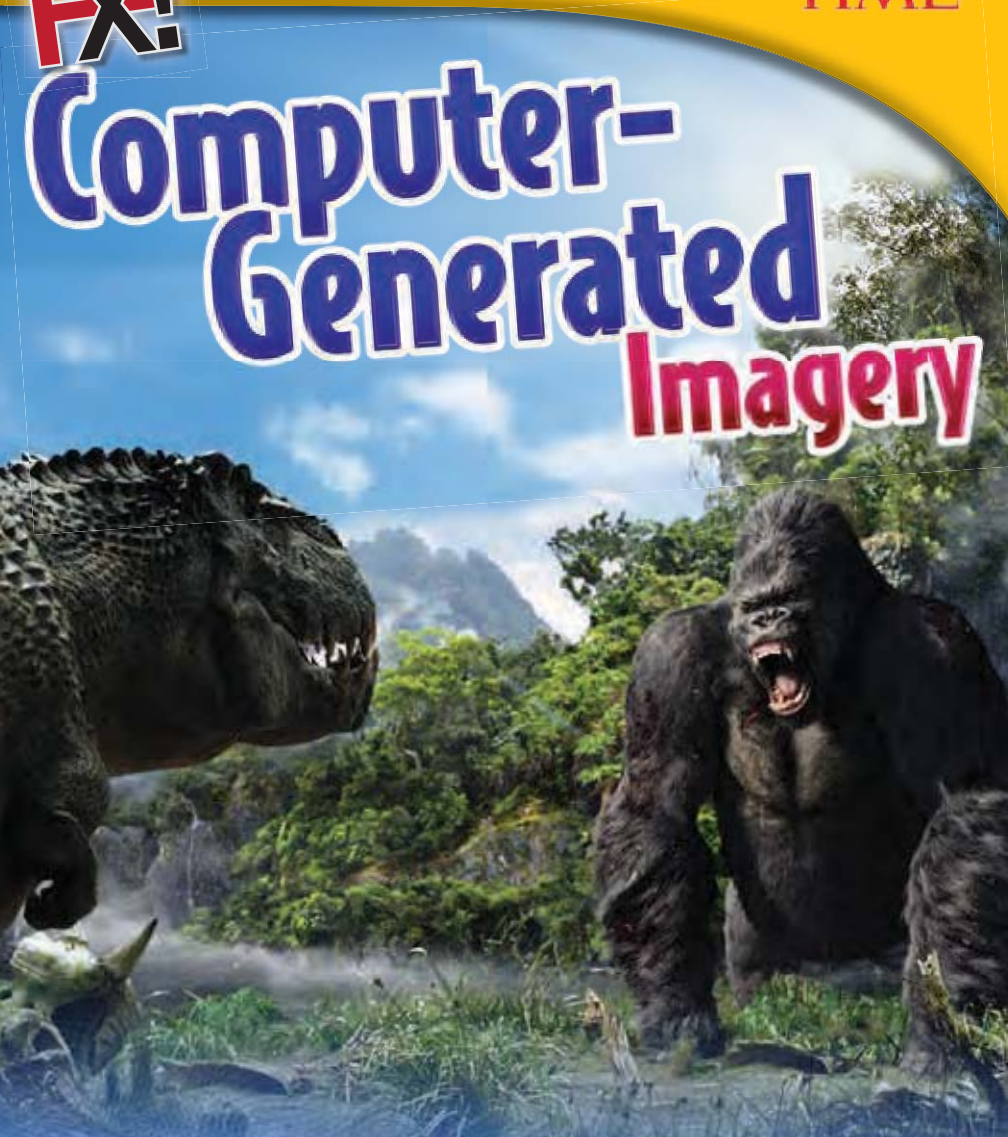
FX!

TIME

Computer-Generated Imagery



Timothy J. Bradley

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Crafting a Blockbuster

Imagine you're a film director, and you've just been handed a script for a blockbuster film. The script calls for giant spaceships, creepy alien invaders, and fierce space battles. How can you possibly create all those **special effects**, and *more*, in time for a summer **release**?

Computers! Whatever a story needs, computers can deliver eye-popping visuals to make your movie look awesome. Magical creatures? No problem. Huge, detailed space battle? Of course! Robot invasion of planet Earth? You've got it! With the right **hardware**, **software**, and artists, filmmakers can create dazzling visual effects for their movies. They do this through computer-generated imagery, or CGI. This gives directors the freedom to bring to life anything they can imagine.

Blockbuster

The word *blockbuster* has been used since the 1920s. But it wasn't until the 1970s, when films such as *Jaws* and *Star Wars* were released, that it became a popular way to describe hit movies.



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AntiKythera Mechanism, believed to be the first "computer"

It all starts with amazing computer technology. The first "computer" was invented in the second century BC in Greece and was used to calculate planetary movements through the **cosmos**. Little did anyone know that computers would evolve to become an integral part of our everyday lives. Computers help operate cars, phones, and homes. They allow us to play games, explore the world and the universe, and create astounding film effects that keep audiences enthralled and lining up for more.

THINK LINK

- How many computers do you see or use in the course of a typical day?
- What might be a worthwhile new use for a computer?
- If you could build your own computer to do anything, what would you want it to do?

"Old School" Special Effects

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Until about thirty years ago, special effects in film and television were created using **practical effects**. Models of spacecrafts and cities with puppets are examples of practical effects. Giant props that make actors look extra small are also examples. The effect is then captured by the camera.

Computers were initially used in films to create motion-control effects. Mounting a camera on a track and controlling it with a computer helped filmmakers create certain effects. For example, if the camera were to move past a model vehicle, this would create the illusion on film that the vehicle is moving past the viewer. This process is considered a practical effect because a physical model is used.

Practical effects are great, but they do have drawbacks:

- A skilled **matte painter** could create a realistic background for a scene. But it would not be possible to move around in that background.
- Masks and **prosthetics** can be used to make a human look like a monster, but the human's proportions couldn't really change. So the effect sometimes doesn't look real enough to an audience. All they see is a person in a monster suit.
- Realistic **sets** of space stations or spacecrafts can be built. But such sets require huge sound stages, hundreds of construction experts, and the time to build them.

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This effects artist creates a realistic miniature set.

Blink and Miss It

Live-action movies made before the 1980s did not contain more than a few seconds of **computer graphics** or **animation**.

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The Need for a New Approach

Filmmaking became more advanced over time. Audiences expected more spectacular effects and visuals in films. Practical effects were becoming too expensive to create, and their limitations held back directors' visions.

Filmmakers searched for new ways to achieve their goals. They needed methods to create amazing effects without busting their budgets. Computers became more and more appealing.

Computer graphics started to be used in a few science fiction films in the 1970s. Movies such as *Star Wars*, *Alien*, and *Westworld* each contained a few seconds of CGI. CGI made fantastical things real—such as showing the world through a robotic character's machine eyes.

There was a revolution taking place behind the scenes in the film industry. Filmmakers, artists, and animators were testing computers to see what they could do to enhance films. What they created blew the minds of theater audiences.

Renaissance Geek

Dan O'Bannon, one of the screenwriters of *Alien*, was hired to produce graphics for the interior sets of the *Nostromo*, which is the spacecraft where all the movie's action takes place.

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creature from *Alien*

Reader's Guide

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1. Some people believe that the old ways of making movies—using practical effects and stop motion—are more of an art form than CGI. What is art in moviemaking? Use details and examples to support your view.
2. How do science, math, and art work together in CGI to create today's movies?
3. Compare and contrast two movies from this book that you've seen. Focus on the use of CGI and how it helped or hindered the movies.
4. Look back at pages 50–53. Which three people do you think made the most important innovations in the area of movie special effects? Explain your choices.

