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2-D or Not 2-D?
How the Iris Closed on
Hand-Drawn Feature Animation

By Thad Komorowski

The Digital Age We Live In

In just 20 years, an entire industry went from an all-time zenith to complete annihilation. As the art of 3-D computer-generated imagery triumphed, the hand-drawn animated feature’s position sunk from its position as a centerpiece of mainstream entertainment to a dank corner of seeming nonexistence.

For the last decade, acclaimed Japanese filmmaker Hayao Miyazaki has swam against that prevailing cultural tide by making animated feature films with 2-D hand-drawn animation. Films like *Howl’s Moving Castle* (2004) and *Ponyo* (2008) exemplify how poetic, dreamlike fantasy is still capable in animation without using pixels to pixilate.

Yet time, economics and, seemingly, public taste have finally caught up with Miyazaki. In November, he announced his retirement and confirmed that his Studio Ghibli has put the kibosh on feature film production. After last year’s *The Wind Rises*, the 73-year-old director accepts the reality that is a disheartening future for the art form he holds dearest: “I do think
the era of pencil, paper and film is coming to an end.”

One of the gem scenes from Hayao Miyazaki’s *Ponyo* might have cried for CGI effects in another filmmaker’s movie. Miyazaki takes pride that those waves are *drawn*. © Studio Ghibli
https://www.youtube.com/watch?v=_7fjxEsBTUo

The irony is that Disney, the North American distributor for many of Miyazaki’s films, helped spearhead the demise of that art form after being a bastion for it. The advancement of CGI in animated features, largely through the studio Pixar (purchased by Disney in 2006), has stirred a public craze that even the Mouse wasn’t immune to.

Since 2004, only two hand-drawn animated features have come out of Walt Disney Animation Studios: 2009’s *The Princess and the Frog* and 2011’s *Winnie the Pooh*. Both were considered commercial failures, and in April 2013, Disney officially pulled the plug on 2-D entirely, laying off virtually all its 2-D animation staff and leaving no hand-drawn features in development.

The Disney-Pixar alliance currently leads the CGI domination, neck and neck with Jeffrey Katzenberg’s DreamWorks Animation (perhaps best known for the *Shrek, Kung-Fu Panda* and *Madagascar* films). Other popular films by Blue Sky (*Ice Age*) and Illumination Entertainment (*Despicable Me*) fill up the rest of the American family entertainment release
schedule. With that dominance sharply in place for the last decade or so, the CGI takeover of animated features is something audiences have accepted without question if the box office figures are anything to go by.

The livelihood of the 2-D hand-drawn animated feature is therefore, without a doubt, a terminal case, says animator Tom Sito. Through his forty-odd years in the business, he’s worked on both 2-D (Beauty and the Beast) and 3-D (Shrek) animated features. Early on, he thought classical hand-drawn animation could peacefully coexist with CGI. But he, like many others, was proven wrong.

“We thought computers had a role, but we didn’t think it would supplant 2-D the way it did,” Sito says.

**Mechanical Manequins to Living Toys**

When computer animation was in its infancy through the late 1970s and 1980s, people in the industry had varied reactions to this fledgling technology. No one certainly could have predicted that CGI animation would reach where it is now.

Tom Sito wrote at length about this period, and the people and mindsets that shaped it, in his book *Moving Innovation: A History of Computer Animation*. He says that one way computer animation was being presented to the traditional business was in an adversarial role: “We’re working on something that’s going to get rid of all you guys, and it’s going to be much more efficient.”

But the primitive results computer animation initially yielded stirred more amused contempt than worry. The look of early CGI was cold, mechanical and soulless, resembling something made in an animatronics factory for a knockoff of Disneyland.

“Originally, I was in the camp of the skeptics,” Sito says. “You can never make cast-iron Betty Boop and stainless steel Bugs Bunny, it’s not going to look the same. But I came to understand the passion of the people who wanted to create computer graphics.”
During the late 1980s, that passion could at times seem for naught. Back then, Mark Mayerson, a traditional animator who turned early on to CGI, worked at Arcca Animation in Toronto on *Captain Power and the Soldiers of the Future*, the first TV series to employ CGI graphics. Mayerson admits that the animation has dated poorly due to the primitive technology of the period. The blend of the sci-fi CGI and live-action produced a campy show with animation that resembled a stilted marionette puppet. There was, however, always a light at the end of the tunnel, even if it seemed a long way off.

“If you wanted to move something, you had to plot the path of action on graph paper, and then pull coordinates off the graph paper, and you had to type them in,” says Mayerson. “Everybody could see the potential for what computer animation could become, but there was very little in the way of user-friendly technology.”

*Captain Power and the Soldiers of the Future*, the first TV series to employ CGI animation, which epitomized the limitations of the technology in the 1980s. © The Landmark Entertainment Group/Ventura Pictures, Inc. [https://www.youtube.com/watch?v=oeAqrKZc-U](https://www.youtube.com/watch?v=oeAqrKZc-U)

In California, Pixar would be the studio to make the most of that primitive technology and go on to become the most important computer animation studio in the world. To make a long and involving history short, Pixar built a world-class animation department out of a failed computer hardware company backed by Apple Inc. maestro Steve Jobs.
John Lasseter, trained at the Disney feeder school CalArts and initially employed at Disney’s hand-drawn animation studio, was and still is the chief visionary of Pixar’s animated productions. Through the late ‘80s, he made shorts that were gaining notoriety as giant leaps forward for computer animation. If there could be no escape from photorealism in CGI’s hard-surface world, Lasseter could at least exploit that restraint by anthropomorphizing inanimate metal and plastic objects as he did to great effect with the lamps in *Luxo Jr.* and Tinny the toy soldier in *Tin Toy.*

The popularity of those shorts—two of which won Academy Awards—secured Pixar a deal with the Walt Disney Company to produce a CGI animated feature. The path was rough. There were many times when the studio seemed likely to fail during *Toy Story,* said animator Steve Segal, who worked on the film and at Pixar in the mid-‘90s. Frequent computer crashes and harrowing deadlines thwarted the crew at every turn, which were only overcome by extreme dedication to an artistic vision.
“It was the best, clearest direction I have ever had,” says Segal of John Lasseter's work on that trailblazing feature. “[He] had a very clear vision of what he wanted and what he wanted was almost always what worked best. He rarely second-guessed.”

When the trailer for *Toy Story* trickled into theaters in 1995, no one could predict the impact it would make on the art and industry of animation. © Disney.

https://www.youtube.com/watch?v=4KPTXpQehio

*Toy Story* was a culmination of all the things Lasseter and the Pixar team were trying to do, just as *Snow White and the Seven Dwarfs* was for Walt Disney and his studio in the 1930s: engage an audience for an entire feature with animated characters—this time, 3-D animated, of course. Its smash Thanksgiving 1995 opening was more than just a triumph for that studio, says Tom Sito. It was vindication for computer-generated imagery as a filmmaking medium rather than a visual effect.

“*Toy Story* was the movie where halfway through the movie I forgot I was viewing a computerized image and I just wanted to know what happened to Woody and Buzz. And that's victory.”

**The Whittling of the Pencil**
As CGI animation was beginning to gather force, the 2-D hand-drawn animated feature was having a renaissance like it had never seen before. Disney films, including *The Little Mermaid*, *Aladdin* and *The Lion King*, were not just critically acclaimed, but major financial blockbusters (something many of Walt Disney’s best weren’t). Animators were making more than ever before at the Mouse—Glen Keane, who animated Ariel in *The Little Mermaid* and the Beast in *Beauty and the Beast*, had a salary as high as $1 million—and those days were expected to last forever.

In a promotional video, Disney producer Don Hahn highlights Glen Keane’s virtuoso animation in *Beauty and the Beast*, in pencil test form (before ink-and-paint). “[Keane] was trying to find a way to get across not only the physical transformation of the Beast, but also the spiritual transformation of what this character had to go through,” says Hahn. “It was a very difficult thing to do with pencil and paper.” © Disney. [https://www.youtube.com/watch?v=xOVlVF3RJQc](https://www.youtube.com/watch?v=xOVlVF3RJQc)

No one dreamed *Toy Story* would pop that bubble, and there might have been hope in the early days that hand-drawn and computer animation could have coexisted peacefully. But the seeds of CGI’s takeover were planted before the public even saw *Toy Story*.
Just a few months before Pixar’s feature-length debut, the Disney hand-drawn animation team released *Pocahontas*, the first of theirs critically panned after a string of hits. Many were calling those earlier films part of an “animation renaissance,” and that success had led to an arms race of salary competition, driving animators to employment agents and pushing production costs up enormously. Smash-hits *Beauty and the Beast* and *Aladdin* had cost under $30 million a piece, while by the end of the decade, costs were regularly rising to over $100 million a movie (as high as $130 million for 1999’s *Tarzan*).

Disney’s summer 1995 release, *Pocahontas*, brought that renaissance to a screeching halt. The lukewarm reception to it and subsequent (and more expensive) hand-drawn films illustrated that the Broadway musical formula was getting tired and that audiences were craving a new taste sensation.

Any number of studio insiders will give you a take on what led to the Disney features’ deterioration: animators banking too much on the idea that their high salaries would last forever, chief executive Jeffrey Katzenberg’s departure to form DreamWorks or in-house politicking and backstabbing. But when discussing what went wrong at Disney, Tom Sito says everyone will keep coming back to that grand exalted word: “story.”

The artists at Disney and elsewhere were becoming more concerned about the character acting and design than coming to terms with stories that engaged an audience. That ship sailed and arrived promptly at Pixar’s port.

“What Pixar did was instead of merely focusing on the technology and coming up with the next piece of hardware, they put together one of the best story departments in [the business],” Sito says. “That did a lot to break down barriers [in] people’s conceptions of CG.”

Yet it wasn’t only Pixar’s sharp story team that caused the radical industry shift. With the promise of reducing production costs and making an insanely laborious medium somewhat less laborious, the advantages of CGI animation for producers were inescapable. Combine that with the fact the advantages of employing CGI animation benefit the filmmaker as well as the audience, Steve Segal says.
Keeping characters on-model, making them appear the same from scene to scene, could be an issue in a hand-drawn production, but it is a moot point in CGI animation: the characters are always on-model. Lighting effects and crowd scenes that were once intense thankless chores can now be achieved far more practically. Spatial depth can be explored in ways once thought impossible, or at least improbable, resulting in the oceanic landscape of *Finding Nemo* or the behemoth work factory of *Monsters, Inc.* Even as early as *Toy Story*, when Buzz Lightyear proves to the toys he can fly, the camera follows him in such a dynamic range that most hand-drawn directors would not even attempt such a scene.

In the climax of *Monsters, Inc.*, the heroes Mike and Sully must flee through millions of closet doors. While it was no less a complex scene in CGI than it would have been in hand-drawn, the computer certainly made the job easier.

© Disney.
https://www.youtube.com/watch?v=PbMYtKkHkAw

According to veteran filmmaker, teacher and historian John Canemaker, who has spent his life intimately involved with traditional hand-drawn animation, it was that initial balance of captivating storytelling and technology that ushered in the sweeping popularity of Pixar and, subsequently, CGI animation in general. Canemaker concedes he prefers classical hand-drawn animation, but he spent extensive time with the key personnel at Pixar during the
production of the earliest movies, whether while writing his books or giving inspirational lectures to the crew. And he cannot help being inspired himself in turn.

“The principles of character animation that [were] forged at Disney in the 1930s are certainly still alive in computer animation,” Canemaker says. “That kind of empathy that you have for inanimate objects, for anthropomorphizing anything, is something that can be carried over now into any medium. Before, it had to be done in hand-drawn animation, and now with computers anything is possible.”

The novelty of CGI, combined with empathetic characters and involving stories, quickly attracted audiences, studios and investors, all of whom quickly came to view 2-D animation as old-fashioned, outmoded and less appealing than the shiny new CGI world. The Pandora’s box Pixar had opened soon left the 2-D animation industry reeling, contracting and faltering faster than anyone could’ve predicted.

Something about CGI’s command of the animated feature doesn’t sit right with Floyd Norman, an animator and story artist who’s had on-and-off employment with Disney since he was first hired in 1956. When he was a story artist for Pixar on Toy Story 2 and Monsters, Inc., he thought that CGI animated features were going to give the hand-drawn films stiff competition—not a death certificate.

“The job computer animation did on hand-drawn—that was the big surprise, even for myself,” Norman said.

A Hollywood Cornerstone Laid to Rest

Ask any animator what role Disney CEO Michael Eisner played in the swift disembowelment of traditional animation and they’ll tell you he’s notorious for declaring, “2D is dead!” No one can seem to peg down exactly where or when they heard that, or under what circumstances he said it. But no one doubts he firmly believed this declaration, nor the cataclysmic, self-fulfilling impact of his clear conviction. In an amazingly short timeframe, the 3-D bug spread and overtook mainstream animated features like a conquering viral force.
DreamWorks Animation ceased its 2-D productions after 2003 to go strictly with CGI animation. Disney shut down its Florida animation studio, which made *Mulan* and *Lilo and Stitch*, in 2004 and announced after that it was moving forward on converting its California studio into a full-fledged computer-animation outfit.

Led by Eisner and the late executive Bob Lambert, Disney gutted its animation department from its record high of 2,200 employees in 1999 to 600 in Jan. 2004. While Disney Feature Animation has lately recouped somewhat in its employment with a figure rising above 800, these are now almost entirely CGI specialists.

People once called a crop of young animators the “next Nine Old Men,” referring to the nickname given to Walt Disney’s advisory board of animators that shaped the animated features from the 1940s onward. But the artists responsible for key characters and performances like Glen Keane, Andreas Deja (Jafar in *Aladdin*) and Eric Goldberg (the Genie in *Aladdin*) ultimately did not stand a chance against the Disney brass that came to demand that all animation be made in pixels and not with pencils.

Eric Goldberg was the animation supervisor for the recent *Get a Horse!*, a new Mickey Mouse short that employs both 2-D hand-drawn and 3-D CGI animation. So Disney still gives him some hand-drawn animation to do—even if they won’t give him the whole film. © Disney

[https://www.youtube.com/watch?v=kFgaZK13yvc](https://www.youtube.com/watch?v=kFgaZK13yvc)

Goldberg still works at Disney, while Keane and Deja left to great commiseration, but they
were the two most popular of many traditional animators who could not maintain an artistic voice in the CGI studio climate. Tom Sito says that the Animation Guild, the California industry union, set up a systematic retraining program for out-of-work animation people expert in now-outmoded approaches, but it’s been of little consequence at the Mouse Factory.

“All of the young traditional animators touted at Disney in the 1990s as the next Nine Old Men are now all gone from the studio or not animating,” Sito says. “After 2003, I heard of animators working bagging groceries, hanging aluminum siding, running boutiques, drawing children’s books. In that time we had six suicides.”

For the last decade, Walt Disney Feature Animation has been a bleak place for what was once hand-drawn animation’s sanctuary. A mass firing in 2013 wiped out most of those who’d held on through a long doldrums of developmental work. The artists responsible for the early 1990s run of smash hits no longer have the power they once did—and according to some veteran animators, that was not accidental, or just a response to changing audience tastes. It was a deliberate dismantling, they say—and that might be just how the studios like it.

“That’s what motivated the rapid change to marginalize traditional hand-drawn animation, and then try to get rid of it all together,” Floyd Norman says. “What the studios realized was, ‘If we adopt this new CG filmmaking, we can get rid of all these damn artists.’ The era of the million-dollar animator has come to a close.”

**Postmortem Mouse**

In 2014, the takeover of CGI animation looks to be complete and irreversible. But this new boom also has its own downsides, as computer animators are having their own employment problems. Disney, Pixar, DreamWorks and Blue Sky are currently all under fire for wage fixing a “no poaching” scandal that kept employees locked in positions and salaries. The “gentlemen’s agreement” has roots as far back as Pixar’s origins with Steve Jobs, but only recently has Ed Catmull, currently president of both Pixar and Disney animation, emerged as
an unrepentant key figure.

“I don’t apologize for this,” said Catmull in a January 2013 deposition. “While I have some responsibility for the payroll, I have responsibility for the long term also... Like somehow we’re hurting some employees? We’re not.” What he decried as “bad stuff” is the sort of market competition that the government and union representatives define as healthy and proper—and lawful.

Hand-drawn animation has had its share of unsavory bullying and poaching since it originated, but nothing on this level or anything that took hold. In light of the evidence now coming forward, the star animators on CGI movies today are, seemingly, regarded as interchangeable. In the old hand-drawn system, Floyd Norman says that classification only applied to lowly assistants like he was at Disney’s over a half-century ago. The anonymity inherent to CGI animation—being unable to differentiate between artists—that was thought to be an advantage is also a heavy detriment.

“So it doesn’t matter if your scene is being animated by Glen Keane or Andreas Deja, or some guy just out of school named Bob Smith,” Norman says. “All the animators are essentially anonymous, and consequently they have no leverage in terms of economics.”

Indeed, even supporters of Pixar like Steve Segal admit that CGI animation, for all of its benefits, has a sameness crisis. While he cited the characters always being on-model as an advantage of CGI animation, it can also be an artistic limitation.

“Since it’s always on-model, it’s difficult to exaggerate,” Segal says. “You can’t animate until a character is built and rigged and tested. You can only make the character do what he was built to do [in advance], so if you get a wild inspiration you might not be able to achieve it. Crazy abstraction and metamorphosis, as in “Pink Elephants on Parade” from *Dumbo*, is almost impossible.”

That rigidity in CGI animation models, however, may be changing—and improving. The homogenized anonymity may be waning, says Mark Mayerson, because art direction in the CGI features has advanced quite a bit and the animators are pushing for an imitation of hand-drawn aesthetics. The look of the trailers for Blue Sky’s upcoming *Peanuts*, for
instance, and a test reel for Sony’s *Popeye* are not causing umbrage with hand-drawn advocates because the character design and movement is remarkably more successful at capturing the hand-drawn aesthetic than it would have been even just a few years ago.

The animation in the trailer for Blue Sky’s *Peanuts* may not perfectly capture the soul of Charles Schulz’s drawings, but it does come closer than any earlier attempt would have as little as five years ago. © Blue Sky Studios/Peanuts Worldwide LLC.  
[https://www.youtube.com/watch?v=XmV3zGifOE](https://www.youtube.com/watch?v=XmV3zGifOE)

“There’s a warmth to drawings that’s difficult to duplicate in CGI because you really have to force the computer to do the things you want it to do,” Mayerson says. “If you leave the computer by itself, everything is shiny plastic. Whatever limitations CGI has at the moment are artistic ones, and people aren’t pushing it or trying new things as hard as they should. But there isn’t anything stopping anyone at this point.”

For many, though, there’s nothing like the look of the real thing. Some of Disney’s veterans hope mainstream audiences will become disillusioned with CGI and herald a resurgence of
hand-drawn animation. Far more likely, as Tom Sito predicts, 2-D will become a niche that will be up to the independent filmmakers to carry on, as heart-breaking as that may be.

“Non-computerized imagery is going to become an eclectic choice, like going to black-and-white,” Sito says. But while that means it will survive in some form, Sito still mourns how marginalized it has become. “Being someone who was raised in the traditions of classic animation, I don’t think we ever saw it ending. We thought we were part of a legacy that went back generations.”

For someone like veteran animator Mark Kausler, the new technology simply isn’t good enough for his artwork: he calls CGI “digital puppeteering,” and says that hand-drawn with the aid of digital doesn’t “breathe.” Kausler made two films with his character Itza Cat, a valentine to the elasticity of ’30s animation, using not only hand-drawn animation, but traditional ink-and-paint on cels, which died off in America years ago in the wake of digital ink-and-paint and Flash and their reduced costs. Suffice to say, films like Kausler’s will be an exception among exceptions.

“What can I say without looking like some old throwback?” Kausler asks. “Projected off a good print or digital cinema package, there’s nothing like the look of real artwork on screen, to my eyes. I don’t understand why audiences put up with Flash, it doesn’t ‘breathe.’ I’ve always held the opinion that CGI is ‘digital puppeteering.’ Some of it is more finished, but it all shakes out to the same result.”
The pencil test for Mark Kausler’s *It’s the Cat* showcases the animation art he lives and breathes for, but can’t necessarily make even in the most ideal studio environments. © Mark Kausler. 
[https://www.youtube.com/watch?v=YfgKMyCeJGk](https://www.youtube.com/watch?v=YfgKMyCeJGk)

More than being just throwbacks, Kausler’s films are important because they are his personal statements. When he worked at Disney on hits like *Beauty and the Beast* and *The Lion King*, his animation had the stamp of collaboration and another’s direction. Compare that to, say, a scene in Kausler’s *Some Other Cat!* where Itza Cat uses a pogo stick to do damage to a rival’s tongue, and you see the difference between a corporatized product and a single artist’s vision—suggesting that as proud as Kausler may be of his Disney work, it really wasn’t him.

“If you just work for ‘the man’ all your life, you may have quite a list of good scenes or sequences you’ve animated, but none of them are really your concept. I wanted something of my own to show for all the years I’ve been animating.”

The growing niche exclusivity for hand-drawn animation could result in artistic growth for the medium as a whole, says John Canemaker. In the digital age, hand-drawn animation has been unintentionally given a freedom that CGI animated features—now firmly attached to the mainstream family movie genre—emphatically lacks.

“In order to express a western, or a science fiction, or a film noir or a Fellini-esque nightmarish horror film, you really have to break out of that children’s mode, because there’s
only so much you can go for,” Canemaker says. “So I think it would be good if we could
nurture a healthy niche aspect to it. Animation is not a genre in itself, it’s a technique.”

Still, for someone like Floyd Norman, the desire to see hand-drawn animation retain force in
mainstream culture will never die. As he bore witness to the history of the animated feature,
he cannot help but hope that hand-drawn animation won’t remain only a niche. Sooner or
later, he predicts the public will grow bored of being dazzled with what the computer can do,
and ponder, “Hey, remember when we watched those films that were-hand drawn?”

“It’s going to be the public,” says Norman. “It’s going to be the marketplace that’s going to
demand the return of hand-drawn animated films. Because it’ll be unique! There’s something
unique about the artist making his or her mark on a piece of paper, and that will never
change.”

Even if the public has, for the moment, turned on that pencil-and-paper magic.