

Chandler Livingston

ESSL290: Professor Kessler & Professor Schmidt

Student Showcase: Individual Research Project

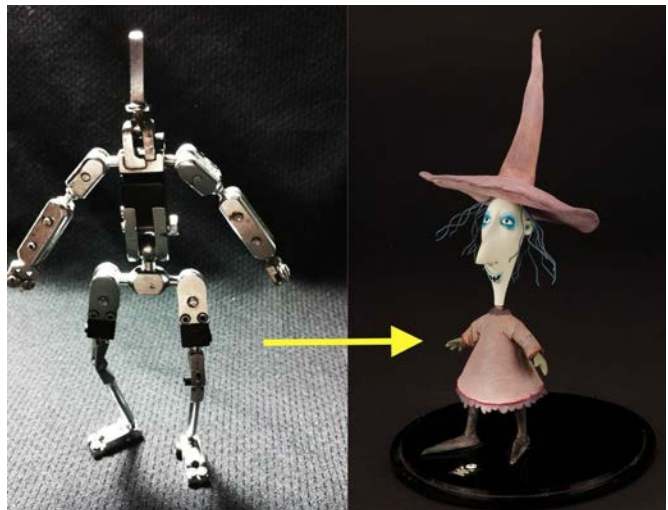
March 29th, 2020

Claymation: Sculpture Meets Engineering

Art and engineering seem to be very distant and unrelated fields of study in the eyes of most people. Artists are creative, free-flowing people that create out of the norm pieces that do not follow any sort of guideline. Engineers are straight-cut. Usually uncreative, do everything by the codebook (Yes, there is a codebook), engineers seem to never mess around with something as ambiguous with no right answer as art. But, if you take a closer look, the intersections of art and engineering are almost everywhere.

Clay animation, or Claymation, is the process of using clay models and still-pictures to create movies or short films. Most processes involve a wire skeleton, or armature, to mold the clay around. These armatures must be able to move, bend, and be strong enough to hold their characters shape. Most armatures are produced to allow a realistic style of movement or a movement specific to the director or creator's personal style.

The clay needed for this style of stop-motion film is very important as well. Most Claymation uses a material called plasticine, a dense, oil-based clay that is non-hardening to allow for continuous uses and changes of position.



Producing any sort of Claymation film requires a ton of effort. Besides the character being made from wire skeletons and clay, the background must also be made with some sort of structure and finished with clay to acquire the same style as its characters. The structures and props must also be created to the appropriate scale in order to fit the setting. Some films even had to manipulate different sources of light to create the proper setting for each film.

Stop-motion films are simply a sequence of still shots rapidly played in succession to create a film. The amount of shots needed can vary from a “small” 22,000 pictures to almost 65,000 still shots. All films created before the year 1990, only used stationary, or static, cameras. It wasn’t until the movie “The Nightmare Before Christmas” produced in 1993 by Tim Burton, computer-controlled cameras allowed for cameras to incorporate moving and sweeping shots to be performed in Claymation films.

The film demonstrates some pretty unique and astounding feats that are used in most



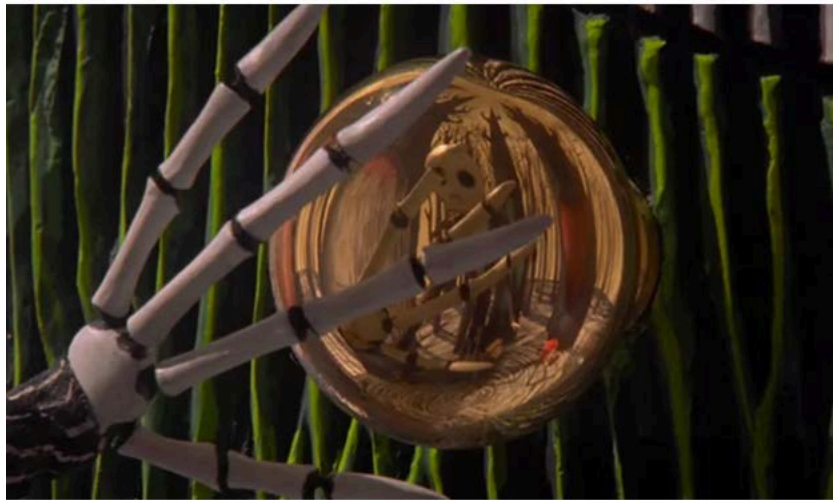
Claymation films. To start, the character Jack Skellington was made with a realistic moving armature, but had a mechanism to allow for interchangeable faces. The character had 400 different masks to account for different facial expressions required in the film.

The sets used to film the movie were quarter-scale mark downs and included trap doors so that animators could pop up and not potentially harm or alter the scene. The

lighting of the movie was very important and difficult to produce. Anywhere from 20-30 different lights were used to create their desired scenery.

With all the effort from 8 different animation teams working at once on different scenes throughout the movie, it took a week to create about 60 seconds of film! The whole project took 3 years to complete. With the Claymation film shooting at 24 frames per second, the film had

110,000 frames total. The team responsible were very adamant about creating an environment with correct physical phenomena. The scene where Jack opens the door to Christmas land was the hardest scene to produce



because of the complexity of creating a doorknob with a refractive capability.

The creation of Claymation has produced a totally new genre of film. With movies like *The Nightmare Before Christmas*, *Wallace and Gromit*, *Coraline*, and even *Rudolph the Red-nosed Reindeer*, the interaction of art and engineering have reaped the benefits of a truly innovative and creative relationship.

For more of a visual look into the creation of Claymation films, click the link below.

https://youtu.be/ydNCj-866_Q

References

"21 Facts About *The Nightmare Before Christmas*." *Mental Floss*, 13 Oct. 2018,

www.mentalfloss.com/article/60723/21-things-you-didnt-know-about-nightmare-christmas.

Schindel, Margaret. "Stop-Motion Clay Animation: A History and How It Works." *ReelRundown*,

ReelRundown, 27 Nov. 2018, reelrundown.com/animation/clay-animation-claymation.

Unbelievable Facts. "20 Lesser-Known Facts About 'The Nightmare Before Christmas.'" *Unbelievable*

Facts, 10 Dec. 2017, unbelievable-facts.com/2017/12/facts-about-the-nightmare-before-christmas.html.