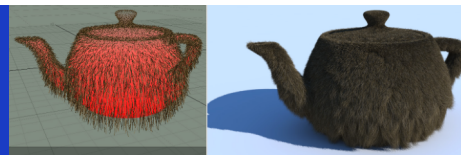# The History of Fur Texture Technology

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ABSTRACT/HISTORY

Maps & Models: Building Blocks
For Procedural Textures:
The main goal for researching
fur technology was to learn the different
techniques that were utilized over the years
that carved the path for creating 'realistic' fur
for animations such as *Toy Story (1995).*

After conducting much research in books as
well as online there was a discovery of the very first
maps (Displacement/Bump) and models (Diffuse)
which were the beginning building blocks for
procedural textures during the late 70's
& 80's.

The research also led to the discovery of Pixar
becoming the industry's innovative leading
company that researched and developed soft wares
which helped to generate 'realistic' looking fur and
over the years Pixar's improvements are displayed in
each of the *Toy Stories* as well as in *Monster's Inc.* which
was the film that firstly introduced the "onscreen
representation of fur".

Fig 1. Monster's Inc. (2001).   Fig 2. Toy Story (1999).

METHOD

During the duration of my research many online resources
as well as a couple of books were utilized to gather all the
necessary information to learn more in depth about fur
texture technology as well as the array of soft wares and
techniques that were developed in order to ensure 'realism'.
I also revisited these films to help compare and contrast
how the aesthetics of fur have changed and what changes
were made to enhance the look and the overall quality
of the fur textures.

For instance, *Toy Story* barely had any characters with
fur except for one treasure troll with frizzy hair and although
the quality was decent and believable, the 'realism' still needed
some work. The hair on Andy for instance was smoothly
textured with barely any "randomization" of length and
variations but in *Toy Story 3* his hair "length randomization" and
"density" became more distinct. His hair even revealed random
"clumping". These are prime examples of how Pixar progressed
in developing their technology to better their overall aesthetic of
fur.

Fig. 3 Toy Story(1995).   Fig. 4 Toy Story 3 (2010).

RESULTS

During the conclusion of the research
I learned some valuable information
regarding the various soft wares that
certain companies such as Pixar (1985) utilize
in order to generate sufficient and realistic
fur/hair. I also learned the history of when
the first procedural maps and models were first
developed in the late 70's as well as how Pixar was the first
company to develop *Renderman* in 1989. "*Renderman* is a technology
that helps to create 'realistic' 3D cg images. It also
helps with shading a surface such as wood or marble.
The mid-late 80's is when procedural techniques
such as wood, marble or stone were beginning to
become popular." "The very first Bump Map was first
developed by Blinn in 1978. Bump maps helped to create
a surface texture/"bumps" without having to
change the geometry. In 1984, Cooke introduced the
the first Displacement Map. They use light and dark surface
area details that are raised or sunk, which helps to render out
a more complex and realistic image. "

CONCLUSION

The Future of Texturing: Ptex

There is no doubt that the future of texturing fur is only going to continue to enhance
aesthetically with the help of future development of computer soft wares such as Ptex (developed by Disney). "It is
a new texture mapping method where it does not require UV Mapping." Ultimately it is a timesaver. As of now
only Disney and Pixar are using it. The use and development of these fur texture technologies above have
proven to improve the quality and aesthetics in fur/hair in a short amount of time.

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