

'Brave' features hair-raising animations

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The time and attention to detail in the hair of Merida, the main character in "Brave," is more than just about making her look realistic on screen. Image credit: Courtesy of PIXAR

Trying to curl hair into perfect spiral curls is difficult enough to do in real life but for the team of scientists and artists at Pixar the quest to create a wild mane of curls for Merida, the redheaded heroine of their latest film "Brave," may have sent them from innocent intrigue to full-blown obsession.

"I have become obsessed with curly hair," said Claudia Chung, simulation supervisor for "Brave." "It is truly fascinating; curly hair defies physics in the way it moves and behaves."

Merida's explosion of fiery ringlets started as a series of springs on a computer. The [Pixar](#) team created many kinds of springs, including short, long, fat, thin, stretched, compressed, bouncy and stiff. In order to give Merida's hair volume, the springs were entered on the [computer](#)

[screen](#) in layers. The layers varied the length, size and flexibility of each curl.

"We used 1,500 hand-placed, sculpted individual curls," said Chung. "There is this weird paradox where a 'spring' of hair needs to remain stiff in order to hold its curl but it also has to remain soft in its movement."

Once Merida's hair was in place, the next step was making it move naturally. Chung and her team of groomers used a new technique to represent the hair. Called a "core curve and points," the result bears a resemblance to a beaded necklace. The core curve is like the chain of the necklace and the points, which include the springs, are like the beads. When Merida moves her head, her curls move along the [curve](#), keep their shape and flexibility while maintaining the look of her character. Even with a computer-generated head of hair, there were times during production when Chung really needed to see a live Merida hair model.

"We had a wig and I think everyone on the team wore it at some point," said Chung.

Steve Marschner, an award-winning computer scientist at Cornell University, in N.Y., who first proposed a widely used model that mimics the way light reflects on hair to improve the look of blonde hair, considers lighting red, curly hair a difficult problem.

"It is interesting because curly hair has strong effects on light," said Marschner.

Since hair isn't always picture perfect or dry or that matter, another challenge was to see what would happen to naturally curly hair when it got wet.

"There is a woman here who has naturally curly hair and we would hose her down," said Chung. "We never completely submerged it, but now I am really curious; I don't know what happens to curly hair when it is completely submerged underwater."

Chung and her team definitely have Merida mania.

"It took us almost three years to get the final look for her hair and we spent two months working on the scene where Merida removes her hood and you see the full volume of her hair," said Chung. "When I first saw the storyboards for 'Brave,' I drooled; I had no idea how I was going to do it, but I knew this was going to be so much fun."

That fun radiates from the screen and provides inspiration to others as well.

"I have say with Pixar [movies] I have to watch them twice," said Marschner. "The first time I am focused on the story and the second time from a technical aspect; I often get ideas about what problems to work on next from watching movies."

The time and attention to detail in Merida's hair is more than just about making her look realistic on screen.

"Everything we do is done to reinforce the character," said Chung. "We created these great individual 'breakaway' curls that really add to her wild spirit."

While a strong attraction is often the first sign of obsession, Chung and her team have definitely fallen head first in love with a fiery redhead on a mission to change her destiny.

Source: Inside Science News Service

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