

## **“SNOW WHITE AND THE HUNTSMAN” - VISUAL AND SPECIAL EFFECTS**

There are some 1300 visual effects shots and many more involving special effects in “Snow White and the Huntsman.” They cover almost every aspect of our craft from CG creatures and environments, liquid, cloth and physics simulations, to major “modifications” of actors. All the work had to be completed within a very short post schedule of just over 4 months.

The film has a very unique look—a gritty gothic fairy tale with a distinctly modern aesthetic. Throughout the film, great attention was given to maintaining consistency of style over the wide range of effects, one of the most significant challenges. It was essential that the effects complement and enhance the look of the film, pushing it to the edge of believability but never taking it over the top. Despite the fantasy nature of the film, we wanted each effect to be sufficiently grounded in reality that the audience would completely believe it.

Alongside the “invisible” effects—battle enhancements, CG horsemen and foot soldiers, extensive environment enhancement, set extensions, CG castles, CG fire, smoke, snow, dust, blood, breath, etc.—are many visually innovative sequences which rely heavily on visual and special effects.

**DWARVES:**

Perhaps our biggest challenge was the dwarves: eight principal characters heavily featured in much of the film, all of whom had to be turned into dwarves.

It is important to note that the actors were not “shrunk” but had to be re-proportioned. Conventional techniques, such as forced perspective and oversized sets/props, would not work. A variety of methodologies were developed to cover every scenario. These ran the gamut from in-camera height cheats and doubles, to full digital face/head replacement and digital re-proportioning using a combination of 2D and 3D re-projection techniques.

Several test shoots during prep enabled us to develop techniques for in-camera cheats as well as the best lens choices and angles. The actors and doubles worked extensively on their walking action. Motion control was employed strategically. The face/head replacement and digital re-proportioning were made particularly challenging by the hairstyles and facial hair of the characters and the different facial geometry between the doubles and corresponding principals.



### **DARK AND ENCHANTED FOREST ENVIRONMENTS:**

These two environments were based around outdoor sets enhanced greatly by VFX. In almost every shot the in-camera environment was augmented with CG plants, animals, birds, insects and atmospheric elements.

The dark forest was part "real" and part hallucination. SFX built moving tree rigs and developed a system to provide consistent levels of fog. VFX added CG mushrooms, beetles, maggots, mussels, snakes, moths, ghostly creatures, bat creatures, dripping liquids, smoke, melting trees and moving branches.



The enchanted forest was populated with hundreds of CG assets. We developed a huge library of forest animals, insects, birds, unusual plants and flowers with subtle animation, fog and dander. Again, we were careful to take the look to the edge of believability without going beyond.



### KEY CG CREATURES:

Other than dogs and most of the horses, almost every creature in the film is CG, some of which are hero characters.

Shown in extreme close up, the GREAT WHITE STAG, is a very complex creature with direct human interaction. The wind at the end of the sequence was a particular challenge for the hair simulation.



The FAERIES are child-like creatures with a few subtle animal features and a delicate pattern of hair covering their bodies. We had to find the appropriate balance between human child and fantastical creature. Two young boys were cast. Highly detailed facial MoCap was used to capture their distinct personalities and re-target to the CG faeries. Dancers were also cast and their MoCap was used as a base for body motion.



The TROLL was designed to feel like an ancient creature covered in stones and moss from its environment. SFX provided a base for the environment interaction with water explosions and tree debris. This was augmented using VFX liquid and dynamics simulations. MoCap of an actor specializing in gorilla motion, with arm extensions, was used as a base for the animation.



## SHATTERING, PARTICLE, LIQUID AND FIRE EFFECTS:

A key moment is the “Mirror Man”, the design of which was inspired by a physical sculpture from artist Kevin Francis Gray. We experimented by filming high speed tests of various liquids and corn starches before moving into the fully CG world. Ultimately, a unique simulation, which combined cloth and liquid, provided the desired effect.



The “milk bath” was a big challenge for SFX. A sterile, non-toxic liquid with the correct viscosity and opaqueness was developed. It had to be produced in huge quantities, heated, and circulated in the bath without generating bubbles.



Another SFX challenge was the village scene. For several nights of shooting, the set had to burn with actors and stunt action all around. It was fire proofed and a network of pipes fed liquid propane to each section of the village. The sections were all isolated both for safety and to allow different burn differentials.

The film is bookended by battles in which obsidian shards play a significant role. In the opening sequence the dark army shatters when attacked by the King's army. Rigid body physics simulations were developed specifically for this using a combination of Houdini and custom code. Although the final shattering effect was completely CG, experimentation with SFX prototypes of various materials helped determine the final look.



During the final battle, our heroes are attacked by creatures formed from razor sharp obsidian shards. The particle behavior here proved very challenging. An entirely new behavior system, based on reversing explosion simulations, was developed for this sequence.

