes, and keeps true to the albino effect. Thoughtful surfacing was also applied to the styling of Shen’s feathers, making them “slick and patterned so that he comes off as calculating and cold, not huggable like the fluffier Mr. Ping,” adds Burian. Shen also posed an interesting task for lighting effects, “since it was difficult to get a consistently clear color read on a character that is meant to be pure black or pure white,” notes production designer Raymond Zibach.

(Above Left) **Lord Shen Early Concepts** • Nicolas Mariet - pencil and marker

(Bottom Left) **Lord Shen CG Render** • Haeng Sook Oh and Ken Yu - model, Andy Harbeck, Wes Burian, and Brandi Johnson - surfacing, Rob Vogt, Hyun Kim, Matt Steele, and Wade Ryder - rigging, Jason Weber - CFX

(Top) **Sequence 1900 - Po Finds the Truth Color Key** • Sean Eckols - digital paint

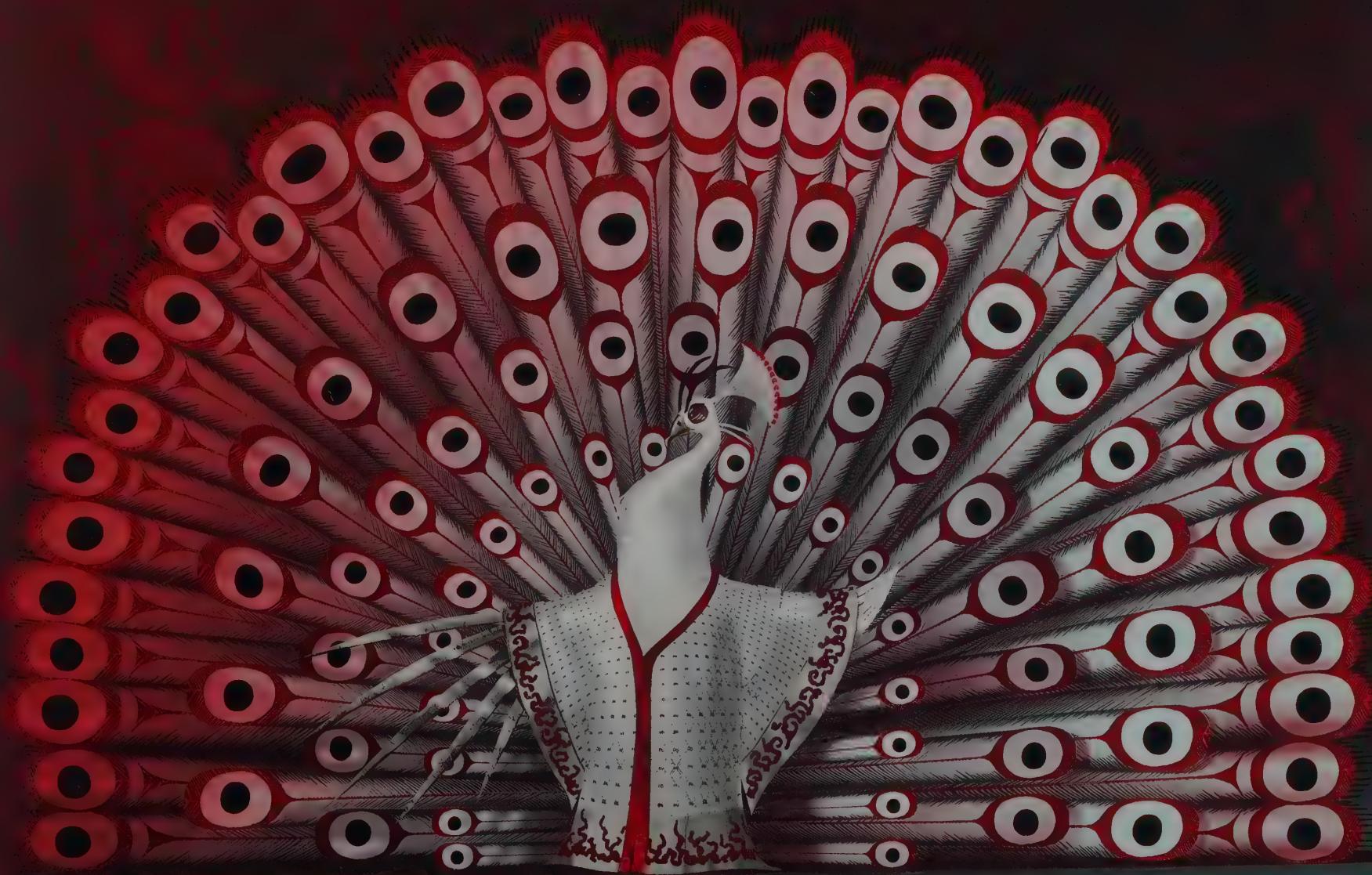
(Above) **Lord Shen Early Concept** • Nicolas Mariet - pencil and marker



On the first film we had solved the problem of fur-to-cloth interaction, but having the feathers move and hide under cloth was totally new for us.

— Alex Parkinson, Visual Effects Supervisor



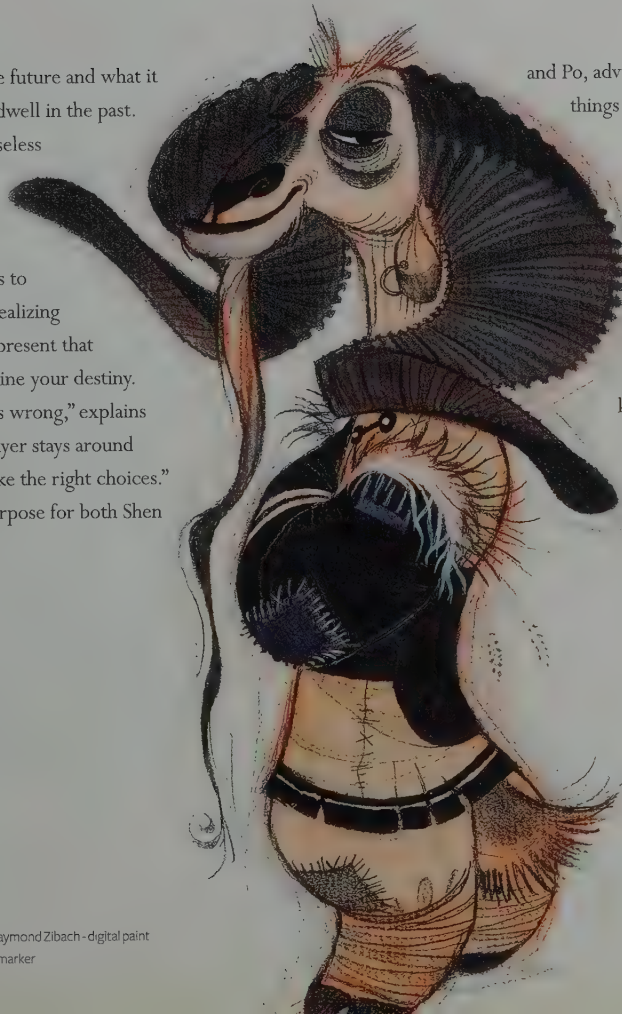






SOOTHSAYER

Soothsayer, an ancient goat, sees the future and what it means for those who continue to dwell in the past. Her main concern is Shen and the senseless path of destruction upon which he commenced when she foretold of a “black and white warrior” who would cause his demise. Soothsayer continues to hope that Shen will change his ways, realizing that it is who you choose to be in the present that is within your control and can determine your destiny. “Shen keeps her around to prove she is wrong,” explains director Jennifer Yuh Nelson. “Soothsayer stays around because she hopes he will one day make the right choices.” In fact, Soothsayer serves the same purpose for both Shen



and Po, advising them to let go of their past and not allow bad things that have happened to them define who they are.

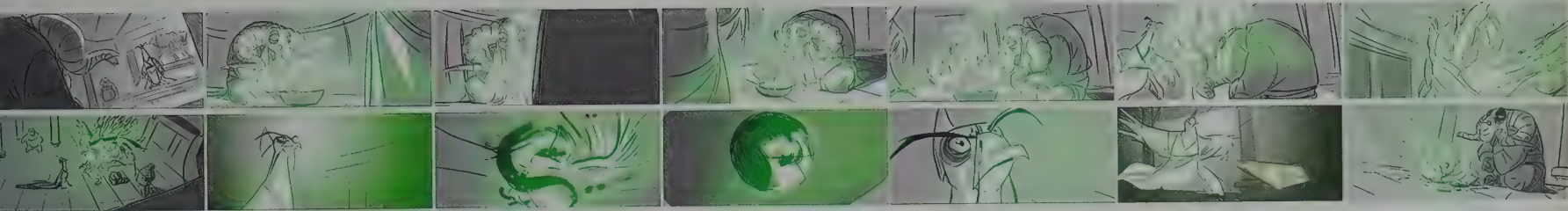
“Soothsayer may have some guilt over the destruction that ensued once Shen reacted to her foretelling,” notes Dan Wagner, Head of Character Animation, “and perhaps that is why she cares for Po as well.” When Po arrives in Gongmen City, Soothsayer realizes that this is the moment she foresaw, but he is not quite the “hero” that she envisioned. “She knows about Po’s role in the story,” adds head of story Phil Craven, “even when he shows up and doesn’t know who he is or what exactly he is there to do.”



(Top Right) **Sequence 800 - Wolf Tells Peacock about Panda Storyboards** • Joe Crawford - digital

(Above) **Soothsayer** • Nicolas Marlet - pencil and marker

(Right) **Soothsayer CG Render** • Ken Yu - modeling, Brandi Johnson - surfacing, Kristofer Vale and Sean Nolan - rigging, John Truong - CFX, Bob Davies - animation, Lyndon Li - lighting



I love how Soothsayer's character design echoes her character. She is weighed down by these huge horns, reflective of how the outcome of a prediction she made in the past weighs heavily upon her. And, she is surprisingly pretty for an old goat with a beard.

— Melissa Cobb, Producer

Character designer Nicolas Marlet felt that Soothsayer needed huge horns to represent the wisdom of her many years on this earth, but the animation team realized quickly that these would greatly limit her animation. Although the horn placement was adjusted in modeling to allow her to turn her head a bit more than the original design would have permitted, Soothsayer is still destined to move slowly, which actually befits her character. Since she can see and anticipate the future, she has no need to move fast, as there are no elements of surprise for her.

Soothsayer's wardrobe consists of many layers of cloth that Marlet designed, based on an image of a Tibetan woman, and this costume required special attention from the character effects team. "Her clothing is eight layers deep, and each layer has its own property and must move independently to look believable," says character effects supervisor Christian Hatfield. The animators actually worked though their rough pass with no clothing on this character, and then the character effects team did a clothed pass and gave it back to animation to see how the original motion and silhouettes held up.





(Above) **Baby Po** • Nicolas Marlet - pencil and marker

(Right) **Sequence 1900 - Po Finds the Truth Color Key** • Sean Eckols - digital paint



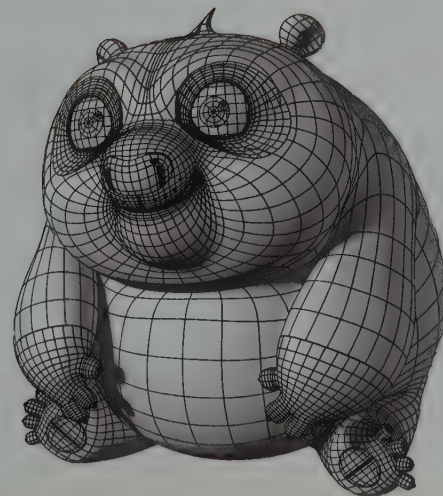
BABY PO

The ultimate example of how round and soft signifies “good” within the shape language of the film, Baby Po is an adorable fluff-ball of black and white fur. Character designer Nicolas Marlet describes Baby Po as “cute and

humorous” when he appears in memories and flashbacks, which pulls tightly upon the heartstrings of the audience when his peaceful existence takes a dramatic, unanticipated turn.







(Left) **Baby Po** • Nicolas Marlet - character design, Raymond Zibach - digital paint

(Above) **Baby Po** • Nicolas Marlet - pencil and marker

(Right) **Baby Po CG Model** • Haeng Sook Oh - Maya model

(Far Right) **Baby Po CG Model** • Haeng Sook Oh - Maya model, Simon Yuen and David Walden - rigging, Wes Burian - surfacing





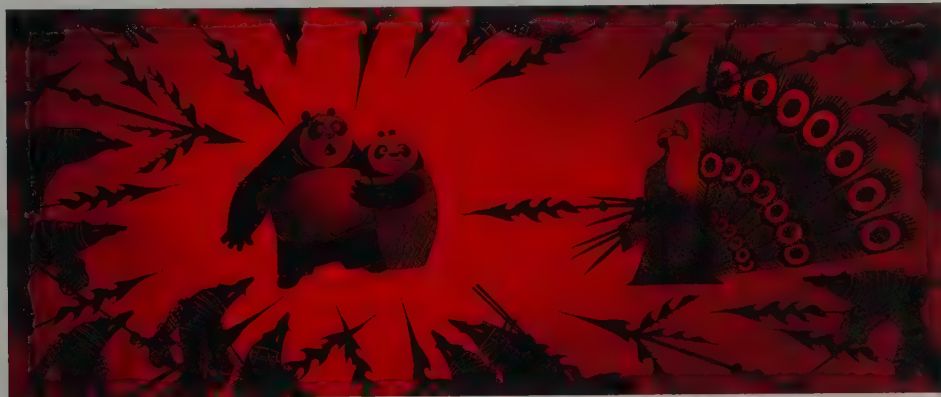
MOTHER AND FATHER PANDA

Although audiences have come to know Mr. Ping as Po's father, they are given glimpses of Po's biological parents in *Kung Fu Panda 2*. One of the challenges with presenting Po's parents is that they are "seen through the cloud of Po's memory," explains producer Melissa Cobb, and Po recalls "his father as a powerful farmer, strong but a bit rough around the edges, and his mother as incredibly sweet." These traits—great physical strength paired with a big heart—clearly resound in Po, which suggests that his recollection of his birth parents is more valid than vague.

Nicolas Marlet gave Po's father a square jaw that required much adjustment before it felt just right for his design. But more prominent in

Marlet's desire to properly express this character's role is the iconographic use of "having his pants hiked up high, as that is a quick read on the 'old father figure,'" jokes Marlet.

To find the perfect look for Po's mother, Marlet illustrated a broad range of explorations on the ideal placement for her black markings. He looked to Chinese opera masks to create a classic, feminine profile for her face. She clearly portrays this motherliness through her eye shape as well. "Even in rough animation," recalls head of character animation Dan Wagner, "her expression toward Baby Po was so heartrending that it brought people to tears."



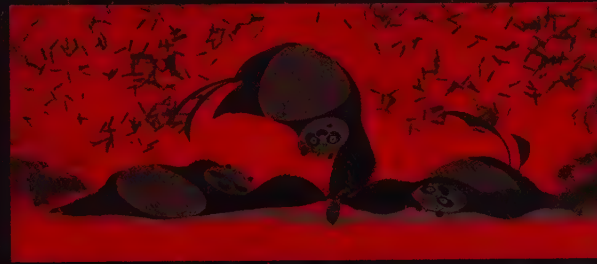
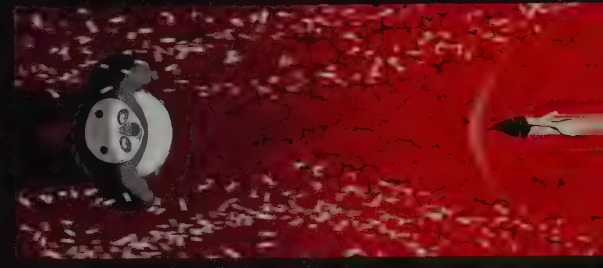
(Left) **Po's Parents** • Nicolas Marlet - character design, Raymond Z. Bach - digital paint

(Above) **Prologue Early Concept** • Jason Brubaker - digital paint













(Left & Above) **Po's Dad (and Mom)** • Nicolas Marlet - pencil and marker





CITIZENS OF CHINA

The cohabitants of the Valley of Peace are harmless creatures, cute and defenseless to the point of needing protection by the likes of the Dragon Warrior. As established in the first film, bunnies, pigs, and geese make for respectable citizens, since they are based on honorable figures in Chinese culture, and character designer Nicolas Marlet brought them into this world with strong silhouettes and well-defined expressions, even though they are used mainly as crowd characters.

Since the geographic scope of *Kung Fu Panda 2* is wider than just the Valley, it was important to the filmmakers to expand and diversify the base of the

population as well—thus, the introduction of antelope and sheep. Marlet had particular fun with horn shape exploration as well as wardrobe details when designing the proper flocking for fleece. While the citizens needed to appear numerous, to give the city its bustle and to add to the stakes of saving the country, each had enough detail to appear to be unique and not just a face in the crowd. These characters are also modeled and rigged to great lengths, “keeping the amount of controls consistent across the line-up because you never know what animation you are going to ask of what character,” explains character technical direction supervisor Martin Costello.



(Left) Antelope • Nicolas Marlet • pencil and marker

(Above) Gongmen City Townsfolk • Nicolas Marlet - character design, Raymond Zibach and Bill Kaufmann - digital paint



OUT OF PICTURE: FOX

At one point during character visual development, Nicolas Marlet designed a red fox that might have also served as part of the greater population of China. But in the end, this candidate for citizenship was not cast in *Kung Fu Panda 2*, due to his slight resemblance to Master Shifu.

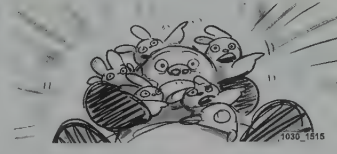


Top: **Fox** • Nicolas Marlet - pencil and marker

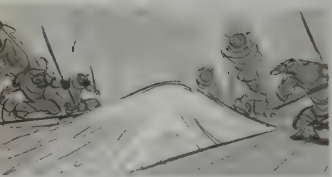
(Above) **Antelope Guard Early Concept** • Nicolas Marlet - pencil and marker

(Right) **Antelope Guard** • Nicolas Marlet - character design, Raymond Zibach - digital paint





(Top) **Boar Early Concept** • Nicoias Marlet - pencil and marker
 (Above) **Sequence 1030 - Rickshaw Chase Storyboard** • Jennifer Yuh Nelson - digital





GONGMEN CITY MASTERS

Masters Thundering Rhino, Crocodile, and Storming Ox are kung fu legends in this world, and, if they seem familiar, they are so legendary that Po incorporated their likenesses into his dream sequence in the first film. After Lord Shen's parents banished him from Gongmen City, these three heroes made up the Master's Council and became stewards of the city.

Their strong, solid shapes suggest they are formidable opponents to any challenge that may cross their paths. Master Rhino appears as square and solid as a stone wall, and if that isn't intimidating enough, he also wields a large hammer that personifies his mode of force. "He uses a ramming style of fighting, charging forward with his horn, befitting his animalistic tendencies," explains supervising animator Rodolphe Guenoden.

Master Crocodile relies on amphibious skills to surprise his opponents in water locations. Besides having a generous amount of teeth with which to harm his foes, the spiked ball on his tail allows both ends of his efforts to be covered.

Master Storming Ox is handy with axes, and charges with his horns down, bull-like, to reflect an animalistic style of fighting. Ox, much like Po, is a prime example of a naturally non-upright-walking animal that is particularly challenging to build and rig, as "characters with a heavy upper body and torso have a lot of mass to resolve when their

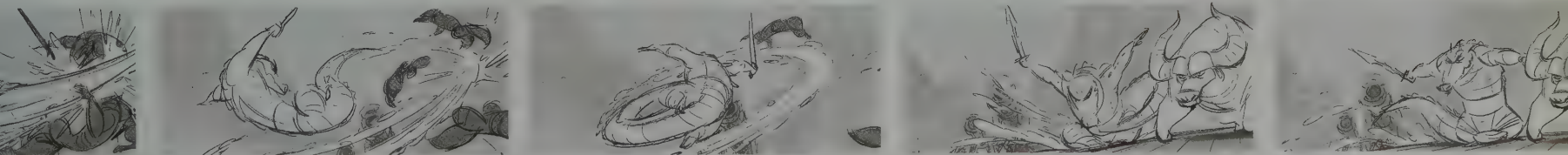
legs come up or they have to sit down," explains modeling supervisor Jason Turner. "Characters such as an ox or rhino don't stand upright in



(Left) **Master Thundering Rhino** • Nicolas Marlet - character design, Bill Kaufmann - digital paint

(Right) **Master Ox Early Concept** • Nicolas Marlet - pencil and marker

(Below) **Sequence 3050 - Final Battle Storyboard** • Gary Granam - digital



nature because they aren't equipped with the correct anatomy to do so. Modeling them for our film required intense thinking and testing to find the right balance in their build."

These masters have been given the responsibility of serving as the protectors of

Gongmen City. After facing an unanticipated, shattering blow to their defenses, "all their fight has been knocked out of them," explains director Jennifer Yuh Nelson, "and they see no point in using their kung fu, after seeing Shen's new weapon." But their fight is not entirely lost, just in need of a kung fu kick start later in the film.

When Po hears that the Old Masters are no longer interested in using their kung fu, he simply will not accept it or give up on them. It's kind of like telling a fan that the thing he loves the most is not going to be around anymore, so it compels him to go on a heated campaign.

— Jennifer Yuh Nelson, Director





(Top Left) **Crocodile Early Concept** • Nicolas Marlet - pencil and marker

(Bottom Left) **Rhino Is Killed Color Key** • Jason Brubaker - digital

(Above) **Master Crocodile Early Concept** • Nicolas Marlet - character design, Bill Kaufmann - digital paint

(Below Left) **Master Ox CG Model** • Sean Choi - Maya model

(Below Middle) **Master Ox** • Nicolas Marlet - character design, Bill Kaufmann - digital paint

(Below Right) **Master Boar** • Nicolas Marlet - character design, Bill Kaufmann - digital paint



OUT OF PICTURE: MASTER BOAR

Master Boar was once part of this kung fu protectorship. Now he makes a cameo as one of the prisoners in the jail, and is featured in the *Kung Fu Panda Holiday Special*. His character is a handful to animate, since “his fat gets in the way when he has to lean or look down,” explains Jason Turner, “not unlike the challenges we faced with Po.”

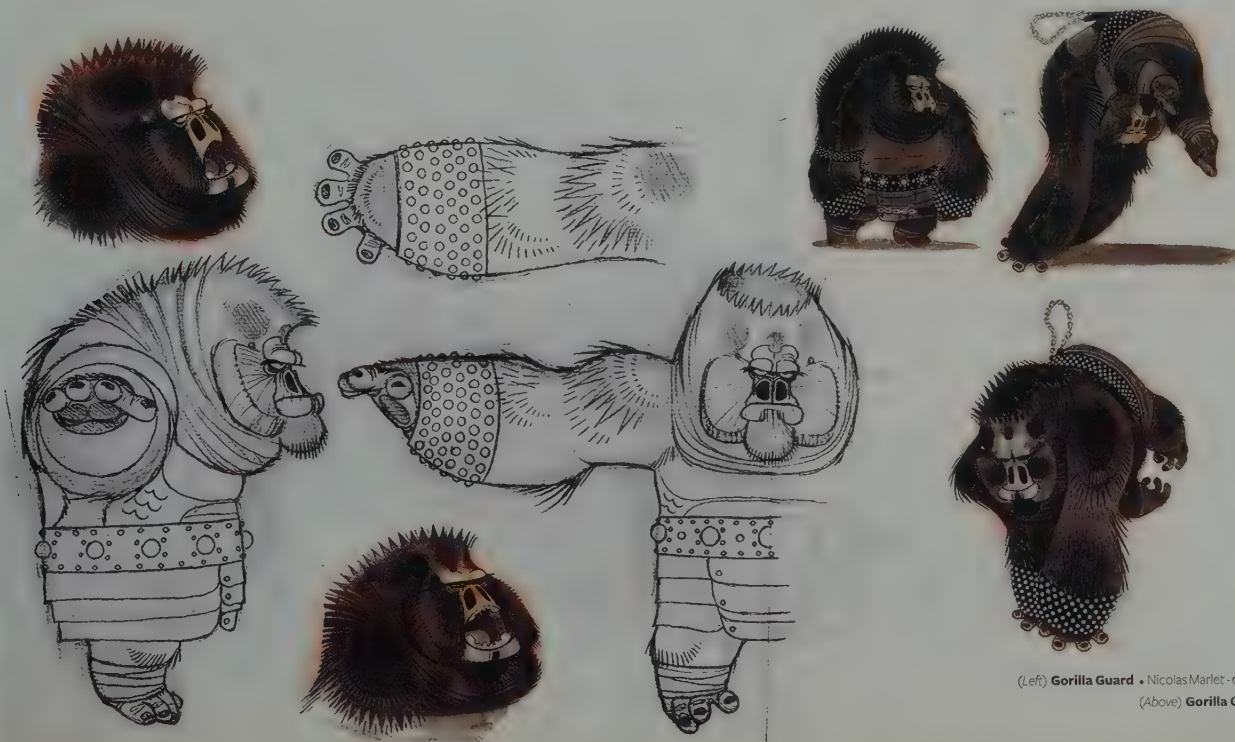




GORILLA GUARDS

Shen also employs a battalion of brutish gorilla guards. These henchmen carry themselves more animalistically than anthropomorphically, “using their upper body strength intensely,” notes supervising animator Rodolphe Guenoden. “They have the perfect build to tow Shen’s cannons around,” adds

production designer Raymond Zibach. On more than one occasion, Tigress confronts these strong-armed, no-necked warriors, and they pose a surprising challenge to her skill set. The gorilla guards are such feared fighters that they appeared in Po’s dream sequence in the original *Kung Fu Panda* as well.



(Left) **Gorilla Guard** • Nicolas Marlet - character design, Bill Kaufmann - digital paint
(Above) **Gorilla Guards** • Nicolas Marlet - pencil and marker



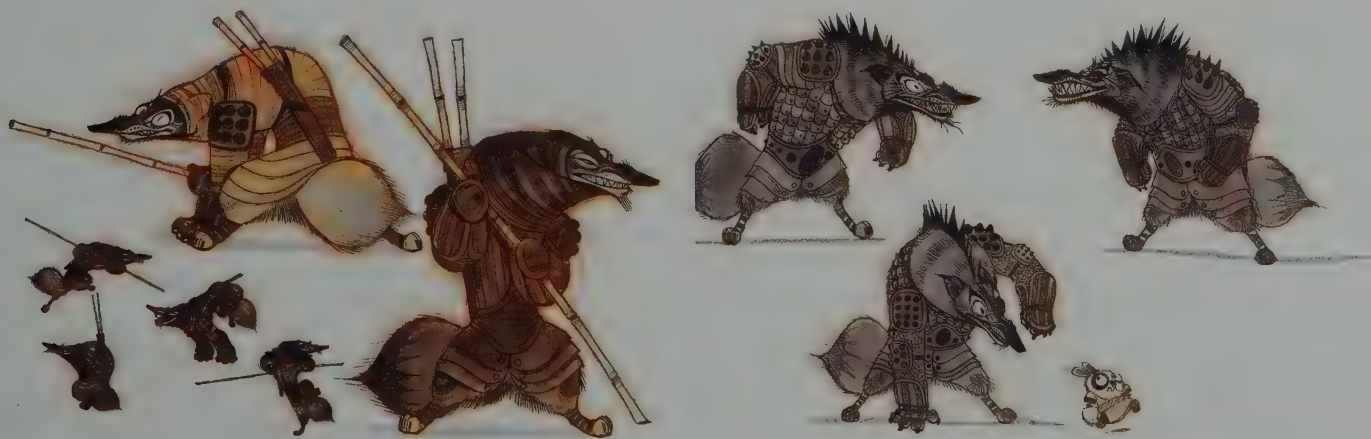


BOSS WOLF AND SHEN'S WOLF ARMY

Boss Wolf and his army of wolves sprang forth when character designer Nicolas Marlet amped up the intimidation element. “Marlet is keenly aware of how to take what exists in nature and exaggerate these key elements to support the story,” explains production designer Raymond Zibach, “such as making the wolves’ jaws protrude like a bear trap, or giving their fur an extra spiky, aggressive silhouette.” The filmmakers did not want the wolves to be academic in their fighting style, explains supervising animator Rodolphe Guenoden, “so their poses are hunched over and vicious-looking, and they attack more like brawlers, moving as a pack.” Director Jennifer Yuh Nelson

characterizes them as “a cool, feral army, where the foot soldiers run on all fours, but rise up to use weapons.” In fact, this band of fighters is so visually threatening that Po recalls them in his flashbacks, and fans of the first *Kung Fu Panda* film will note that Po also envisioned them in his “Dream Sequence.” The audience can now appreciate that those “dream wolves” were not just the stuff of Po’s fantasy, but players in the repressed memory of his father battling them during Shen’s earlier assault on the panda world.

Boss Wolf and the wolves were complicated models, with many layers of detail going into their build, including masks, wrappings, elbow and shoulder



(Left) **Wolves** • Nicolas Marlet - pencil and marker

(Above) **Early Wolf and Boss Wolf Concepts** • Nicolas Marlet - pencil and marker





(Top) **Boss Wolf** • Nicosas Marlet - pencil and marker

(Above) **Sequence 1900 - Po Finds the Truth Early Concept** • Tang Kheng Heng - digital



It was fun to play up the threat factor with all kinds of one-eyed, mohawked, masked versions of the wolves.

— Nicolas Marlet, Character Designer

pads, and kilts made out of leather and/or scaled armor. “The masks were a particular challenge because they are crafted out of metal yet required rigging to allow expression to some extent,” says character technical direction supervisor Martin Costello. While appreciating the rigging abilities, the animators were less rigid about implementing individual wolf facial expressions, wanting to maintain the “packness” of the army. Further complicating these characters

was the fact that they are furred under all of the detailed costume layers, which created another opportunity for ambitious work by the character effects team.

Regardless of all the snarling teeth, crazed aggression, and impressive weaponry that these wolves possess, perhaps their greatest contribution to the threat factor in the film is the fact that no matter how fierce this group is, they are afraid of Shen themselves.



WOLF WEAPONRY

“A roaming squad of death and destruction,” as described by director Nelson, the wolves brandish a variety of weapons, including spears and bow-and-arrow sets. “The designs were inspired by weapons we saw in Ping Yao,” notes art director Tang Heng, “where the first bank in China was created and therefore needed solid protection.” The wolves’ armory is thoughtfully burnished with a flame motif, and their protective wardrobe displays the fiery eye that appears on Shen’s tail feathers—constant visual reminders that the wolves are Shen’s fiery force.

(Left) **Wolf Army Early Concept** • Nicolas Marlet - pencil and marker

(Above) **Wolves** • Nicolas Marlet - pencil and marker

(Below Left) **Wolf Weapons** • Tang Kheng Heng, Bill Kaufmann, and Facundo Rabaudi - digital paint

(Below Right) **Boss Wolf** • Nicolas Marlet - character design, Bill Kaufmann - digital paint





LOCATIONS





(Above) **Po's House** • Raymond Zibach - digital paint



THE BIG WORLD BEYOND

In the first *Kung Fu Panda*, the audience was swept into a picturesque and timeless China, an ethereal backdrop for a story and characters that abounded in both action and comedy. From majestic palace to humble noodle house, the environment was an accessible yet imaginative space, rich in detail and thoughtful in its portrayal of an elegant, historical culture.

These statements ring true for the second movie, but on a grander scale—just as Po must go on an epic journey of identity in this film, the locations visited in *Kung Fu Panda 2* broaden Po's world and the audience's beyond the Valley of Peace. To better grasp a sense of what different realms Po could visit in his new adventure, the core artistic crew traveled to China to immerse themselves in the culture and architecture of various cities and provinces. "Visiting China reinforced our goal to bring an authenticity to creating a fantastical but believable setting for our film," says production designer Raymond Zibach. The crew toured numerous sites in southern China. Art director Tang Kheng Heng believes that "getting firsthand impressions of the landscape and architecture was key" to their successful translation of Chinese culture into Po's world.

This film is an exploration and a discovery both geographically and personally for Po. It has to take him to places he has never been . . . or has he?

— Jennifer Yuh Nelson, Director

At every level of design, the artistic direction of *Kung Fu Panda 2* supports the story by establishing a sense of reality with an overlay of imagination. "The textures applied to our surfaces are photorealistic, but the overall look is stylized," explains head of surfacing Wes Burian. As an example, the marble finish assigned to the base of a column is entirely believable, yet the column itself

is part of an overwhelmingly grandiose tower, meant to reflect the over-the-top egoism of its resident, Shen. In fact, each element that is modeled and surfaced displays thoughtful textural detail, but this detail is often undetected by the audience. For instance, although great care was taken to model the individual roof tiles on Shen's tower, such visual distinction was never the focus of the shot. "It is meant to provide a sense of richness to our world, not to act as a distraction," Burian continues. Similarly, the camerawork and lighting in these locations always supports the action of story, as does the use of the stereographic medium. "We utilize all of these cinematographic tools," notes Zibach, "to play up the emotion or action of a sequence, never using them just to be cool."





VALLEY OF PEACE

Revisiting the Valley of Peace in *Kung Fu Panda 2* feels like a return to Shangri La. The lush foliage set inside the protective circle of sugarloaf mountains invokes an immediate sense of safety and relaxation. Inspired by the Li River Valley and Yellow Mountain regions of China, the seemingly soft, rounded silhouette of these peaks resonates the design theory of the film that such shapes suggest good things.

The style of surfacing in this environment subtly reflects the Chinese use of repetition in its aesthetics as well. “Within the sugarloaf environment, bushes and trees are painted by using repeated textures,” explains production designer Raymond Zibach, “almost to the point where the mountains are carpeted with the patterning of bushes, but are broken up with rock surfaces revealed throughout. The trick is loosening it up again when it looks too digital.”

DRAGON WARRIOR NOODLE AND TOFU

Mr. Ping’s noodle house has gotten a bit of a makeover since the first film. The entry archway has been rebuilt after sustaining damage from the kung fu battle



in the previous story, and the fact that this repair is visible not only adds a sense of reality to this environment, but also nostalgically recalls that first adventure. More noticeable is the new signage, touting the restaurant as “Dragon Warrior Noodle and Tofu,” an homage to Po’s new prestige. “Mr. Ping loves that his son has brought his noodle house more success. He isn’t

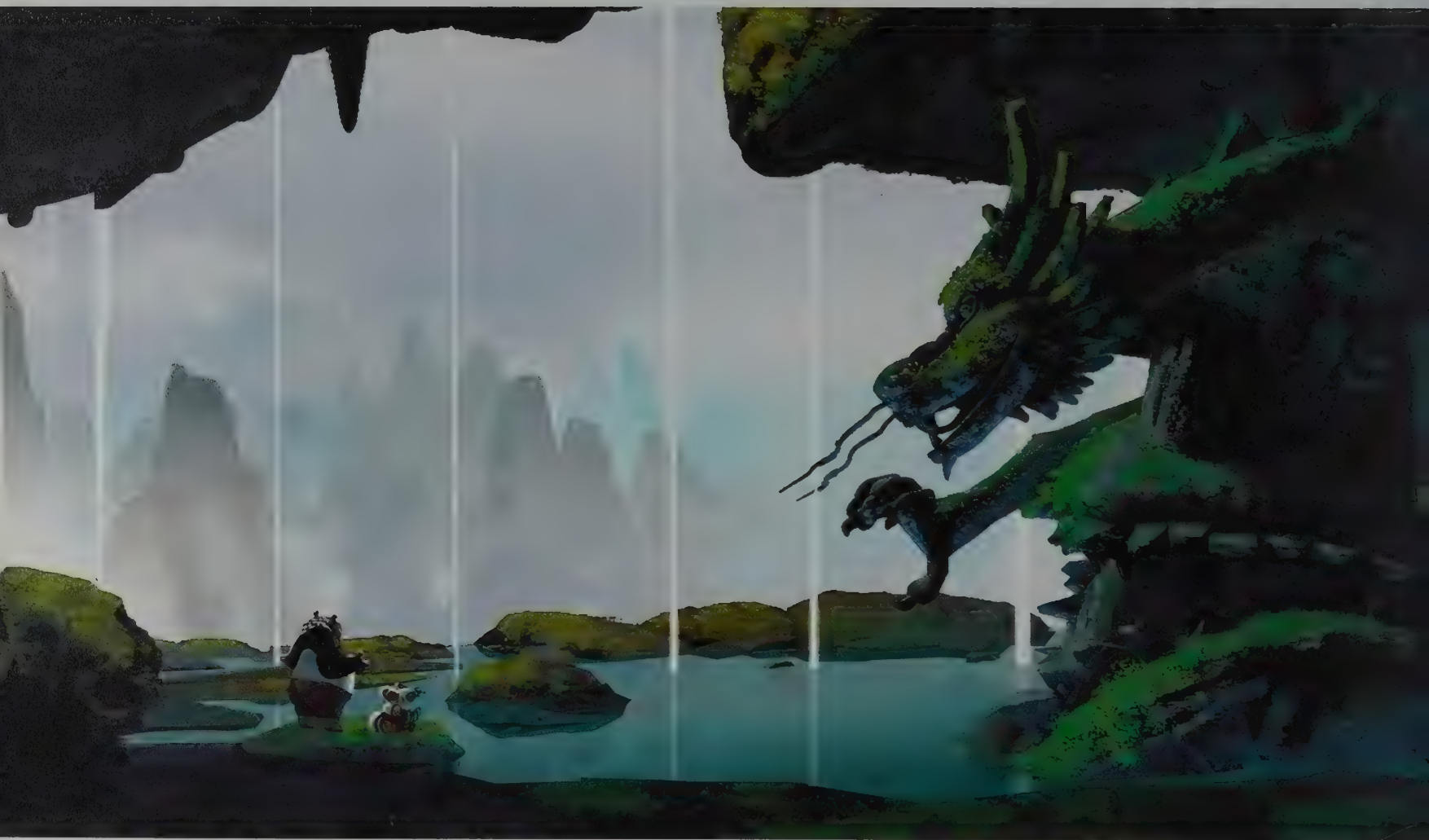
exploiting it, just celebrating it,” explains head of story Phil Craven.

The dining area of the restaurant also boasts the glory of Po, replete with festive banners and paintings hailing the Dragon Warrior. The kitchen holds the honor of being the true heart of the home in both movies, as touchingly demonstrated by the scene where Po and Mr. Ping finally have the “where did I come from?” discussion. To emanate the warmth and love with which Mr. Ping tells the story of how he came to be Po’s father, the room is bathed in golden light, a color theme for Po that also draws upon the Chinese theory that yellow is the most beautiful color and at the center of everything.

(Top Left) **Valley of Peace** • Tang Kheng Heng - digital paint

(Bottom Left) **Sequence 550 - Dad Says Good-bye Valley of Peace Matte Painting** • Sun Yoon - digital paint

(Above) **Sequence 200 - Po and Dad Talk Color Key** • Raymond Zibach - digital paint



(Above) **Grotto Early Concept** • Raymond Libsch - digital



DRAGON GROTTO

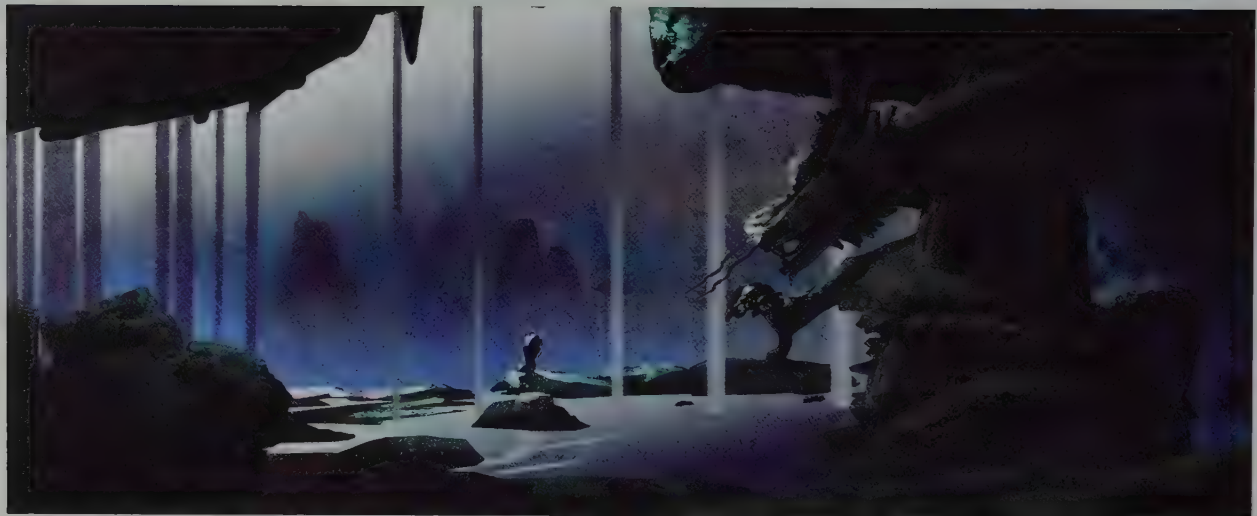
Po and Shifu meet again as mentor and student, this time in the breathtaking Dragon Grotto. Atmospheric effects give this location a misty and mystical aura, creating a serene space to reinforce Shifu's sea of calm as a good balance to the crashing waves of Po's uncertainty as he begins his journey of discovery. The effects crew was quite waterlogged for this entire sequence, crafting mist as well as a spectacular waterfall, water droplets running on fur, displacement on the pond's surface, and ripples in the water.

In this aqueous sanctuary, Shifu instructs Po on finding inner peace. In

doing so, he introduces a key theme of the film, which is based on water: the concept of letting things flow through you instead of allowing them to erode you. Inside the Grotto sanctuary, Shifu shows Po how to catch and convey a drop of water without breaking it, an almost impossible task. However, "when you have inner peace, you can do anything," Shifu advises. To capture this action and interpret it for the animators, storyboard artist Alessandro Carloni studied Tai Chi practice and combined this elevated form of kung fu with contact juggling in his storyboard panels.

Atmosphere really added depth along with a sense of mysticism. We used the look and feel of an early morning mist to draw the audience into the scene, but then toned it down when the focus turned to the characters and their conversation.

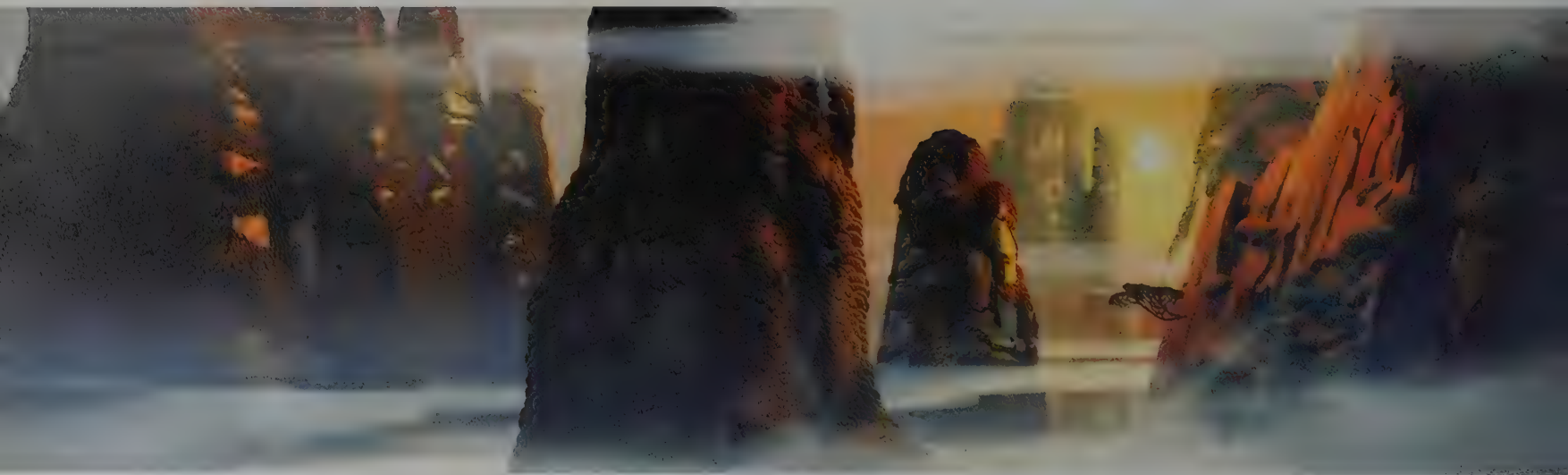
— Dave Walvoord, Head of Lighting





(Above) **Sequence 400 - Shifu's Lesson Valley of Peace Matte Painting** • Sun Yoon - digital paint
(Left) **Sequence 1875 - Ripples of Death Color Key** • Raymond Zibach - digital paint
(Below/Left) **Grotto Maquette** • Facundo Rabaudi - mixed media
(Below) **Grotto CG Set** • Soongu Kwon and Jason Turner - Maya model, John McLaughlin - surfacing





(Above) **Cliff Town Mountains** • Jon Klassen (concept art)
 (Below Left) **Sequence 100 - Po Lives the Dream Color Key** • Chris Brink (digital paint)
 (Bottom Left) **Sequence 100 - Animation Guide, Po and Wolf Fight** • Philippe Guenoden (ink and paper)
 (Below Right) **Cliff Town Buildings** • Gino Chiodini (digital paint)
 (Bottom Right) **Musical Instruments** • Tang Xuezheng/Chris Brock/Blake Murray (digital paint)
 (Right) **Opening Action Sequence, Po Rescues Orphans Unused Early Concept** • Tang Xuezheng (digital paint)



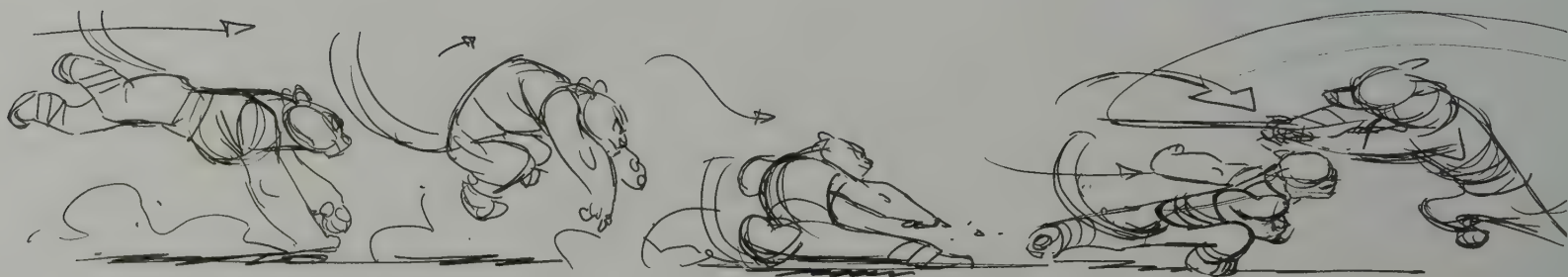


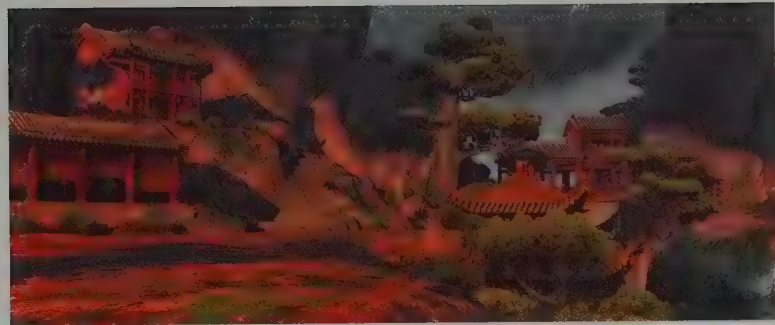
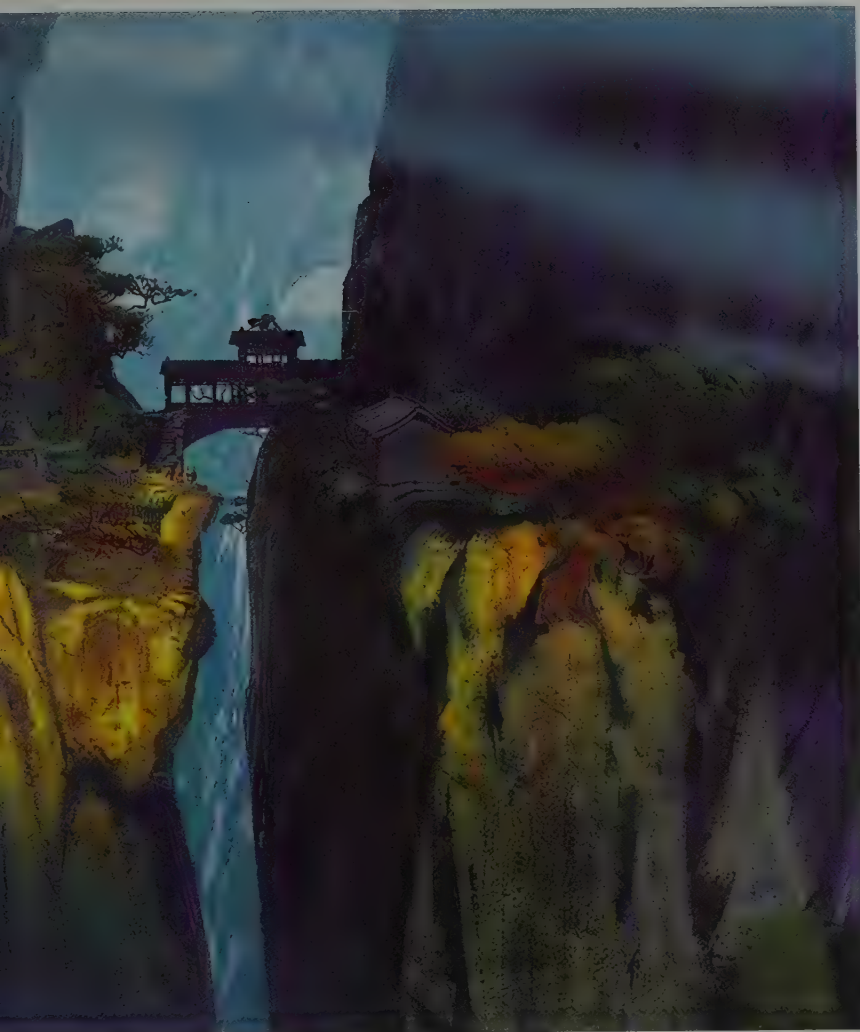
ARTISAN VILLAGE

Peaceably inhabiting the edge of a cliff in the mountains outside the Valley of Peace is a village of musically inclined artisans. This reclusive community has an almost meditative atmosphere, much like a monastery from the Qingchengshan Mountain that the creative team visited for inspiration. “It has a windswept, organic feel with patina surfaces and grass overgrowing rooftops,” explains art director Tang Heng, giving a sense that it has quietly become one with nature over time. Colors and lighting in this environment further support the natural feel, incorporating warm warm and cool cools in the generally earth-toned set.

This tranquility only lasts until Shen’s wolves raid the village to gather metal for their arsenal, their target being the beautiful ensemble of instruments, which the modeling and surfacing teams took great care to craft with authenticity. The cacophonous village then becomes a backdrop for Po and the Furious Five to rally in defense of the defenseless, as well as serving as the setting where Po’s childhood memories first emerge. It’s the first time they fly into action together in *Kung Fu Panda 2*, and it’s a perfect setting to show how this team now works in martial harmony.

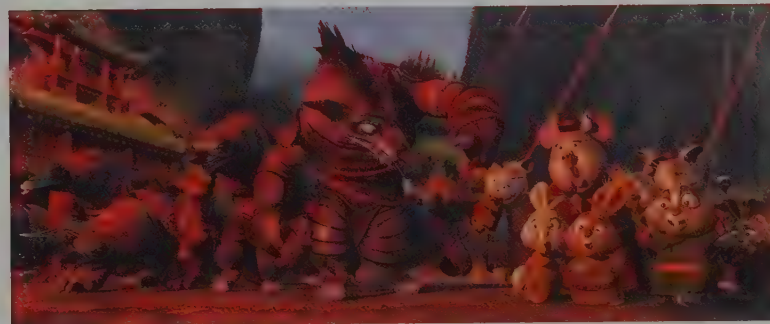






The Artisan Village is a wonderfully natural setting. But its muted palette made it challenging to get a good read on some of the characters in this location, so we had to adjust saturation levels to achieve the right balance.

— Dave Walvoord, Head of Lighting

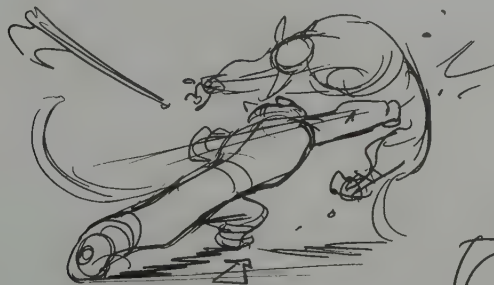


(Top Left) **Cliff Town** • Tang Kheng Heng - digital paint

(Top Right) **Cliff Town CG Set** • Ken Yu - model, Deepa Agarwal and Sandy Dong - surfacing

(Above) **Sequence 100 - Final Frame** • Dorian Bustamante and Juan Gonzalez - layout, Dave Weatherly - animation, Bryan Poon - CFX, Dan Warom - crowds, Scott McKee, Jeff Kasunic, and Kurt Kaminski - lighting

(Below) **Sequence 100 - Po Lives the Dream, Tigress and Wolf Fight Animation Guide** • Rodolphe Guenoden - ink and paper





(Top) **Tavern Early Concept** • Jason Brubaker • digital paint

(Above) **Arrival at Gongmen City Color Key** • Raymond Zibach • digital paint

(Below) **Sequence 780 - On the Boat Concept** • Chris Brock • digital



TREK ACROSS CHINA

When Po and the Five embark on their mission to Gongmen City to stop Shen, it is not only a physical journey but a personal journey for Po as he ponders his own identity. “This travel montage needed to give the sense of being an epic journey on several levels, into a bigger and newer world beyond what we saw in the first film,” explains production designer Raymond Zibach. Fortunately, China is such an abundant and diverse land that it had many rich locations that offered the design team the scale they desired. From the snowdrifts of the Himalayas to the sand dunes of the Gobi Desert, a wide

variety of environments were readily available to inspire the artistry of this adventure.

SAMPAN BOAT

Po and the Five finish their trek by entering Gongmen City on a sampan boat. This flat-bottomed Chinese skiff, generally used for fishing and light transportation, is a humble craft made of natural materials. Barely big enough to house these six, its intentionally modest size offers an intimate setting for Po and Tigress to have a heartfelt conversation.



(Above Left) **Sequence 600 - On the Trail Concept** • Tang Kheng Heng - digital

(Above Middle) **Furious Five Boat** • Facundo Rabaudi - Maya model and digital paint

(Above Right) **Travel Sequence Early Concept** • Raymond Zibach - digital paint





(Above&Below) **Gongmen City** • Ritchie Sacilloc • digital paint
(Right) **Sequence 1030 - Rickshaw Chase Color Key** • Bill Kaufmann • digital paint

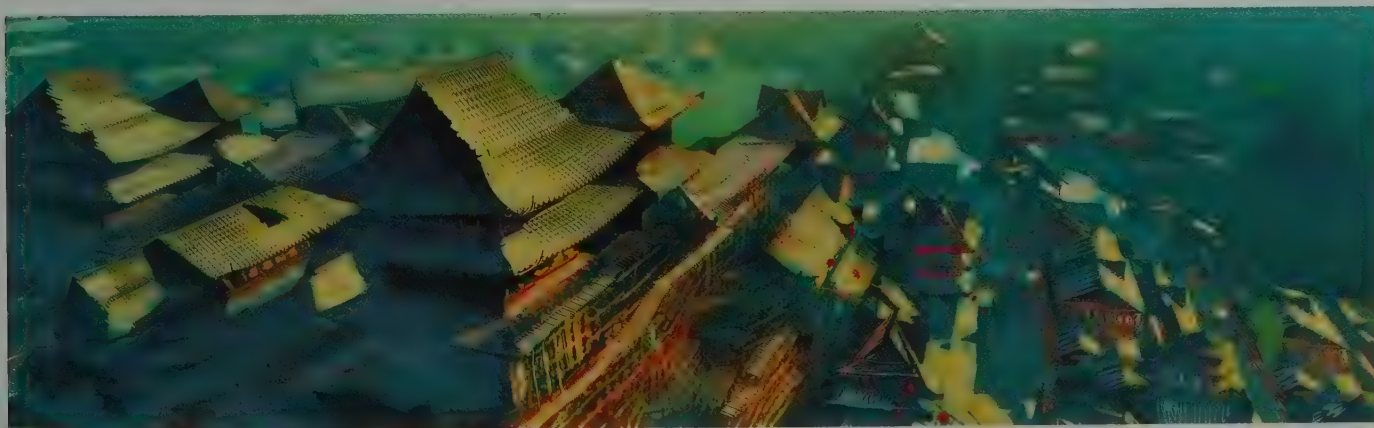




GONGMEN CITY

Gongmen City is a place unlike any Po has ever been to, and intentionally so: This location is another means to keep Po unsettled in his journey, due to its disorienting geography, bustling commerce, and swarming population. It is a cinematic means “to take Po and the audience out of their comfort zones, to add more intensity to the task of surviving in an unknown, overwhelming environment,” explains production designer Raymond Zibach. The city is full of stacked buildings, crisscrossing alleyways, and infinite doorways, all contributing to the sense of “not knowing what may be lurking around the corner,” adds director Jennifer Yuh Nelson.

Early in the development of *Kung Fu Panda 2*, Nelson wished to incorporate an oceanfront location into the story, so the artistic team began to research Shanghai and Hong Kong for inspiration in creating a metropolis with a port. The crew also wanted to reflect the crowded appearance of these cities, but had to be smart about how to build such an ambitious set. Art director Tang Heng came up with the idea of modeling a limited number of city blocks, which could then be altered by variations on surfacing as well as flipping, scaling, and changing elevations of the blocks. Looking at the architectural details in the ancient city of Pingyao as a prime example, “the





Although Gongmen City is a disorienting place, it is still an exciting arrival for Po as suggested by the golden light and soft sky fill that create a sense of hope and anticipation at the start of an adventure.

— Dave Walvoord, Head of Lighting



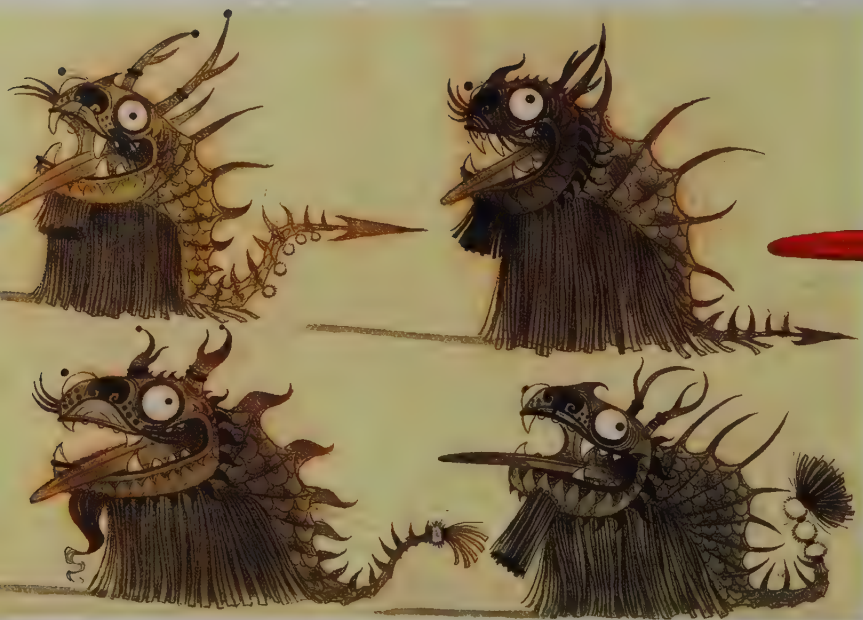
crew created an opulent [red, painted, gilded] and a modest [raw wood, stone] version of each block modeled,” explains head of surfacing Wes Burian. In the end, what started as nine different city block models appeared as over 10,000 different buildings with an average of 40,000 surfaces applied to each city block. Added to this framework were countless set-dressing elements such as lanterns, signage, and banners. The result is a stunning urban sprawl that is quite efficient in its construction. This approach also had another artistic benefit to it, as the reuse of structures played into the “sense of rhythm and grouping that Heng wanted to achieve in the city,” notes modeling supervisor Jason Turner.



Efficiency in some instances allowed for more refined detail in others. For example, there appear to be Chinese characters painted on some doorways, graffiti-like in their placement. As Heng explains, “this marking is the Chinese character ‘luck,’ which, when displayed in front of a house, is supposed to bring good luck and fortune to those within.” Another thoughtful yet diminutive detail in the city could be found along the roofline of some buildings, where a few small yet intricately carved characters are perched. “The rabbit riding on the rooster is a symbol for the ruler of the town, which means ‘he or she must be good to his or her subjects,’” adds Heng.









(Previous Spread) **Gongmen City Market** • Ritchie Sacci - digital paint

(Above) **Gongmen City Early Concept** • Tang Kheng-Heng - digital paint

(Below Left) **Lion Costume Early Concept** • Nicolas Marlet - character design, Chris Brock - digital paint

(Below) **Rickshaw** • Jason Brubaker - digital paint

DRAGON COSTUME

An effective hiding place for Po in the big city, the design of the Chinese costume prop was also a fun assignment for character designer Nicolas Marlet. “It’s a bit of a mash-up between a tiger, a dragon, and the legendary qilin,” explains production designer Raymond Zibach. Marlet sighted a prime opportunity for humor in the application of “googly eyes” to what was meant to be a stealthy disguise for the most talented kung fu warriors in China.

RICKSHAWS

To add to the chaos in Gongmen City, rickshaws run rampant through the streets and alleys—and in some cases, along building ledges and rooftops. These vehicles were designed based on traditional Chinese transportation, but adjusted as needed to contain a panda and other less traditional passengers.







(Facing Page, Top & Bottom) **Gongmen City Maquette** • Facundo Arisate - mixed media

(Above) **Gongmen City Block** • Jason Brubaker - digital paint

(Below) **Gongmen City Block CG Model** • Jeff Hayes and Ilya Zhukov - Maya model, Deepa Aragwal - surfacing

(Bottom Left) **Gongmen City Blocks** • Rita Lamas - digital paint

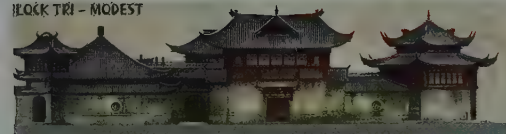
(Bottom Right) **Gongmen City Blocks** • Rita Lamas - digital paint, Jason Brubaker, Chris Block - digital paint

The modeling of the buildings in Gongmen City had to be detailed enough to allow ambitious camera fly-arounds so that we could shoot from every angle without cheating, plus we needed to give surfacing many options for creating variations.

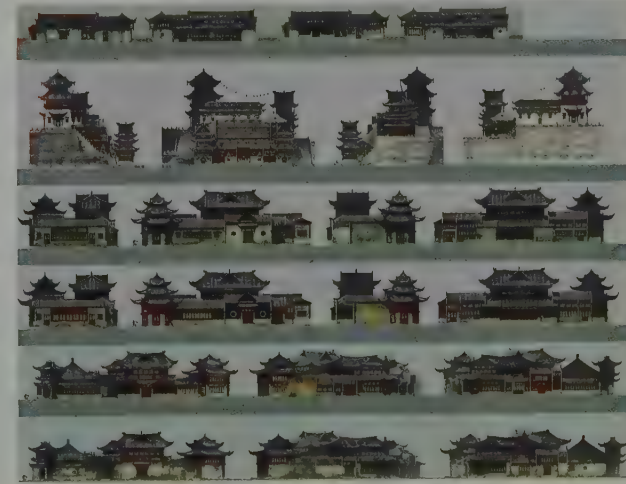
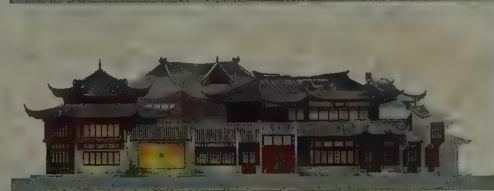
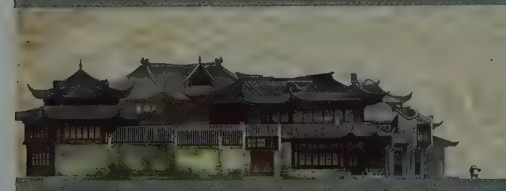
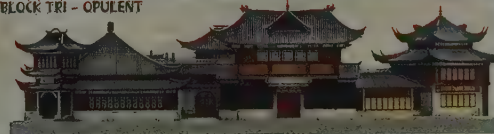
— Jason Turner, Modeling Supervisor



BLOCK TRI - MODEST



BLOCK TRI - OPULENT





(Left) **Fight Club Early Concept** • Jon Klassen - digital paint

(Above) **Tea House Entrance to Fight Club Early Concept** • Jon Klassen - digital paint

(Below) **Fight Club Early Concept** • Bill Kaufmann - digital paint





JAIL

Now the site where Shen locks up the old masters, the jail location once served as a kung fu academy, where Masters Thundering Rhino, Storming Ox, and Crocodile trained young fighters in Gongmen City. Hidden deep below ground was a “fight club” arena, where the new warriors would test

their skills and strength against one another. “At one time in our story,” recalls head of story Phil Craven, “there was a ban on kung fu in the city and this location was masked to look like a medicine shop at the ground level, but underground fighting still took place in the recesses of the structure.”







TOWER OF THE SACRED FLAME

Regal and solid, yet rigged to blow up into hundreds of thousands of pieces, Shen's Tower of the Sacred Flame is impressive architecture. Most imposing is the central tower structure, ten stories tall and intentionally visible for miles as it looms above the rooftops of Gongmen City. The tower stands as a monumental example of the use of repetition in Chinese architecture, which also happened to be "a way to get a lush look that the computer can do easily, capitalizing on good design done once," explains production designer Raymond Zibach. "For the exterior, nine of the tower

floors were built out of four different pie shapes, reusing columns, floors, windows, duogong, tiles, roof caps, handrails, and balconies each time. When you put it all together, the effect is staggering, and the scale and believability is tremendous." The tower houses an eight-story open atrium, which is huge in scale to allow for plenty of action within its walls. "It's also a good space to introduce Po's old nemesis—stairs," adds Zibach, a mighty foe numbering 629 steps to the top. The interior build also benefited from the application of repetition. Explains modeling supervisor Jason Turner, "Each interior



(Left & Above) Shen's Tower Interior Concepts • Mike Yamada • digital paint





(Above) **Fortress Grounds** • Jason Brubaker, Chr's Brock, and Tang Kheng Heng • digital paint
(Right) **Shen's Tower CG Model** • Luis Labrador, Ken Yu, Jason Turner - model, John McLaughlin - surfacing





level is comprised of two unique pie shapes [because one shape has staircases] that were copied and rotated, forming an octagon.”

Throughout the palace, Shen’s fire theme is perpetuated on numerous architectural details, such as flame motifs that wrap up and around columns and banners that are die cut into the shape of sunbursts. The palace also has noticeably low ceilings to allow the audience to feel that space more intensely, in an intimidating and claustrophobic way. This sense of intimidation is heightened by elaborate décor designs that incorporate the fiery peacock eye symbol, giving the sense of being

**Shen’s tower was inspired by both
The Yellow Crane Tower in Wuhan and
The Pavilion of Prince Teng in Jiangxi, regarded as
two of the four Great Towers of China.**

— Tang Heng, Art Director

watched from every angle. The main courtyard of Shen’s palace is an open space, based on the historical fact that, in China, such spaces generally had neither trees nor other ornamentation within them. This was so no one could hide in an attempt to shoot the emperor.

This proved a little too stark, “so we planted a few bits of foliage, including the cypress, which represents longevity,” explains art director Tang Heng. Around the courtyard are four watchtowers, which echo the repetitive aesthetic, but each tower differentiates itself by being dedicated to one of the four seasons in its adornment.



(Top) **Dining Room Early Concept** • Tang Kheng Heng - digital paint

(Above Left) **Sunroom Ceiling** • Mike Yamada - digital paint

(Above Right) **Fortress Sunroom** • Mike Yamada - digital paint

(Right) **Sequence 1600 - Escape from the Palace Early Concept** • Tang Kheng Heng - digital paint







FIREWORKS FACTORY

The production of fireworks was once a celebrated enterprise for the Peacock clan, bringing honor to them and prestige to Gongmen City. Shen, however, has taken the family business and turned it into a violent source of power to support his own personal agenda. A cunning and highly intelligent creature, “Shen took the gunpowder and some chemicals and turned it into an evil, sparkling powder,” notes visual effects supervisor Alex Parkinson.

The first design of the fireworks factory was more mammoth, encroaching upon the presence of Shen’s tower in the skyline of Gongmen City. This size comparison did not suit the story, so the factory was brought into a more grounded realm by turning it into a long structure with smoke stacks. This still made it impressive, but not overpowering in its build. The final

version was “inspired by a bridge in China where people would take cover when caught in a rainstorm,” explains art director Tang Heng, an interesting connection to a structure in which Shen creates a dangerous downpour of his own.

The lighting approach in the fireworks factory is aggressive, heavy on red, but also playing against blue to get a dramatic, graphic read on the action.

- Dave Walvoord, Digital Effects Supervisor

The interior is a showcase for atmosphere, with vats of molten metals spewing sulfurous steam and emitting a haunting red glow. “It was important for us to convey the smoky, metallic hardness in this space,” notes production designer Raymond Zibach, as this was a clear way to

envelop the audience in Shen’s presence by setting up a clear contrast to Po’s softness and roundness. “We didn’t stop to think about what a realistic lighting solution would look like; instead we pushed forward without

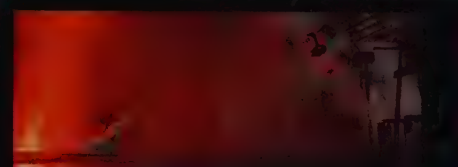
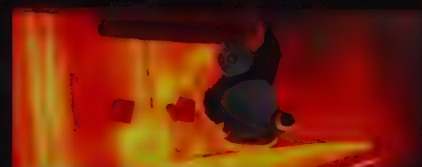
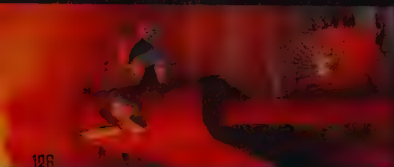
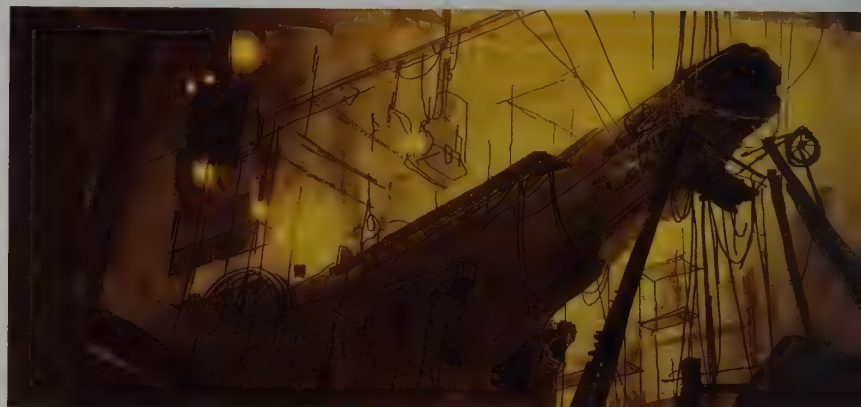


(Left) **Factory** • Ritche Sacilioc - digital paint

(Right) **Sequence 1850 - Fireworks Factory Raid**
Color Key • Bill Kaufmann - digital paint



(Above, Below & Facing Page, Top) **Factory Early Concepts** • Ritche Sacilio - digital paint
 (Right) **Lord Shen's Cannon** • Tang Kheng Heng and Facundo Rabaud - digital paint
 (Far Right) **Cannonball** • Mike Yamada - digital paint
 (Facing Page, Middle Right) **Cannon Early Concept** • Facundo Rabaud - digital paint
 (Bottom) **Sequence 1850 - Fireworks Factory Raid Color Keys** • Sean Eckols, Bill Kaufmann - digital paint



apprehension to add to the intensity of this environment,” continues Zibach. The volumetric effect of smoke adds to the mystery of the space and plays almost as a character in its own right, with steam dramatically clearing to reveal Shen’s arrival. Beyond the atmosphere, the effects team was also tasked with animating the conveyor belt, which “portrays both comedy and danger in its animation, a perfect balance for Po,” notes head of effects Lawrence Lee.

CANNONS

Certainly the most important prop in *Kung Fu Panda 2*, the cannon is the weapon Shen built to stop kung fu in its tracks. Its existence shocks the Old Masters to their core once they witness its power, which in turn fuels Shen’s

burning desire to utilize this firepower all the more.

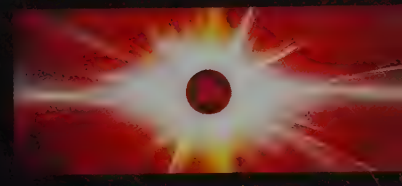
There are several different cannon designs, but all are based on the likenesses of predatory animals such as the eagle or crocodile, as if Shen was drawing upon the menacing power of such creatures to create a more fear-worthy presence for himself. His flame and fiery eye motifs appear on these devices, and even the cannonballs feature a pattern of flame and are cast in the red and black of his armed forces.

The cannonball trail and residual smoke are both thoughtfully designed elements, meant to highlight the fireworks and Shen’s personal style. “The cannon’s trail has a sparkle effect and a spiral motion to give it that extra ‘wow’ factor, like a firework as it launches,” explains Lee. “The smoke that comes out of the cannon’s nostril sparkles and fans out like a peacock’s tail.”



It is quite hard to make cannon shots appear stylized and still lethal, but not too deadly for our audience to watch comfortably.

— Lawrence Lee, Head of Effects





(Above) **Po's House** • Chrs Brock - digital paint

(Right) **Po's House CG Model** • Ken Yu - model, Deepa Agarwal - surfacing

(Below) **Sequence 1900 - Po Finds the Truth Color Key** • Bill Kaufmann - digital paint



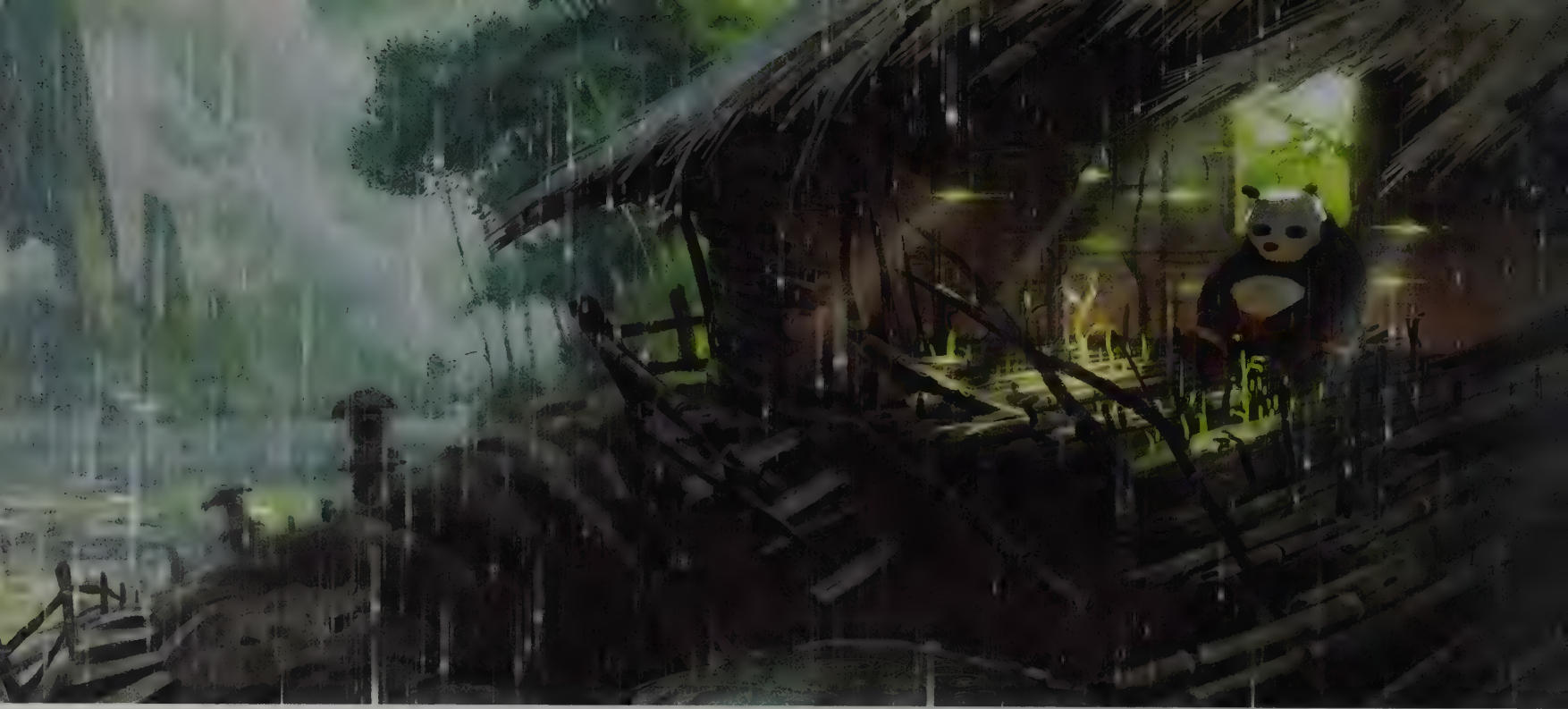


PANDA VILLAGE

What Po eventually comes to learn is that he was born in a panda village that succumbed to the wrath of Shen while Po was an infant. This location was “inspired by Lijiang in the Yunnan Province,” explains art director Tang Heng, “where pandas once lived in abundance and where the snow-capped Himalayas add to the majesty of such a special place.” To impart an accurate sense of the geography and topography for the crew, a physical model was built that greatly facilitated a common understanding of the terrain.

While in its prime, this village was an oasis of bamboo groves, gentle waterways, and humble panda huts that were inspired by the farmhouses of southern China. When Po finally arrives in this location, he sees mostly wreckage that exposes Shen’s desperate effort to eliminate a potential threat by setting everything afire. “It is a somber scene, illuminated by monochromatic lighting to enhance a sense of gray and sadness,” explains head of lighting Dave Walvoord. This setting also benefits from how atmosphere is used to heighten emotion, with mist and rain further conveying the quiet, solemnly reflective mood.





(Above) **Po's House Early Concepts** • Chns Brock - digital paint

(Below) **Sequence 1900 - Po Finds the Truth Storyboards** • Catherine Rader - digital

(Below Right & Facing Page) **Po's Village Early Concepts** • Chns Brock - digital paint



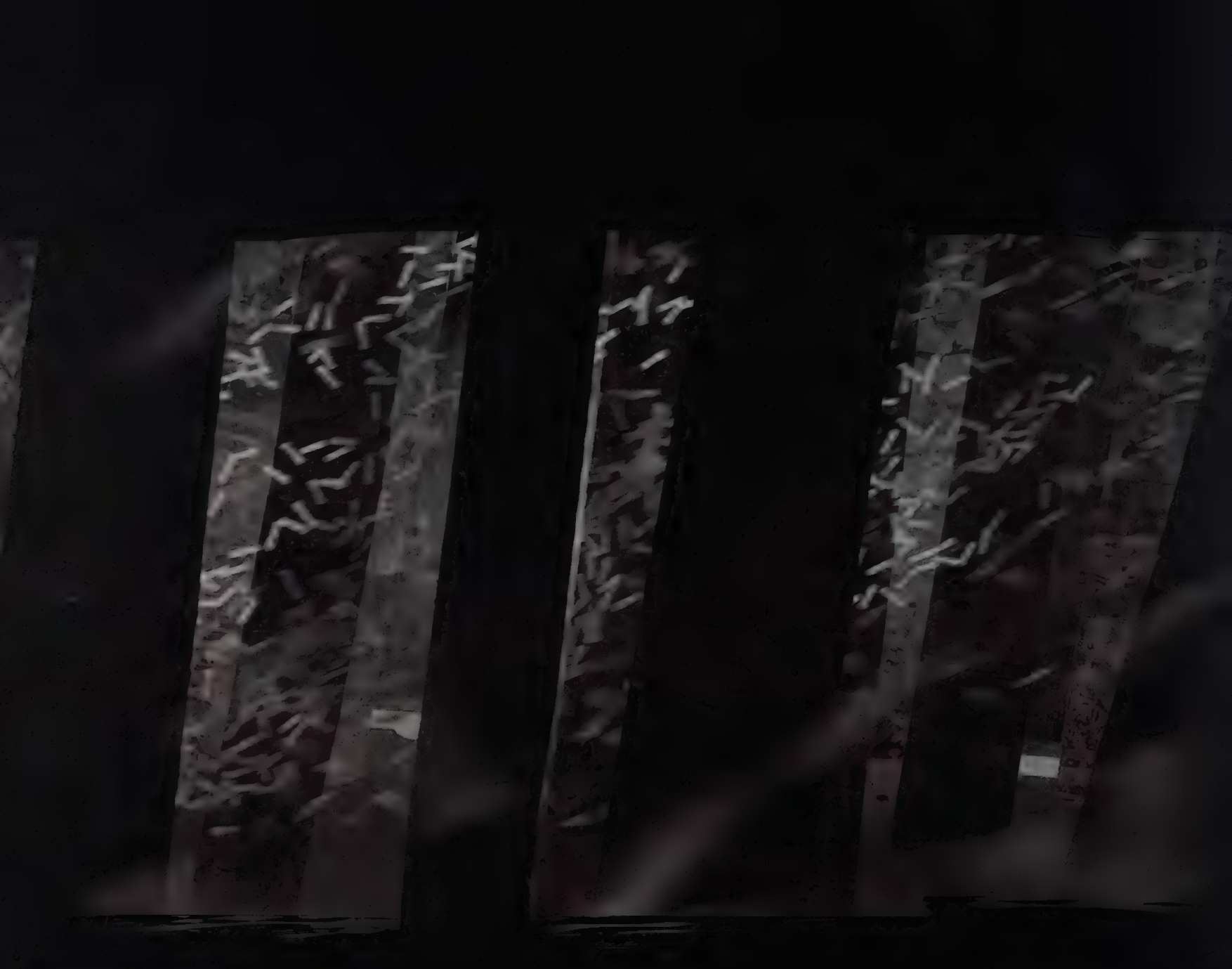


**The pandas of our film stow their crops
underneath their homes; thus the
panda houses are on stilts.**

— Tang Kheng Heng, Art Director

The visit to this village involves an important moment of recognition and growth for Po, and this hopeful sentiment is echoed in the set design. Although the village appears abandoned, the bits of burned wood are now being overgrown by bamboo, a visual symbol of rebirth in what was formerly a devastated location. Moreover, the raindrops actually provide the means for Po to seek inner peace by putting into practice what Shifu tried to teach him in the Grotto.

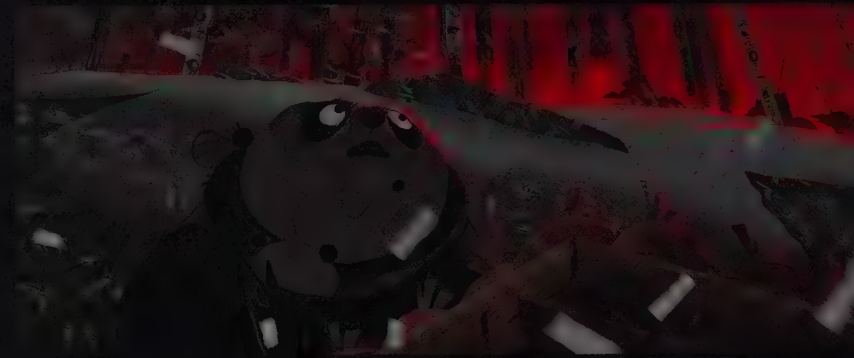
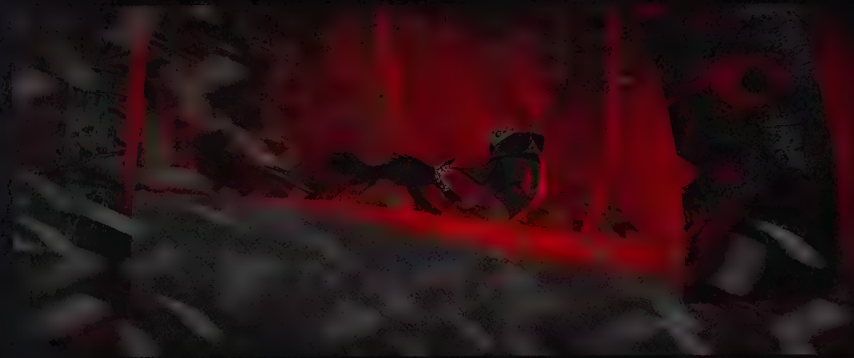








Sequence 1900 - Po Finds the Truth Early Concepts - John Cassar - digital painting



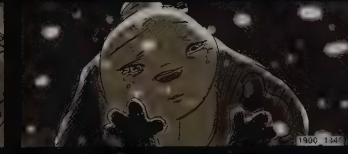
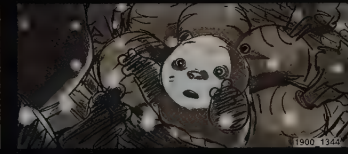
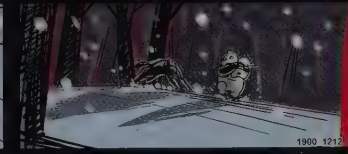
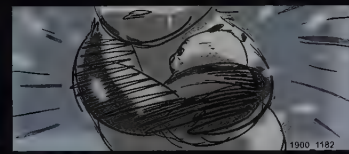
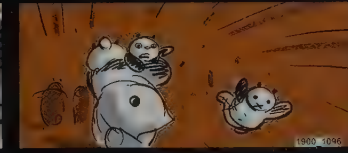
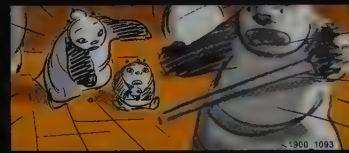
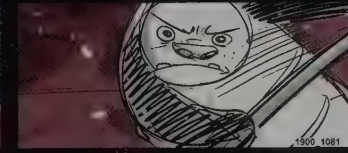
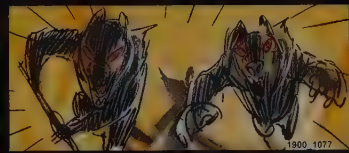
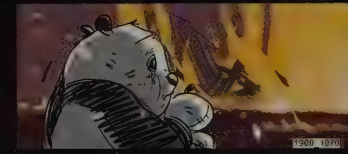
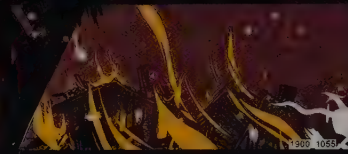
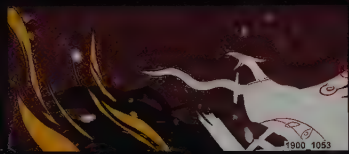
[The middle bottom] Sequence 1900 - Po Finds the Truth Early Concepts - Tang Xiaojing, 2008/08/08

[The middle bottom] Sequence 1900 - Po Finds the Truth Color Key - Sean Cooke, 2008/08/08



Sequence 1900 - Po Finds the Truth Color Key - [Storyboard](#)
Sequence 1900 - Po Finds the Truth Color Key - [Storyboard](#)
Sequence 1900 - Po Finds the Truth Storyboards - [Storyboard](#)









HARBOR

When the crew was asked to brainstorm a spectacular final battle, the idea of having it on water came up almost instantly. The harbor is an important part of Shen's plan, as it is the easiest way for him to launch his fleet toward the whole of China. It is also a fitting climax for the water theme of the film, wherein Po can put into effect what he has learned from Shifu and what he has chosen to do with such knowledge and power.

Atmosphere plays an important role in the harbor. The coordination of fluid effects was key to establishing the mood for the battle sequence, so even the rough layout pass included suggestions for clouds, fog, and mist. "This helped Raymond and Jen see what was important to focus on earlier rather than later in the pipeline," recalls head of layout Damon O'Beirne.

Another important factor in getting the final battle to play well was establishing the timing of explosions as early in the pipeline as possible. Once again, the rough layout pass incorporated temporary effects, allowing

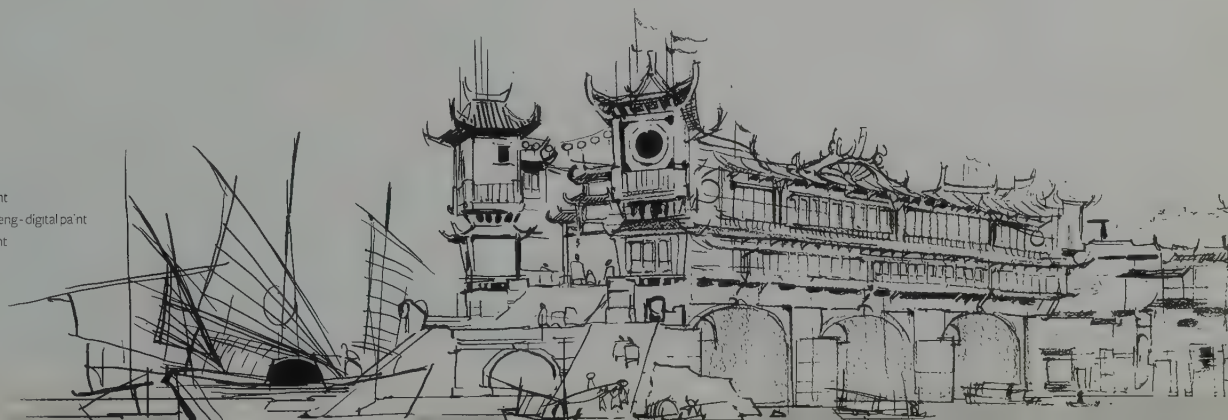
the editorial team to properly adjust timing on these shots. "These temporary effects are invaluable in certain shots, such as when a wolf is trying to light the cannon and the other character's efforts need to be played against this ticking clock," continues O'Beirne.

"The final battle was nearly as complicated as you could imagine," says visual effects supervisor Alex Parkinson. "First, we're focusing on our main characters in and among hundreds of crowd characters who are on constantly moving boats. The characters in their boats are floating on an effects-generated water surface, which is surrounded by additional effects for cannonballs being fired, with their residual trails, explosions, and smoke clouds. In addition, there were lighting implications for weapon fire, cloud glow, and water reflection. Mapping out departmental interdependencies was as challenging to maneuver as a battleground itself!"

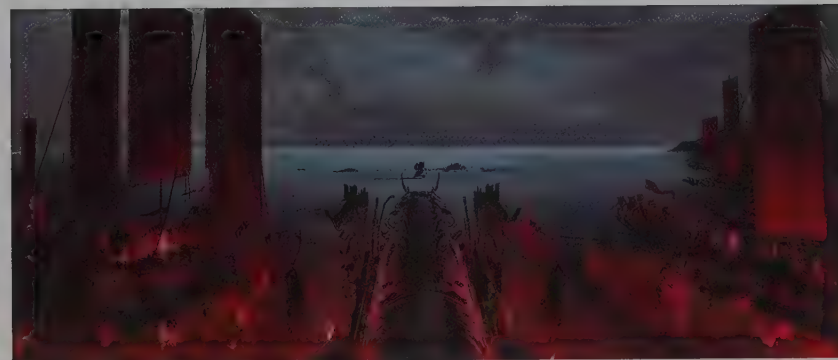
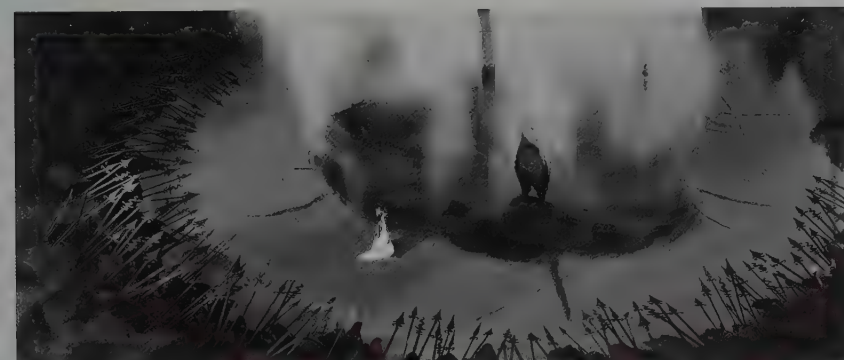
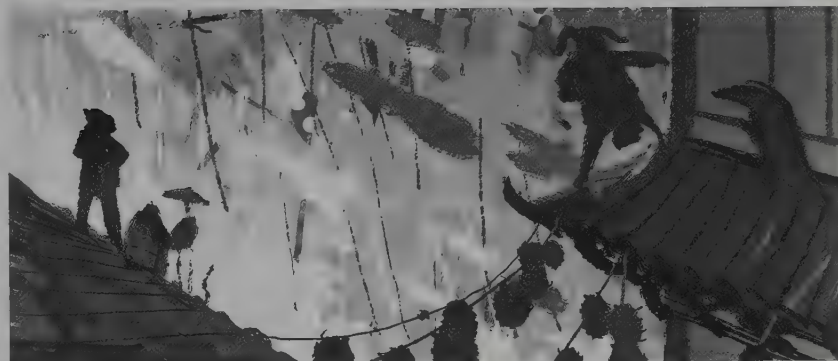
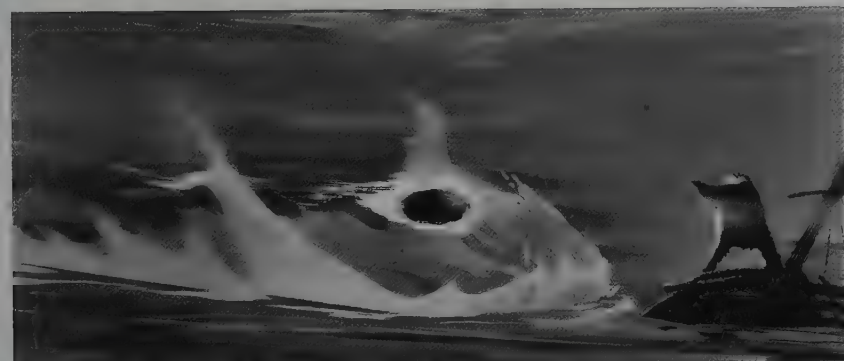
(Top/Left) Harbor Early Concept • Chris Brock - digital paint

(Bottom/Left) Final Battle Early Concept • Tang Kheng Heng - digital paint

(Right) Harbor Early Concept • Ritche Sacilloc - digital paint







(Above Left) **Lord Shen's Ship** • Jason Brubaker - digital paint

(Below Left) **Final Battle (On Land) Early Concept** • Tang Kheng-heng - digital

(Above) **Final Battle Early Concepts** • Mike Yamada - digital paint

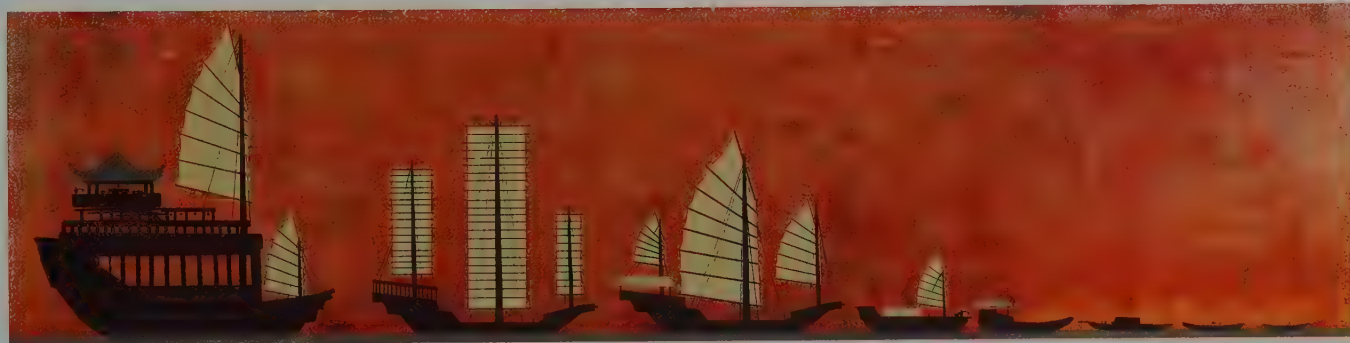
(Below) **Gongmen City Ships Early Concept** • Bill Kaufmann - digital paint

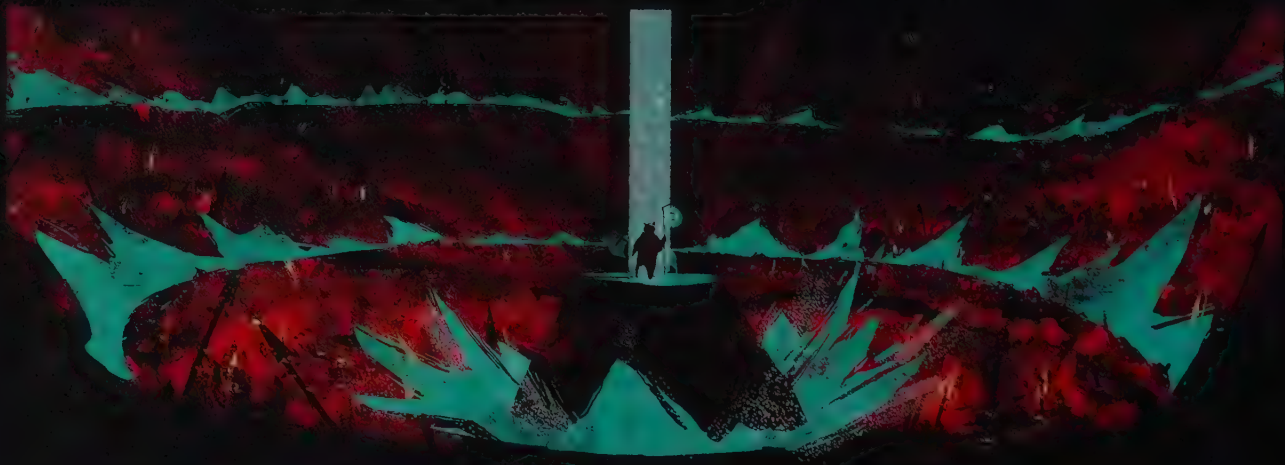
The use of 3D stereo during views down the lines of boats for the final battle is particularly effective, adding intensity to the scale of Shen's fleet.

— Alex Parkinson, Visual Effects Supervisor

BOATS

Shen has mounted a commanding fleet of boats to set sail in his conquest for China. Although the boat designs vary to some degree, they are based on the iconic Chinese junk, used for commerce via river transportation. Shen's armada features flame details as well as the fiery eye motif, all cast in ominous black and red.





(Top) Final Battle Early Concept • Chris Brock • 10/10/02

(Middle) Final Battle Early Concept • John Klopper • 10/10/02

(Bottom) Final Battle Early Concept • Mike Ventricola • 10/10/02

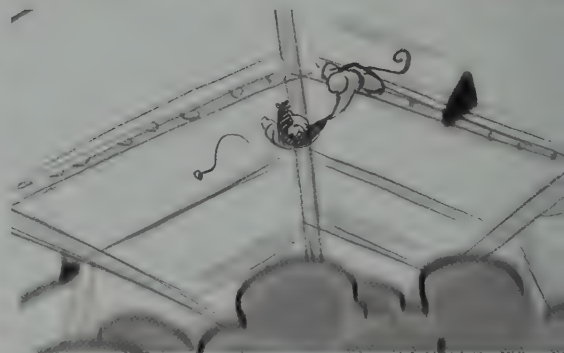
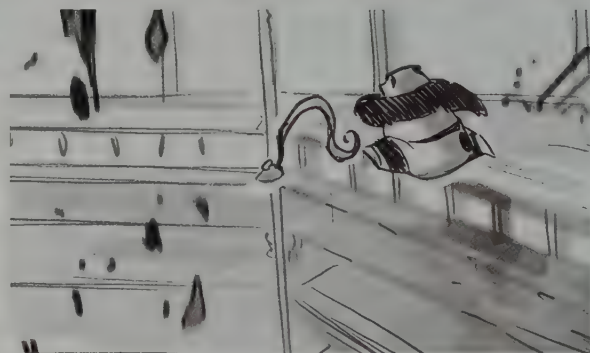
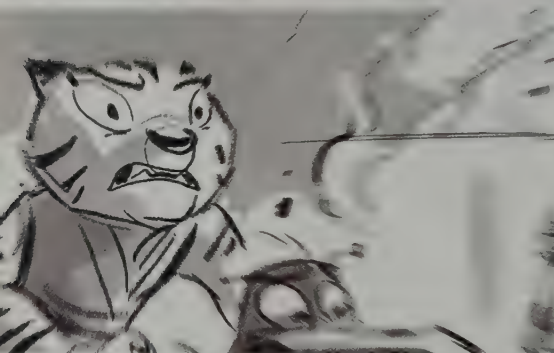
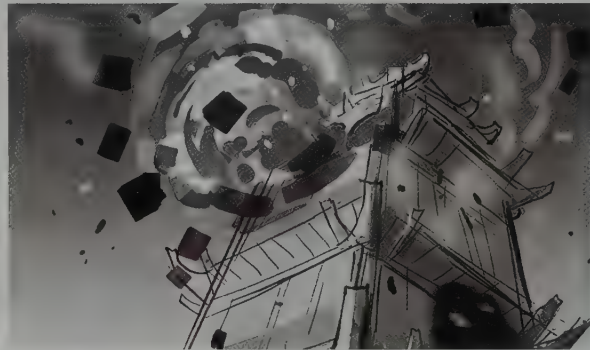
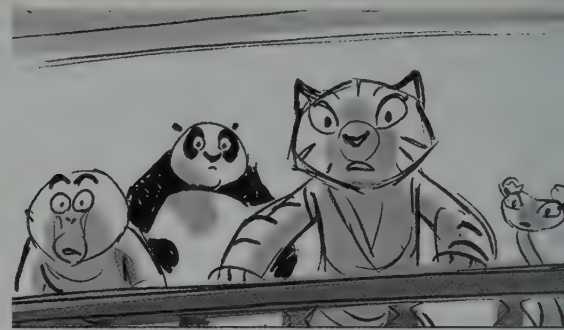
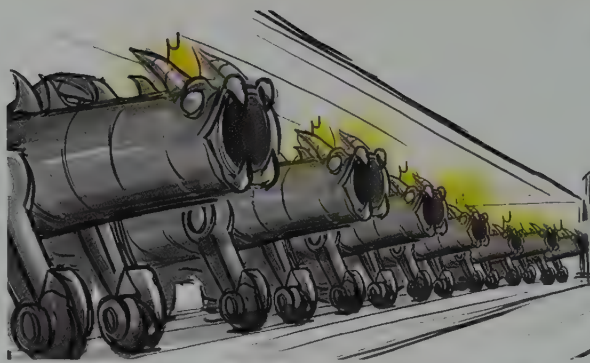
(Right) Sequence 3100 - Po Defeats Cannon Storyboards • Alessandro Ciccarelli • 10/10/02





THE JOURNEY IN PROGRESS





(Above) **Sequence 1600 - Storyboard** • Phil Craven - digital

(Right) **Sequence 1600 - Final Frame** • Hamilton Lewis - layout, Steve Gordon - animation,
Stephen Herdelberg - CFX, Uda Haraguchi, Ben Lishka, Mike Necci, and Pablo Valle - lighting



SEQUENCE 1600

In *Kung Fu Panda 2*, Sequence 1600 is an action-packed section of the film entitled “Escape from the Palace.” Getting that sequence to the screen was an action-packed journey in itself, involving many different departments along the production pipeline.

Once the script had been written and all of the characters, props, and locations were designed, modeled, surfaced, and rigged, these elements were combined through the efforts of hundreds of artists to tell a story . . . and the 3D production journey of “1600” began.

STORY AND EDITORIAL

Storyboarding establishes the roadmap for a film. Taking the script pages and turning them into comic-book-like panels, the story artist translates the written word into a visual representation, taking into account composition, camera angles, and pacing.

In Sequence 1600, Po and the Five must escape from Shen’s palace before he blows it up. “The challenge we gave ourselves in story was to put Po and

the Five in an inescapable situation, and then show how they would escape. So first we made the Peacock’s fortress tower very tall, surrounded by high walls and hundreds of guards with swords and flaming arrows,” explains head of story Phil Craven. “But as we started visualizing the sequence, we found that even though the place was packed with armed wolves and precarious ledges, on a very basic level it just wasn’t exciting to watch our heroes climb downward. It’s much more dangerous and exhilarating to escape *upward*. So then we came up with the idea of making the whole building fall over so that Po would be able to run up the side of a falling tower and leap to safety over the courtyard wall.”

Once the director and story team were satisfied with how the boards played, editorial took and imported them into the Avid video system, cutting them together into a story reel with temporary dialogue, sound effects, and music. As each of the departments down the pipeline finished their work, their shots were sent to editorial, which continually updated and refined the reel, eventually coming up with a final cut of the film.





LAYOUT

Layout might be considered a more detailed roadmap for the journey, or perhaps one guided by a GPS system. Layout assembles the digital elements along the lines of what the storyboards dictate but then takes the sequence many steps further into refinement.

Head of layout Damon O’Beirne appreciated the fact that current technology allowed his department to produce a rather high quality previsualization of a sequence. “Resolution and representation of the final film is much greater now that we can add lighting, paint effects, atmosphere, motion blur, rain, smoke, water planes, depth of field, and flame to our rough layout pass,” he explains. There is especially great value adding lighting direction into the pre-viz pass because, notes production designer Raymond Zibach, “it helps with staging very early in the process, knowing when we’ll use dramatic

versus soft lighting. It informs us if the characters’ faces are well lit or not, which tells us what sort of performance they need to give to convey emotion.”

Layout is also where stereoscopic considerations begin. “Our stereo philosophy was to have the audience’s point of focus and the screen convergence be in the same place,” explains visual effects supervisor Alex Parkinson. “This worked especially well in Sequence 1600 in order to establish the sense of vertigo when our characters go down and up the tower. In the shots where Po nearly falls through the hole, the audience should get the sense of the world falling out beneath him. When they look up the tower, stereo adds to the sense of huge scale; and when they reach the top, the audience should get the sense of the tower falling and the ground rushing towards them.”

ANIMATION

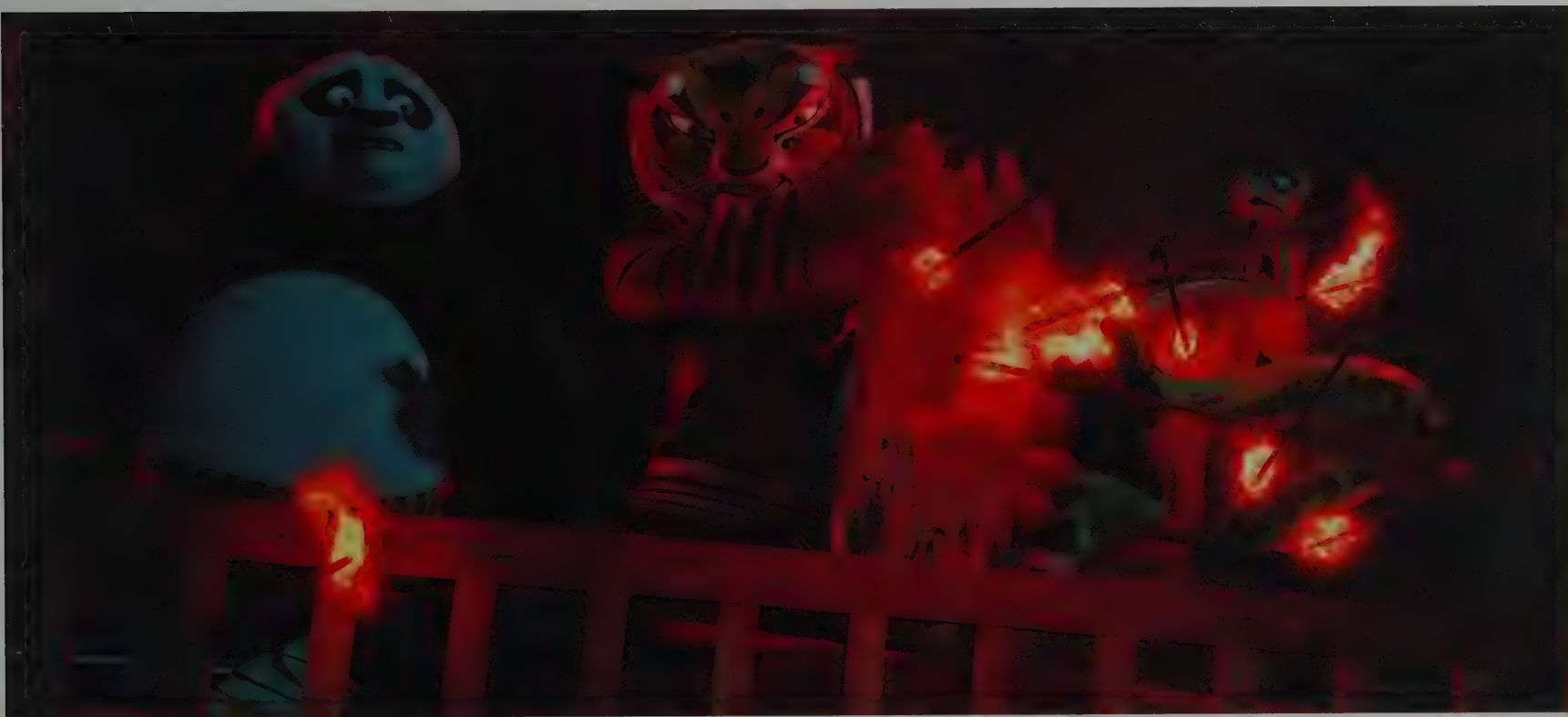
Once the camera and editorial choices are made, animation populates the shots with the characters and brings them to life with engaging and nuanced performances, truly getting the cinematic journey in motion.

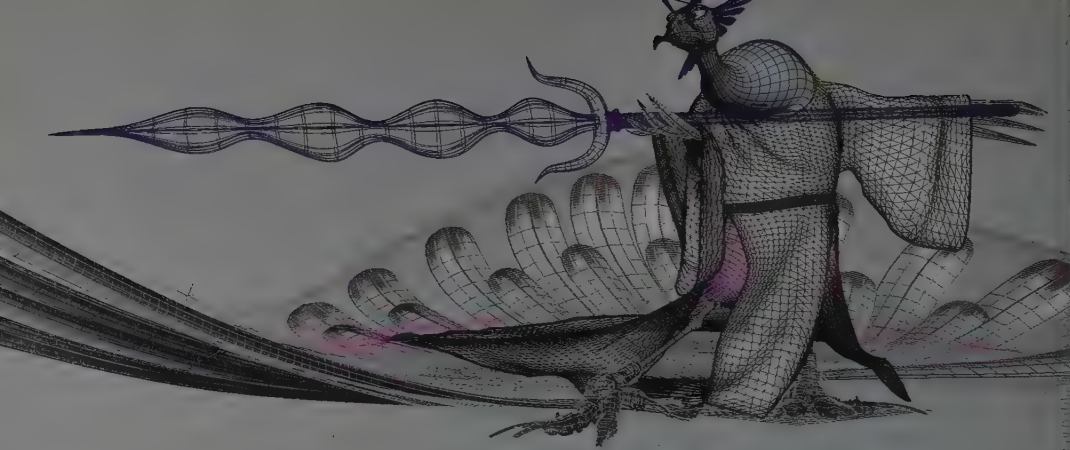
Although the overall animation style in *Kung Fu Panda 2* is broad realism, each character has a unique movement based on his or her design. This animation theory is clearly exemplified in Sequence 1600. For example, as head of character animation Dan Wagner explains, “Viper has to move much

like a snake and Crane has birdlike movements because they anatomically look like the actual animals they are. Tigress is a bipedal character, but when she runs, we have her run as a quadruped to represent a tiger’s realistic run. Monkey also walks and runs on all fours and is ambidextrous and flexible like an actual monkey. However, a character like Po is most identifiable when he is anthropomorphic. He wouldn’t look natural or relatable behaving like a real bear.”

(Left) **Sequence 1600 - Escape from the Palace Rough Layout Frames** • Chris Stover, Nathan Warner, Jason McDade, and Damon O’Beirne - digital

(Below) **Sequence 1600 - Final Frame** • Damon O’Beirne - layout, Bill Tessier - animation, Cassi Walls and Stephen Heidleberg - CFX, Loren Simpson and Jason Porath - FX, Mike Necci, Udaï Haraguchi, Ben Lishka, and Chris Cunningham - lighting





(Left) Lord Shen Feather Groom and Garment Setup • Jason Weber and Lee Grant • character FX
 (Below) Master Thundering Rhino Garment Setup • Cherie Rye • character FX
 (Right) Sequence 900 - City Without Kung Fu Fire and Fireworks FX • Steve Webb • digital
 (Below Right) Sequence 1600 - Cannon Fire FX Escape from the Palace • David Tidgwell • digital



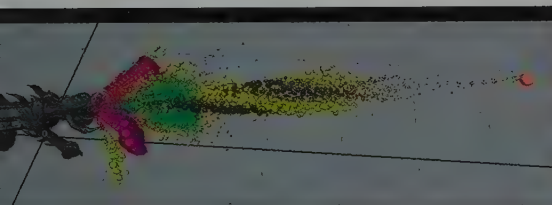
CHARACTER EFFECTS

The character effects department makes sure the characters are dressed and groomed for their animated adventure. When the animators do their rough pass on a shot, there are no clothes on the characters. The character effects team takes the rough pass animation and creates a clothing setup to see how the clothes work with this motion. These shots are sent back to animation for one more pass, and character effects for further refinement after final animation is finished. Character effects also manages some hair and feather behaviors.

All the action made for “plenty of clothing and silhouette concerns,” explains character effects supervisor Christian Hatfield, “a prime example

being when Tigress breaks out of the tower, deflecting arrows and flipping along the balcony. Extreme care was taken to tailor how well the cloth in her shirt moves and reacts to her actions, especially the folds.”

Even more complicated was Shen, being a fully feathered character who performs kung fu with long, flowing garments draped over his feathers. Hatfield recalls that “beyond the complex clothing adjustments, Shen also required careful work around the mouth: his extreme facial expressions created exaggerated skin deformations, which called for considerable feather detail adjustments to have his expression read correctly, without distraction from any odd feather behavior.”



EFFECTS

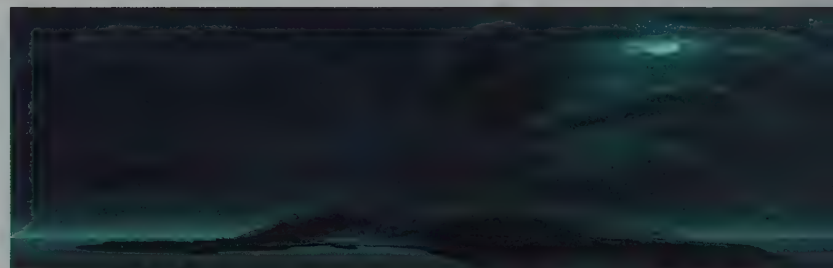
Effects makes the trip an adventure along the way, adding water, wind, flame, and other animated noncharacter elements into the journey.

The effects department contributed a great deal of excitement to Sequence 1600 through their animation of various elements. At the most subtle level, the addition of atmosphere made the world feel much more real. “Whether it’s mist in the distance, or wisps of dust that rise out of the gaping hole in the tower floor that Po falls through, the use of atmosphere in this film was thoroughly worked out in the early stages of shot-planning,” notes head of lighting Dave Walvoord.

On a far more explosive level, cannon fire and the resulting spiral trail,

smoke, and point of contact added great drama to Sequence 1600. “We employed particle renders for the cannon ball sparks and trails, and volume renders for the flame and smoke, all through Maya systems, which offer dialable controls for these elements,” explains head of effects Lawrence Lee.

The grandest effects in this sequence appear during the destruction of Shen’s tower, which drew upon the rigid-body simulation previously used in *Megamind*. “This effects technology allowed us to break off assets of the tower into thousands of smaller pieces for an impressive collapse,” adds Lee. The effects crew also generated massive dust plumes and showers of falling debris to add to the sense of peril in this dramatically devastating shot.



MATTE PAINTING

Matte painting ensures a beautiful tour with amazing scenery off in the distance. Their work fills out the environments with carefully painted and staged levels of generally “flat” artwork.

“It is fundamental to the look of the world, and we would never be able to render all the detail we have in our environments without placing some of that detail on matte paintings,” notes visual effects supervisor Alex Parkinson. While in the past these paintings could be produced on single level cards, “the added complication of stereo means that we have to produce the matte paintings in layers and establish different depths for them, giving the feeling that things are disappearing off into the distance. But matte painting can also be applied on elements that are closer to the camera, as long as they are projected onto simple geometry to give the sense of depth in stereoscopic film and to allow for some parallax [appropriate displacement] when the camera moves,” he explains.

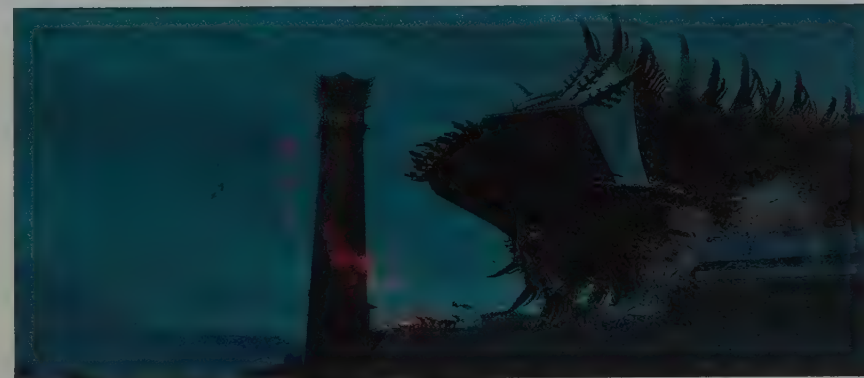
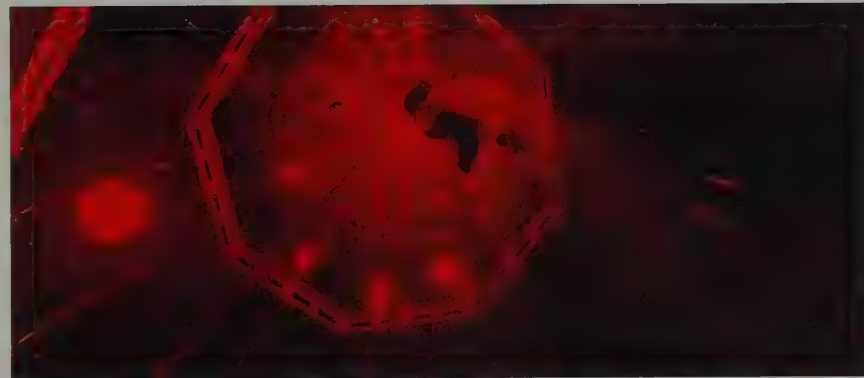
FINAL LIGHTING

Although lighting tests are run throughout the production process to test surfacing choices, final lighting combines all of the above elements as they arrive at their final destination, illuminating them with the proper balance of cool or warm light. For *Kung Fu Panda 2*, the lighting styles varied from sequence to sequence—they were natural, graphic, or monochromatic—to enhance the storytelling experience. “We use lighting as an extension of the emotional arc of the film, similar to how we use color,” notes production designer Raymond Zibach. “It’s one thing to put color concepts into keys, but quite another to take them into a CG environment where lights mix theatrically, unlike how we can paint them with clear separation on a 2D image.”

In the action-filled Sequence 1600, lighting was applied in a more aggressive way to amp up the sense of drama. “We intentionally have characters coming in and out of light to visualize the sense of action,” explains head of lighting Dave Walvoord. “You lose drama if you don’t go back and forth in shadow and light, but we always make sure that characters are well lit when voicing important information, such as when Tigress is backlit on the balcony and then pops out of darkness to deliver her line.”

Lighting also gives tension to a shot, such as the red glow that envelopes Po as he plummets down the atrium opening. It can also portray a sense of desperation—when the tower begins to fall, red light flashes through its windows. This eventually dims out, reminiscent of James Cameron’s portrayal of the sinking ship in *Titanic*.

- (Top Left) **Sequence 325 - Rhino is Killed Matte Painting** • Daveed Schwartz - digital
(Middle Left) **Sequence 1030 - Rickshaw Chase Sky and Hills Matte Painting** • Greg Miller and Mark Orme - digital
(Middle Right) **Sequence 1600 - Escape From the Palace Matte Painting** • Sun Yoon - digital
(Bottom Left) **Sequence 100 - Po Lives the Dream Matte Painting** • Sun Yoon - digital
(Top Right) **Sequence 1600 - Final Frame** • Nathan Warner and Rhiannon Wilhelmi - layout, Jack Geckler - crowds, Scott Cegielski - FX, Kenny Lam, Mike Necci, Udai Haraguchi, and Ben Lishka - lighting
(Above Right) **Sequence 1600 - Final Lighting** • Dorian Bustemante, Rhiannon Wilhelmi - layout, Bill Diaz - animation, Stephen Heidleberg - CFX, Mike Necci, Ben Lishka, Udai Haraguchi, and Chris Cunningham - lighting
(Right) **Sequence 1600 - Final Lighting** • Hamilton Lewis, Rhiannon Wilhelmi - layout, David Hubert - animation, John Troung, Stephen Heidleberg - CFX, Mike Necci, Udai Haraguchi, and Ben Lishka - lighting
(Bottom Right) **Sequence 1600 - Final Frame** • Jason McDade, Rhiannon Wilhelmi - layout, Esan Mandal, Jason Mayer, Jason Porath, and Loren Simpson - FX, Kenny Lam, Mike Necci, Udai Heidleberg, and Ben Lishka - lighting





(Above) **Valley of Peace Color Key** • Tang Kheng Heng • digital

(Below) **Travel Sequence Early Desert Concepts** • Raymond Z bach • digital





THE JOURNEY ENDS . . .

. . . OR DOES IT?

Kung Fu Panda 2 took Po on a journey of identity, teaching him that “we are not defined by the past, but by whom we choose to be in the present.” It is a mandate to keep making the right choices and to always endeavor to go deeper and further into figuring out who you truly are.

As shown by the thoughtful artistry of the DreamWorks Animation crew within the pages of this book, it is clearly a mantra this visionary team took to heart, constantly choosing to dig deeper and go further in their efforts to create fine animation.





Top: DreamWorks Animation Glendale Crew
 Above: DreamWorks Animation Redwood City Crew
 Below: Panda Hideout Early Concept • Raymond Zibach - digital

COLOPHON

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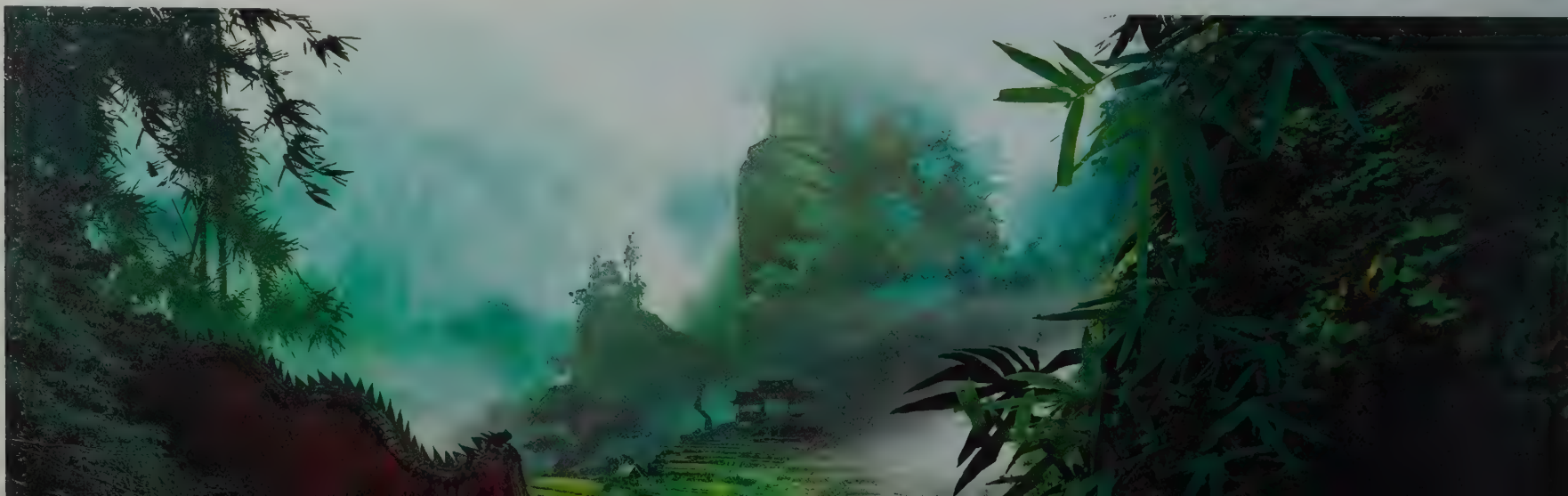
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She is also grateful for the opportunity to embark on this literary jaunt with such talented publishing associates as Kristy Cox, Jake Gerli, and Jody Revenson.

The author dedicates this work to her family and friends for their continued love, support, and companionship along her own life's journey . . . especially her boys, Joshua and Ryan, who make that journey all the more an adventure.

—TMZ







TRACEY MILLER-ZARNEKE has long been fascinated with the world of animation, way beyond her credited roles on the feature films *Meet the Robinsons*, *Chicken Little*, and *The Emperor's New Groove*. She has previously authored four books on the art of animation, including DreamWorks' *The Art of How to Train Your Dragon* and the predecessor to this book, *The Art of Kung Fu Panda*. Tracey lives in Los Angeles and channels her creative energy into work as a writer and playtime with her two young sons.



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The Art of Kung Fu Panda
The Art of Madagascar 2
The Art of Megamind
The Art of Shrek Forever After
Shrek: The Art of the Quest

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(Cover) **Sequence 100 - Po Lives the Dream Color Key** • Chris Beckler - digital paint
(Above) **Sequence 100 - Po Lives the Dream Color Key** • Chris Brock - digital paint
(Front Flap) **Sequence 100 - Po Lives the Dream Final Lighting** • Scott McFee and Jeff Kasunic - digital

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Po has fulfilled his dream of becoming a kung fu master. Now the Dragon Warrior, he guards the Valley of Peace alongside his friends and fellow masters, The Furious Five. One day, while protecting innocent villagers from a crew of mysterious bandits, Po is distracted by visions of his childhood. He realizes that he must ask his father, Mr. Ping, the inevitable question: Where did I come from?

At the same time, China is being threatened by Lord Shen, a cunning adversary with an arsenal of cannons. The Furious Five must battle Shen while Po battles the mystery of his past in order to gain the strength and focus he needs to defeat Shen. With breathtaking development art, exclusive behind-the-scenes stories, and unique insights from the film's creators, this awesome collector's edition takes you beyond the Valley of Peace and across all of China, revealing the journey of *Kung Fu Panda 2* from concept to finished film.

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