A NEW AGE

By Jay A. Fernandez

As production on *The Croods* sequel moved from the studio and into the home office, staying connected became a bigger challenge than simply a plot point in the film.

IN THE FIRST *CROODS* MOVIE, IT SEEMED LIKE THE CROODS' WORLD WAS ENDING. BY THE TIME OF THE SEQUEL, *THE CROODS: A NEW AGE*, IT SEEMED LIKE OURS WAS.

In an inverse of the plot of DreamWorks Animation's 2013 hit about a prehistoric family surviving in a hostile world after their home cave is destroyed, the spread of COVID-19 drove the film's crew out of the studio and back into their home office caves. The remote scenario forced a range of sudden creative and logistical adjustments even as new technology made advancements in collaboration and design possible, which is not a bad description of the story arc in *The Croods* sequel.

In *A New Age*, we pick up the first family—Grug, Ugga, Eep, Thunk, and Gran—as they believe they've finally stumbled upon the perfect new home: a gorgeous paradise with functioning agriculture and high protective walls. Unfortunately, a more evolved family called the Bettermans already lives there. Phil, Hope, and teenaged daughter Dawn offer to share their elaborate treehouse

and other modern inventions with the primitive Croods, but it's not a smooth arrangement. Tension rises between the two clans—one cohesive, chaotic, and close, the other independent, unburdened, and isolated—until they are forced to work together to deal with an unexpected threat.

"The longer we worked on this movie, the timelier it became," says first-time director Joel Crawford. "One family has figured out the modern comforts and built walls around themselves, but they essentially built walls within the walls and lost their connection. The Croods have no home and no walls."

The Crood family mantra—"the pack always stays together"—could be the same for any feature animation crew, where the workflow among departments must be smooth for the magic to take shape. So what happens when a pandemic makes the crew disband? What happens when the pack *can't* stay together?

Image courtesy of DreamWorks Animation.

THIS PAGE: A visual development painting by Production Designer Nate Wragg of the sleep pile.

Image courtesy of DreamWorks Animation.

AN EXPANDING WORLD

Written and directed by Kirk DeMicco and Chris Sanders, *The Croods* grossed $587 million worldwide and earned an Oscar nomination for best animated feature. The sequel, which hit theaters November 25 and Premium Video on Demand 17 days later, is sillier than the original and utilizes a lighter palette, in terms of both color and emotion.

"In the first movie, the whole world was trying to kill them. It had a dark undertone," says Crawford. "Tonally, this film is brighter and more comedic."

At the center of the story is the world's first teenaged couple—daughter Eep Crood and Guy, the "modern" man she met in the first movie—as they try to navigate a strange new discovery: *feelings*. "We wanted to explore how their relationship would blossom," says Head of Story Januel Mercado. "The challenges they would encounter as more complex things entered their life: other families, more emotions and dynamics. Eep is this firecracker experiencing a lot of these emotions for the first time. There's a lot of meat there."

Throughout, the dueling natures of the two families surrounding the central couple are accented by posture and framing. "We were conscious to keep the Croods not upright, like animals, while the Bettermans live like we do," says Story Artist Heidi Jo Gilbert. "And the Bettermans' lives are separated, so visually we wanted to keep them isolated from each other. The Croods are always together visually."

The world was also expanding for the artists, animators, and designers, who had new techniques and tools to play with that would not only push the story
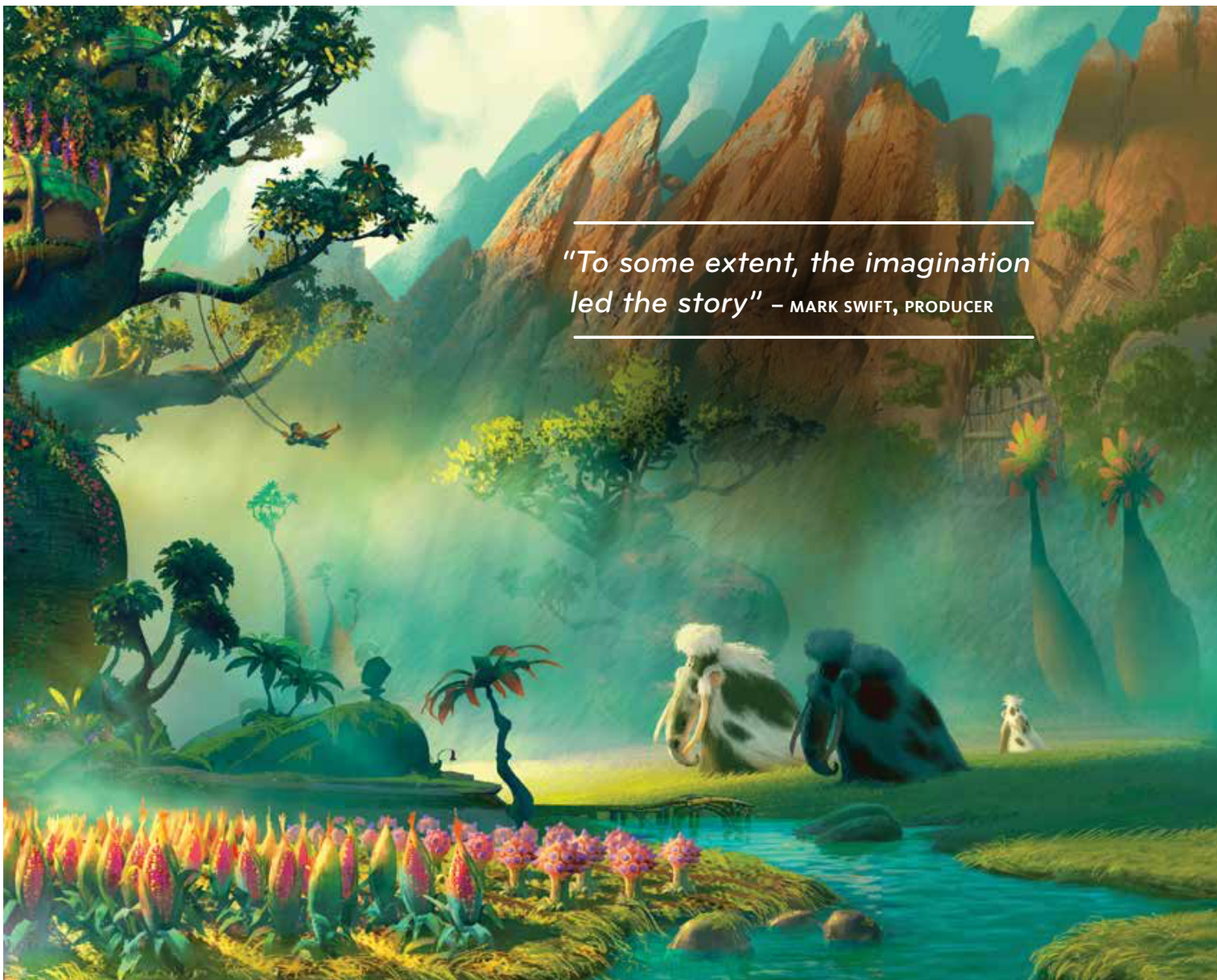
"To some extent, the imagination led the story" – MARK SWIFT, PRODUCER

but also allow them to layer even more rich, inventive detail into the nature-gone-berserk Croodaceous era the Croods inhabit. The dreamy, Shangri-La of the Bettermans' compound in particular invited a visual perspective defined by more saturated colors, a "blast of sensory overload," as Crawford puts it. According to Production Designer Nate Wragg, the mantra in the design and art departments was to use a richer palette to paint bold, whimsical landscapes that "feel like *National Geographic* on steroids." For example, they used the Maldives and Hawai'i as inspiration for the lush greenery of the Betterman farm's resort vacation vibe and an invented watercolor turquoise they called Betterman Blue.

The story's mythical Paleolithic setting offered endless potential for such whimsy, and the story and art departments were encouraged to pitch ideas and sketches, the stranger the better. "To some extent, the imagination led the story," says Producer Mark Swift. One idea—a forest where the trees turn out to be giant butterflies—had been pitched by an art modeler for the first movie. The designers developed a "prehistoric version of fall in Vermont" to dial up the greens and devised lighting that shines off and through the butterflies' wings to create a stained-glass look.

Where the first film emphasized naturalistic effects with characters and environments, the new *Croods* pushes into more stylized territory. "You could feel the tactility of the world," says Wragg. "It was stylized first rather than photorealistic in the details."

Several sequences involve groups of characters falling into water, and the resulting splashes were a favorite for the

effects team to play with. "The splashes have beautiful, stylized shapes to them almost as if an illustrator had drawn the silhouette," says Visual Effects Supervisor Betsy Nofsinger. "We looked at splash reference in high-speed commercial photography and sculptures of breaking waves, along with shape sketches from Nate. At the same time, they're very physical, real splashes."

One major animation challenge was executing a sequence where Eep and Guy steal a romantic moment while inside the Croods' sleep pile. From Guy's point of view it's as if his girlfriend is part of a huge Italian family crammed into a tiny studio apartment, but the story team run by Mercado had the idea to push it to where the pile seems somehow much bigger. The animators had to design ways to ground the stacked and shifting bodies in reality while also opening it up to a private moment between the lovebirds.

"For those sequences, to create the nice graphic pile we had to put stunt bodies in there, an extra limb here and there, to maintain that nice spherical silhouette," says Head of Character Animation Jakob Jensen. "That was one of the first scenes we animated. It was baptism by fire."

"Tonally, we described it as like two teenagers sneaking out at night to have this lover's rendezvous in the moonlight—but surrounded by their family," says Wragg. Fragments of moonlight and off-screen firelight spill between the bodies to achieve a romantic feel. "I love when you have a stupid cartoon idea, and all these genius minds try to crack it," says Mercado. "We hand it off to these smarter guys who build it, rig it, light it. Jakob took it as a fun challenge."

A WHOLE NEW TOOL SET

Not long after *The Croods* opened, the studio rolled out upgraded animation software called PREMO that Jensen calls the "Lamborghini version" of the previous software. Since it offers real-time full 3D cached playback, it opens up more time for the animators to experiment and refine their work. It also allows them to build shots with a greater number of characters while still making real-time adjustments to the animation.

"Having the entire Croods family riding on the back of [their pet macawnivore] Chunky would have been nearly impossible for us to

achieve in our old software, not to mention some of our wilder shots at the climax of the film with people riding on all sorts of creatures doing crazy stunts with the camera flying about," says Jensen.

An upgrade to the raytracer Moonray meant the effects crew could render things in real time as they altered them and handle increased complexity, such as a sequence in a vine-strewn monkey town with choreography that slows into bullet time and a scene of the Croods riding together on a sabretooth tiger. "We can throw tons and tons of stuff at this renderer, and it'll just gobble it up," says Head of Effects Li-Ming "Lawrence" Lee.

They stretched the rendering of things such as water features, banana peels, cave crystals, and goopy fruits around the Betterman farm to find a fresh balance between stylization and believability on a large scale. "We didn't hold back anywhere," says Nofsinger. "Even in our 'easiest' sequences, we were continually adding detail work because of how good our rendering looks and how easy it was to focus in on all those details. Those effects really add so much layering and complexity."

At the same time, the pipeline

CLOCKWISE FROM TOP LEFT: Concept art by Leighton Hickman, a butterfly forest envisioned by Sebastien Piquet, the crows nest by Frederick Stewart, and a chase through kangadillo canyon by Peter Zaslav.

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— NATE WRAGG,
PRODUCTION DESIGNER

had been redesigned to enhance real-time collaboration, with many departments—lighting, VFX, effects, and surfacing—all on the same platform, which increased efficiency by allowing different departments to add to a scene contemporaneously all through the process. Complexity management was reduced so that environments heavy with tangible organic material—plants on plants, small pebbles, fog—could be built with more contact and creativity. Every image got richer, and animated previews with a cheated lighting render were available much sooner.

"I was blown away by the state-of-the-art cinematic tools," says Mercado, whose team had come up with odd bits such as Eep's "peanut toe" and a visual gag involving Grug's first uncomfortable sauna experience. "We would come up with silly ideas, and they would be shot beautifully through real lenses and lit with atmospheric perspective and beautiful sunlight and fog."

THE SCATTERED PACK

When the production finally abandoned the studio for remote work in late March, the crew faced a slew of logistical hurdles to keep the pipeline intact. About 20 percent of lighting, 50 percent of lighting set-up, and 60 percent of the animation was already complete, and the final look of several sequences had been established, so they had enough of a collective understanding of the project to continue. But with everyone scattered, the feedback and review processes were harder, and the lack of physical proximity meant close creative collaboration was no longer possible.

It was a tough transition, but the technology operations group was able to create remote logins quickly enough that the production was approving scenes within a week or two. Department heads, many of whom were in leadership roles for the first time, were in a Google Hangout brainstorming solutions not just with other departments but with other DWA productions, crowdsourcing ways to do remote dailies and other workarounds. The visual effects department had to figure out how to factor for the way color showed up differently on individual monitors, eventually developing a key set they were comfortable using to compare light images and make color calls.

Many animators and designers had kids at home—and a few gave birth during lockdown—so the crew developed a new understanding of work-life balance. "We all had to have a crash course in being flexible and accommodating and trusting that our professional coworkers are going to deliver," says Nofsinger.

The situation did have its positive aspects beyond more schedule flexibility and a lack of commute. Using remote meeting tools allowed them to look in on multiple meetings at the same time, so they could monitor dailies, notes, and discussions from other departments via captioning while participating in their own meeting (or record them for later). This improved

awareness of where every sequence was in process at any given time.

For the effects department, being on separate computers at home during the review process—rather than all in a room with a single person at a screen—meant a lot more access to assets and interactivity, a benefit they may build into the process moving forward. Jensen says it's conceivable they could also bring back to the studio a good collaborative media reviewing platform like SyncSketch, which they used to watch video during lockdown. And now that remote work has proven viable, it opens up the talent pool to animators and designers who don't live in Los Angeles. "I imagine in the future there will be more situations open to artists working all over the globe," says Swift.

"We're lucky we're imaginative creatures that can work anywhere," says Jensen, who used his children to act out potential scenes in his backyard since reference shoots were no longer available. Partners and kids also became substitute preview audiences for artists, who got to share their work with their families in a new way. "My daughter would ask me every day, 'When are lighting dailies today?'" says Wragg. "Usually we review in a dark, color-accurate room in the basement at DreamWorks. Here at home, your family, pets, everyone can take a little peek."

Lee's eight-year-old daughter, Abigail, would occasionally peek over his shoulder and break out in laughter. "That's always a good sign," he says, "when your target audience says, 'Hey, that's funny!'"

So, the world didn't end. It just got a little harder, a little weirder. But it also opened everyone up to new ways of thinking, working, and living. Curiosity, ingenuity, and a willingness to stay connected despite the hardships won the day both within the production team and onscreen. A new age, indeed. 🌀

LEFT: Concept art by Leighton Hickman showing Guy making a discovery.
ABOVE: A new shade of turquoise dubbed "Betterman Blue" contributed to the vibrant landscapes, seen here in concept art by visual development artist Luca Pisanu.