

# Visual Effects Education Today

Isaac Kerlow explores what it means to be a vfx artist today and how students should prepare to be the vfx artists of tomorrow.

Posted June 30, 2005, on [vfxworld.com](http://vfxworld.com)

Pursuing a career in visual effects continues to be as demanding and competitive as ever. The good news for today's young talent is that there are many ways to become a visual effects artist and all of them work, each one for different reasons and for different people.

For most of the 20th century the visual effects industry was relatively small, and most of the few professionals lived in a handful of cities with significant film or TV production. In addition to its limited market, the visual effects industry was also very specialized and rapidly changing. For that reason, universities, film and art schools did not bother developing or offering specialized professional degree programs in visual effects. As a general rule, universities preferred to develop specialized degrees for the "proven" artistic specialties that had been around for centuries (painting and sculpture) or even a few decades (design and photography first, filmmaking and animation later). For decades and for hundreds of individuals, the only way to get started in a visual effects career was to somehow get any entry-level job in any vfx production. Much has changed in the last 20 years. Visual effects today represents a significant sector within the media and entertainment industries, and educational institutions are actively involved in the training of future visual effects professionals.

## What is a Visual Effects Artist?

Visual effects today is a complex professional field with many specialties, it is not a monolithic field where everybody does the same task. The generic term "visual effects artist" is used quite often even though it fails to specify the multiple specialties within the profession. But in a general way, a visual effects artist is someone who creates special imagery and effects mainly for live-action movies, TV commercials and series, and also for a few high-end computer games and performing arts events.

All vfx artists share a basic understanding of filmmaking, imagemaking, engineering, storytelling and magic. But at some point in their careers, all vfx artists develop and master a unique specialty that leans toward one of these four areas. Not all "medical doctors," for example, do the same. A heart specialist, a general practitioner, a brain surgeon and a dermatologist, they all share a basic understanding of medicine but each one has a specific skill that they use in their day-to-day jobs. The same is true in visual effects. It is not

unusual for a vfx artist to have a main specialty and a secondary skill. This is, in fact, reflected in most CVs and resumes of vfx artists.

Many of today's visual effects professionals have trained in a variety of fields: visual arts, animation, engineering, programming, film, design and a number of crafts. This seems to have worked so far because the practice of visual effects requires a combination of art, technique, craft and science.

An easy way to split vfx artists by specialty is by looking at whether the artist, technician or craftsperson uses digital technology or not. Hence, the distinction between digital visual effects and practical or special effects. Most visual effects today involve digital tools, but a fair amount of effects are still created with physical materials; for example, scale models, prosthetics, animatronics and explosions.

## **What do Visual Effects Artists Need to Know?**

We can better understand what the visual effects artists of tomorrow might need to learn by looking at the types of tasks required in today's leading vfx productions. When doing this, it is best to look at the entire spectrum of productions ranging from high-budget Hollywood studio movies to low-budget independent movies. At the risk of simplifying, we can reduce the specialties of visual effects artists today to a few principal areas: concept development and storyboarding; visual development; image painting and retouching; model-making; compositing and wire-removal; tracking, rotoscoping and match-moving; programming and scripting; practical effects; 3D CG (computer-generated) production, including modeling, rigging, lighting and rendering; CG character animation; CG effects animation; and effects supervision. There are a few other vfx specialties that have always been or have become essentially technical: motion control, for example, and will not cover them in this short article.

Concept development and storyboarding require polished drawing skills, plus a healthy dose of imagination, an ability to interpret ideas and develop unique styles. Whether drawing is done with digital or traditional tools is irrelevant: drawing is essentially an activity about description and imagination. Image painting and retouching requires an excellent understanding of color, the effect of light on surfaces, and the ability to create images based on very specific reference styles. Visual development is about rendering a vision and building a skin around an idea, painting skills and tons of imagination are essential. Traditional modelmakers often specialize in creating physical scale models and prosthetics, many modelmakers today got started as traditional sculptors but have also mastered the tools of digital 3D modeling. Compositing and wire-removal are about making elements from different sources look like they belong in the same picture, these areas need a deep understanding of how colors blend in painted and photographed images. Tracking, rotoscoping and match-moving are techniques that demand an understanding of film and video production, and the mechanics of filmmaking.

Computer programming and scripting are used for a wide variety of tasks, including the development of shaders, the creation of dynamic simulations and the elaboration of custom robotic systems. It is easy to understand why many vfx artists with programming abilities end up becoming technical directors. The area of practical effects (formerly special effects) includes most effects that are created with physical materials such as clay, wood, fire, water, wind and gunpowder; pyrotechnics is a fundamental component of practical effects. Three-dimensional CG production is a complex area with distinct stages, each clearly defined as a professional specialty: modeling, rigging, lighting and rendering. The craft to animate and bring virtual characters to life requires a thorough understanding of both keyframe and motion capture acting, and expressing emotions through the face and the body of the character. The craft of CG effects animation requires the ability to stylize a variety of natural phenomena through simulation scripts. Last but not least someone working as an effects supervisor needs to understand the details of the craft as well as being able to communicate, organize, motivate and lead an effects crew.

## **Where do Visual Effects Artists Get Their Education Today?**

The vfx artists of tomorrow are likely to continue emerging from schools of art, film and/or engineering. In many countries, it is possible to find a menu of training possibilities to choose from. The images that illustrate this article, for example, showcase some of the work done at three of today's leading schools: Gnomon School of Visual Effects in Hollywood (where I used to teach), Filmakademie Baden-Württemberg near Stuttgart in Germany and Supinfocom in Valenciennes, France.

Some of the available vfx educational opportunities include one or two-year diploma programs, four-year undergraduate degree programs, multi-year graduate programs and, last but not least, on-the-job training. It is difficult to say which of these options is the best. One would have to look at the needs of the individual student and the particulars of the training center or school in question. I have seen, for example, young vfx artists get a lot of short intensive training courses while others leave them unsatisfied and frustrated. My personal opinion is that visual effects artists of the future are likely to benefit the most from getting a solid education in the form of a four-year bachelor's degree to develop their skills and creative point of view. Short courses, especially on a specific production software, are most effective after the student already understands how to develop a creative concept, and how to translate ideas into specific images or sequences.

Trying to get an internship or apprenticeship at an interesting company is also an important variable in the learning equation. Apprenticeships have a long tradition in the arts, where much of the instruction is done by example. Internship programs and entry-level jobs are excellent opportunities for young talent to learn from experienced veterans. The months in the early 1980s that I spent as a student intern at Digital Effects in Manhattan (one of the four companies that did effects for *Tron*) were invaluable to understand what CG and vfx were really about. On-the-job training is probably the most valuable ways to learn about visual effects.

Future visual effects artists need to learn how to use the digital tools and knowing how to break down a shot into its simplest components. The abilities to recombine old visual effects techniques into new solutions and to develop altogether new techniques are prized assets in this field. Vfx artists also need to value the following: interdisciplinary work and cross-fertilization, being a team player, the ability to communicate effectively and the importance of a good demo reel or portfolio. Visual effects is a profession driven by visuals and an individual's proven ability to create (usually in the form of a demo reel or a short movie) is always more relevant than his or her academic degree, whether the academics like it or not.

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This article was printed from VFXWorld.

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