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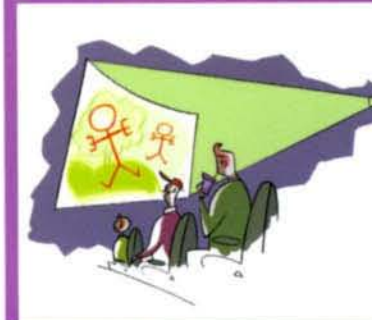

producing animation

CATHERINE WINDER
ZAHRA DOWLATABADI

Focal Press

Producing Animation

FOCAL PRESS VISUAL EFFECTS & ANIMATION SERIES

THE ANIMATOR'S GUIDE TO 2D COMPUTER ANIMATION
Hedley Griffin

PRODUCING ANIMATION
Catherine Winder and Zahra Dowlatabadi

Producing Animation

By
Catherine Winder and Zahra Dowlatabadi

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For Emily and Dylan

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FOREWORD

A gray ocean. A black sky. Forty-foot waves pound the deck of a large ship that is being tossed about in a violent storm like a toy. A helicopter emerges from the clouds cutting a momentary path through sheets of blinding rain towards the vessel below.

Imagine being pushed out of the helicopter and lowered by a thin cable down to the troubled ship. You hit the deck hard, holding on for dear life, as a huge wave breaks over the bow. You stagger onto the bridge cold and wet, only to discover that the new high-tech navigation systems are down. You have been charged with taking command of the ship and steering it towards a top-secret location. You rally the crew: a rag-tag team of over 200 men and women assembled from around the world, who must now follow your lead and work in unison to keep the vessel afloat and on course . . .

Welcome to the world of producing animation! This is how I felt as I was handed 52 episodes of an animated series to produce with only 12 months left on the schedule. Gone were the original producers who had spent a third of the budget and all of the development time. Gone were the relationships with the overseas vendors. Nonexistent was the production methodology for the CGI portion of the show. The only thing left intact was the studio's enthusiasm for the project, a hungry network, and a tired crew. It was the greatest learning experience of my career . . . if only there had been a guide.

Full of contradictions and filled with the promise of great financial rewards and creative riches, the animation world is hard to define. It is a world that sits on the cutting-edge of technology, yet is still considered primitive for being so labor intensive. It is an industry that truly spans the globe, yet is surprisingly very small.

And to define an animation producer is harder still. One has to be part therapist, union negotiator, customs broker, technologist, artist, storyteller, international trade leader, attorney, filmmaker, talent agent, studio executive, mentor, and friend. It is incredibly challenging, all consuming, and in the end, very rewarding.

Though not all productions are storm-battered ships left adrift in wild oceans, both Catherine Winder and Zahra Dowlatabadi have courageously jumped into such situations and survived. It is from their extraordinary

range of experiences that we have for the first time a detailed look at the development and production process of producing animation.

David Lipman
Producer, *Tusker, Shrek*

Previous Credits: Head of Production for Feature Animation DreamWorks-SKG; Executive in Charge of Production/Supervising Producer, Hanna-Barbera, Inc.; Vice President/Executive Producer, USAnimation, Inc.

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We would like to express our appreciation to David Lipman for his succinct and creative way of describing what it takes to produce in the Foreword. Additionally, we thank all individuals whom we have quoted for sharing with us their definition of what makes a good producer.

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I, Catherine, would like to thank my husband, Craig Berkey, for his unconditional love, support, and patience. Throughout the writing of this book he was faced with almost daily compromises, but did whatever it took to help me achieve this goal. I would also like to thank Silvia Koleff for all of her wonderful help with Dylan. Knowing that he was in such good hands made it possible for me to spend the time I needed on the book.

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1

INTRODUCTION

What exactly does an animation producer do? What is a creative executive? How much does it cost to produce one minute of animation? How do you put a production plan together for animation? Are there significant differences between producing a feature, direct-to-video (d-t-v) project, and television series?

This is just a tiny sampling of the many questions that we are asked as soon as we reveal our profession as animation producers. We tried looking for books to recommend to people interested in the topic, but realized there wasn't a suitable title out there. Although there are many well-written and useful books that discuss the technical process and art of animation (see Appendix, Animation Resources), there is nothing available that outlines the actual nuts and bolts of producing for major animation studios and distributors. As this is a significant missing piece of the picture, we decided to use our combined knowledge and experience and take on the challenge of providing it.

Producing animation is based on the ability to think logically, proactively, and creatively. It is a cerebral act that combines a technical knowledge of the animation process with individual style, experience, and gut instinct. Part of the problem of defining what an animation producer does is that the job function is truly amorphous. Throughout the animation industry, there is no single definition of what a producer does. And the role animation producers play on each project changes constantly. A producer's domain varies from production to production, as well as from studio to studio. The positive side of this variability is that producers are often able to shape the production to fit their own experience and expertise. On the flip side, it can lead to untested modes of production that can result in costly overages and frustrations for all involved.

In our opinion, the producer is the one person with the full overview and responsibility for a project from a creative, financial, and scheduling

perspective. Based on the creative expectations and fiscal parameters of the project, the producer pulls together an animation team. The producer sets up and manages both a production schedule and a budget, aiming to deliver the product at the agreed-upon level of quality. The producer is also in charge of keeping both the executives (or buyers) and the production team enthused and motivated. As this role is all encompassing, the knowledge base required to become a producer is quite extensive.

Our combined experience in the animation industry has been quite varied. Both of us progressed up through the ranks, and between the two of us, we have worked in almost all production capacities. Our job titles have included coordinator, production manager, overseas production manager, associate producer, line producer, co-producer, producer, executive producer, production executive, and vice-president of production. Zahra got her start in television production, but her career has been primarily focused on feature film and direct-to-video projects. Zahra's experience has been very hands on, working directly on the production lines. Catherine has worked in the areas of production and development for both television and feature films. Although she has rolled up her sleeves and produced several television series, the majority of her experience has been as an executive. She has overseen production facilities and projects in all formats, both domestically and internationally. She has also set up and run a studio from scratch. Combined, we have been involved in many different kinds of projects, including feature films, direct-to-video releases, television series, television specials, and short films.

We first met each other on an ill-fated production in 1991. We were both hired as troubleshooters in the last 10 months of production for an animated feature film. In a short time, we discovered that there was actually closer to 20 months' worth of work remaining to be done. With the story still in development, much of the production money was already spent. A completion bond company had moved into the production offices. The company was there to make sure that all production deadlines were met without failure so there would be no additional costs incurred. Their presence was a source of constant irritation for the producing team in Los Angeles.

The project was structured such that the pre-production and some of the production was completed in the LA studio. Due to the lack of available talent and budgetary and time restrictions, the work was then divided up and subcontracted to studios all over the world. Sections of the film were sent to Canada, Denmark, Spain, Australia, and Argentina. Every scene ultimately ended up going through a studio in Asia for clean up and ink and paint. Because each studio's availability and capabilities differed, the scenes had progressed to different stages of animation. Once scenes were finished in clean up, they were sent to LA for key effects and then back to Asia. The Asians were the "catch-all" studio, completing any artwork that was not finished.

Because the project was being outsourced to so many different studios, it was unclear where the approximately 1,350 scenes had been shipped, and how far along the production pipeline they had progressed. To top it off, the anemic tracking system in place proved to be completely out of date. It was our job to figure it all out and get the film completed by the fixed delivery date. Zahra was based in LA while Catherine was at the subcontracting studio in Asia.

Once we got started, we quickly discovered that the project had been prematurely greenlit for production. (We should add that this is unfortunately a very common problem with animated projects.) None of the many changes taking place seemed to be able to fix its inherent story problems and only confused and complicated the production. At the home-base studio in LA, the script was continuously changing. Character and location designs were being completely re-done. Scenes were being added and taken out as fast as they were being completed. The final deadline, however, remained firmly intact. It was impossible to feel like we were making any headway. As a result, the production crew was quickly losing their enthusiasm for the project.

Given the number of studios working on the project, the cultural challenges were enormous. Receiving work from numerous animation studios, all communicating in different languages, made it extremely difficult for the American and Asian crews. Many of the artistic revisions had not made it all the way down the lines of communication to each studio around the world. Consequently, scenes that had already been fully animated had to be redrawn. Since it was often difficult to pinpoint exactly whose responsibility it was to make these changes, the burden rested on the Asian team to handle this additional work.

Naturally, the LA studio had the highest expectations and made demands that were impossible to fulfill under the circumstances. Working six to seven days a week to try and catch up left the Asian crew feeling unappreciated and unable to put their best efforts forward. As time was short and they were being pressured, they had to make artistic compromises in order to get the scenes completed. Unfortunately, these creative shortcuts led to further frustrations by the LA team and resulted in even more revisions. The Asian crew was expected to produce top-rate animation, but there was no time for this in the schedule, so both teams often locked horns. Part of the problem was that the subcontractors were producing a feature film thousands of miles away from the creative decision-makers. The quality control checkpoints were impossible to implement without some artistic compromise. In short, we had our work cut out for us with the two main crews feeling frustrated, unhappy, and burned out.

An important consideration that should always be taken into account when running an international production is cultural traditions and holidays, both in the US and abroad. With the clock ticking away, no one had

planned for the Chinese New Year, which stopped production in the Asian studio for an entire week. At the same time, the LA crew had to contend with their own unexpected problem: the LA riots. It was not safe to be out on the streets, and the crew rightfully feared traveling to and from work. An angry driver had actually chased the head of the background department along the pavement of an LA street. In addition, all artwork shipments to and from the subcontracting studios were halted since the LA airport was very close to the hotbed of the riots.

As this was before the days of e-mail, we averaged 20 to 30 faxes a day to each other, trying to get a handle on the project. Fighting off packs of diseased dogs on the way to work helped Catherine limber up for the physical work ahead. As the entire studio took a daily nap, she would often have to climb up on the artists' desks to the shelves above in order to find missing scenes. (At some overseas studios, it is customary to sleep under the desk or on a cot since the crew literally works around the clock to get the work completed on time.) Meanwhile, back in LA, the artistic supervisor wanted to keep tweaking key elements even after they were approved. As production in certain countries was on hold until they could get the materials, Zahra had to do evening reconnaissance missions to keep the show moving. Staying until everyone had left, she would search and find the artwork. The next day she would get the director's approval and coax the artistic supervisor into relinquishing the scenes in order to ship them out.

Somehow, through all the chaos, we managed to revise the schedule so that it was manageable. We put a tracking system in place and got scenes completed through production. Most importantly, we were able to motivate our team and finish the picture on time. It took a lot of emotional fortitude and diplomacy, as we were in the middle of a war zone with very high stakes and fiery tempers. At the end of it all, we both naively assumed that there had to be an easier way to produce a film. Over the years, however, we have discovered that the complexity of the medium almost prohibits the possibility of a stress-free and orderly production. Many of the obstacles encountered are the direct result of the creative process itself and should be expected. On the other hand, many of the production snags are unnecessary and can be avoided with good planning and foresight.

Beyond committing to paper the nuts and bolts of producing animation, a primary purpose of this book is to help less experienced decision-makers (those new to the animation business, such as corporate executives and creators) to make smart, production-savvy decisions. Producing animation can be a highly rewarding experience. When developing a new project, there are no boundaries for creators, writers, and artists, as the characters and their world can be created from scratch on a blank piece of paper. The rules of the physical world do not apply. As a result of this freedom, the possibilities are limitless. Achieving the appropriate balance between the cre-

ative goals and fiscal limitations of a project is the inherent challenge of every production. Despite having infinite potential paths to take, there inevitably comes a point in every production where choices have to be made and finalized. Having worked with many talented professionals, we have witnessed—and also experienced—the struggle to commit to creative decisions. Because this is so difficult, we have both wished we could refer these professionals to a source that explains the animation process and the implications of decisions made to the overall project.

On a project that I (Zahra) worked on as an associate producer, the development executive had an impressive live-action background, but no experience in animation. With the best of intentions to improve the film, this development executive took it upon himself to rewrite the dialogue for scenes, many of which had already been animated not just once, but multiple times. With the project rapidly falling behind schedule and going over budget, my job was to figure out which scenes could be safely worked on. Doing this would allow the project to meet production objectives and maintain momentum, as sufficient inventory would become available for each department. However, it was no easy task, as it seemed that no matter how I reworked the schedule and each department's weekly workload (also known as quotas), we were unable to move the project forward at a pace in keeping with the schedule. My top priority was to find a way to avoid the backward step of changing dialogue once a scene was animated. I had to devise a system that would allow us to catch scenes that required changes and stop them from entering production.

In order to get the work flowing through the animation department, I realized that I had to get on the same page as the executive. As an initial step, I invited him to attend dailies so he could get a sense of the process involved in animating a scene. (During dailies, scenes that have been completed through rough animation, clean up animation, effect, or color are viewed by the producer and director for approval.) While looking at the footage, the development executive was clearly impressed by the artistry that went into drawing each scene. My next step was to show the large stacks of drawing that made up the scenes we had just viewed. By his reaction, it was evident that the executive had not been aware of the staggering amount of work that went into getting the scenes animated.

I was very lucky because the executive was extremely smart and the brief introduction made him eager to learn more about animation. The first thing we had to establish was an understanding of the schedule. The timeline in animation can be deceptive for someone who is not familiar with the process. Even though we had close to two years of production time remaining, every day was already accounted for and there was little room for revisions. Together we explored the quota system—that is, how a production relies on getting a certain number of feet or seconds completed through each

department every week. Unless footage quotas are met in each category, there will not be enough work for the artists in the subsequent department to do. A domino effect ensues, causing the project to fall behind schedule. This offset travels all the way through the various departments to the end of the production line. While artists at the end of the production line have nothing to do, artists at the beginning of the production line are asked to undertake or work on the same scenes again and again. As revisions continue, these artists are caught in a vicious circle of not meeting their quotas. In the meantime, the time lag results in an escalation of department quotas in order to hit the film deadline, and the artists are pushed to produce more drawings every week. These circumstances create a self-defeating scenario in which the artists become demoralized, the production quality drops, and the project falls behind schedule and runs over budget.

My attempt to bridge the gap between development and production gave the executive a better understanding of the consequences of his rewrites and the various challenges I was up against. It also gave me an opportunity to get to know him better and understand why he felt the changes were so critical to the project. Together, we figured out how to solve the problems we were facing. We established an "on-hold" category so that scenes he believed could potentially change were held back from production, thereby avoiding the waste of talent, time, and money. He also requested to be copied on the production report in order to be more in sync with the project. Through our close collaboration, we were finally able to push the project forward and establish a mutually beneficial relationship between development and production.

Keeping in mind that each situation is unique, in this book we have attempted to define and clarify the process and procedures of producing animated projects with the focus on large-scale television, direct-to-video, and feature production using 2D or traditional animation and 3D Computer Generated Imagery (3D CGI). The intended audience for *Producing Animation* is broad, ranging from film students to industry professionals. Our primary goal is to create a basis from which a producer can springboard and structure a production based on its individual needs. This book will take the reader through all the steps necessary to set up a project, including selling an idea, developing and preparing an idea for production, as well as the actual production process. For the entrepreneur producer who is trying to sell his or her project, this book will describe the role of and identify the industry professionals to contact. *Producing Animation* outlines the various stages a property goes through before production starts. For the student or line producer who may be strictly interested in the production phase, we offer detailed information on how to budget, schedule, and track a project, as well as actual charts that can be used for such tasks. For professionals needing a basic knowledge of the animation business, this book provides answers to

commonly asked questions, along with an overview of animation methodologies.

Unlike other forms of art, animation is a medium that is always changing. During the writing of this book, the industry has undergone phenomenal changes through technology and the Internet, making it almost impossible to keep up with all of its innovations. Many of the lessons we have learned, however, are fundamental to the business, no matter what the format or methodology. We hope that by sharing our own experiences we may help pave an easier path for future animation producers. Additionally, it is our sincere hope that the information in this book will entice new producers to enter the industry, and along with professionals already in the business, continue to push the frontiers of animation to more exciting and unforeseen territories.

Welcome to the wacky world of animation. We hope you enjoy its challenges, as there is nothing more satisfying than seeing the results of your hard work moving on the screen and the audience responding to it.

Commonly Asked Questions about Producing Animation

How do you become an animation producer?

The best schooling for a future producer is to begin as a production assistant and work up through the ranks of the production team. Starting from the ground up on an animated picture gives you the advantage of learning the process on a practical basis, and often helps you gain a deep appreciation and respect for the talent of both the artistic and the production teams. As a production assistant, you work directly with the artists. This allows you to get firsthand experience on how artwork is generated and handled. You will discover the detailed nature of animation, and why even the slightest mistake such as misnumbering a storyboard panel can quickly derail the production.

The next step up from production assistant is called coordinator, production supervisor, or assistant production manager. The titles used for this position vary depending on the studio's structure and the project's format. In this role, you are the liaison between the production manager, the department supervisor, and the artists. It is your job to keep the artists on schedule and track the flow of artwork. This position is highly beneficial, as you will begin to develop the ability to create schedules. You will be able to estimate how many artists are needed in order to meet the weekly quotas, and gauge an approximate amount of time required to complete a given piece of artwork. Establishing a good relationship with the artists and knowing how to motivate them is another key lesson you can learn in this position.

During weekly meetings held to review the artwork with the director, you get to see why a scene may require revisions and what creative solutions are used to fix the problem. Having successfully managed your team of artists, you may then be considered for the role of production manager.

The production manager takes on increased responsibilities, such as directly managing members of the production crew and artists from a budgeting and scheduling standpoint. With the aid of coordinators or assistant production managers, it is up to the production manager to keep the entire production on schedule. Although you may not be privy to the actual dollar amounts allocated to each category, with guidance from the producer, your primary goal is to stay on budget based on the fixed number of hours given to you. You will use these figures as a guideline to meet the production's objectives. As a production manager, you will wear many hats as you begin to work with both the creative and the business sides of a project. You will have the power to hire freelance artists and make deals with them in accordance with the budget. Most importantly, this role offers the ideal opportunity for you to shadow the producer and learn as much as possible. For more information on roles of the management team, see Chapter 7, "The Production Team."

Proving that you are able to meet deadlines, understand the production process, and complete a project within the allotted time indicates that you are prepared for the next challenge: taking on the duties of an associate producer or line producer. In this position, you are responsible for the overall financial aspect of a production, along with keeping it on schedule. Having now worked on numerous projects, you are knowledgeable about the creative needs specific to each show. By attending casting and recording sessions, you have learned what qualities to look for in a performer during an audition. You can assess what makes a good story. You are able to recognize strong character design and understand the importance of color choices. In this position, you can further sharpen your deal-making skills as you get exposed to how the producer and the business affairs department negotiate contracts with high-end artists, voice-over talent, and writers. By now, you have had an ample amount of training and should be able to create budgets and schedules and put together crew plans.

Each of your varied experiences should have taught you to think strategically, understand story structure, and balance both the creative and business ends of the process. You should be able to troubleshoot by quickly coming up with alternate options when faced with a problem. Once you have reached this point in the production hierarchy, your next advancement is to step into the shoes of a producer. (For more information on the different types of producers and their respective duties, see Chapter 2, "The Animation Producer.")

Why does it take so long to produce a traditionally animated project?

Producing a hand-drawn animated project is very labor intensive. You will often hear the question on animated features made in the US, "Is the scene on ones or twos?" This question refers to how many frames will be shot per drawing. If the animation is on "ones" (one drawing per frame with 24 frames per second), then you need 1,440 drawings for 1 minute. Multiply the drawings you need per minute for a 75-minute feature, and you have well over 100,000 drawings. Moreover, on average, you usually have 1 to 3 characters in each scene. If you were to count each of these images, then you quickly run into over 300,000 drawings.

So far, we have only focused on character animation. However, each scene also has a background. On average, every background has a minimum of two to three elements, but it can go beyond 60. A scene could be a 12-field setup (12 inches across) or it could be over 20 feet in length for long panning shots. It is not uncommon for a film to have over 1,000 painted backgrounds. In addition to the backgrounds, there is also the visual effects level (or all the non-character-related animation, such as rain, fire, and smoke) to consider, which will require hundreds and hundreds of effects drawings.

Described so far are the images you see on the final film. One of the extraordinary aspects of animation is that in reality, over half the work completed never makes it to the screen. For all the cleaned up animation, painted backgrounds, and cleaned up effects that we have already talked about (see Chapter 9, "Production," for more detail), there is also rough animation, rough layout, clean up layout, and rough effects. Prior to layout, there is also the storyboarding phase in which each sequence goes through many evolutions before it is ready for production. Before the storyboarding begins, there is the visual development phase during which artists create many drawings in order to come up with the final character designs and locations. If you take into consideration all the artwork, the sheer magnitude of labor involved on animated features becomes clear.

Up to this point, we have only written about the amount of *drawings* produced on a project. We have not touched on the other departments that don't actually draw, but are also central to the production's creative process, such as editorial, scene planning, animation checking, and ink and paint to name a few. In other words, the creation of the artwork takes a substantial amount of time, but you also need to add in the multiple hours required in other departments that play a significant part in completing a scene. If you were to follow the progression of a scene from the storyboard phase to final color (as we describe in detail in Chapter 8, "Pre-Production," and Chapter 9, "Production"), it is abundantly clear why the process is so slow and costly.

Are all artists called animators? What exactly is an animator?

It seems logical to call all artists working on an animated project animators, but it is not accurate. An animator can take a design of a character or an object and bring it to life through creating their movement and action. The animator's role can best be likened to that of an actor. Just like any other performer, whether it is in the theater, the opera, or the ballet, he or she takes center stage. But it is through the combined efforts of many talented individuals—such as visual development artists, storyboard artists, editorial staff, layout artists, clean up artists, technical directors, and many other staff members—that a show gets completed and offered to the public.

What kind of skills are required to get into the field of animation?

People often ask how to receive training in three main job categories: 1) an artist, 2) a member of the production staff, or 3) a voice-over actor.

Artists

The most important tool artists can have is a portfolio (or a sampling of their best work). It is an artist's calling card. If you do not have a portfolio, you must prepare some initial artwork to start building one. Taking classes offered at animation colleges or at the animation union are good places to begin accumulating samples of your work. Some studios have training programs that generally last three months, but they are rare and difficult to get in to.

For those artists who already have a portfolio, it is important for them to continuously update it. Keep copies of artwork from previous projects you have worked on. Recent sketchbooks should also be included. If you have many years of accumulated artwork, it is always wise to get help from fellow artists to select your strongest work. You should also research the show you are applying for and make sure that your portfolio includes artwork that is suitable for the project.

In hiring, every studio has its own specific requirements based on the status of their projects in production and pre-production. Initially, the best thing to do is to contact the recruiting office or Human Resources office of a studio and request information on their portfolio requirements. Follow the guidelines closely. Depending on your skill set (for example, whether you are an animator or a painter), the requirements for your portfolio pieces will vary. For detailed information on previous experience needed for different job categories, see Chapter 9, "Production."

The following is an example of the portfolio requirements.

When applying for an entry-level position in clean up animation, your portfolio should contain samples of:

- Clean up drawings and original roughs
- Flippable inbetweened scenes
- Life drawing sketches
- Artwork from personal or school projects
- Videotape of animation exercises

When you have all your artwork prepared, set up a time to drop off your portfolio. Most studios have weekly or monthly reviews and will then return your portfolio to you. Some artists prefer to make copies of their work and leave the copies at the studio so that their work is always available to the recruiting department. You may be asked to take a test. This procedure is very common in most studios. A standardized test is often a fair gauge of judging an artist's aptitude for the project.

Production Staff

There are several ways to get into production. While a portfolio is an artist's calling card, a resume or curriculum vitae (CV) should be used when applying for a future production staff position. Make sure you have a strong resume that emphasizes your abilities to organize, work with people, communicate, and juggle many things at once. It is important that your resume is easy to read and can be understood at a glance. It should not be more than two pages long. If you have listed individuals on your resume as references, it is wise to speak with them in advance to prepare them for a possible call. By doing so, you give your contacts a chance to review your work experience, and then, hopefully, they will be able to give you a glowing referral when the time comes.

If you have little or no production administration in your background, you should look to get on a project as an intern, production assistant, or a producer's assistant. If you attend a community college, you may be able to design a class in which you can get school credit in exchange for doing an internship at a studio. Computer skills are also an important asset. Having a working knowledge of software programs such as Filemaker Pro, Excel, and Photoshop can give you the winning edge by setting you apart from other candidates applying for the same position.

Voice-Over Actor

Most voice-over actors have agents who send them to auditions. If you don't have an agent, it is important that you assemble a tape that demonstrates

your voice range and talent. You should then research voice agencies and send them a tape. Be sure that the tape quality is professional.

When a voice-over actor is hired, the agent negotiates the deal and helps the actor with all of the contractual paperwork. The agent is then paid a percentage of the actor's negotiated fee. The average voice-over session takes approximately 4 hours, depending on the role. Pay rates vary based on the type of voice-over work being done, and whether the project is union or non-union (that is, Screen Actors Guild [SAG] or not). For union work, it is best to contact SAG directly to get the updated minimum rates. For non-union work, the amount paid is whatever you or your agent can negotiate.

Whether you have an agent or not, it is a good idea to take a voice-over acting class, as it will help you hone your skills and make potential contacts. Many of the voice-over coaches are professional voice-over directors who are looking for fresh talent. (For more information on auditions and casting, see Chapter 8, "Pre-Production.")

What effects have computers had on the animation industry?

Computers have altered the landscape of animation in two distinctly different arenas: 1) the use of Computer Generated Imagery (CGI or CG), a form of animation that enables the artist to draw 3D images using the computer, and 2) the use of the computer as a tool in the 2D production process often referred to as "Digital Technology."

A common misconception is the belief that the use of computer hardware and software enables an artist to just press a few buttons and—presto—the drawings are done. This is not the case, although there are instances in which computers can make the life of an artist a little easier. For example, computers can produce an "inbetween." However, this action can only take effect after the CG animator has completed the key frames or extreme poses. (See Chapter 9, "Production," for more details on inbetweening.) The main difference between 2D and CG animation is in the tools used. The artist who once drew with pencil and paper can now use the keyboard and mouse to create and shape images. This technique requires just as much artistic talent, expertise, and hard work as do other forms of animation.

Over the years, the number of CG projects has steadily increased. Examples of such films are *Disney's Toy Story* and *A Bug's Life* (produced in association with Pixar) and Pacific Data Images and DreamWorks' coproduction of *Antz* (see Figure 1–1). There are also an impressive number of CG television shows beginning to crop up, including Sony Pictures Family Entertainment Group's *Roughnecks: Starship Troopers Chronicles* (see Figure 1–2) and *Max Steel* (see Figure 1–3), and Nelvana Communications' *Rolie Polie Olie* (see Figure 1–4).

Figure 1–1 *Antz* (TM and © 1998 DreamWorks L.L.C., reprinted with permission by DreamWorks Animation)

Figure 1–2
Roughnecks: Starship Troopers Chronicles (TM & ©2001 Sony Pictures Family Entertainment Group and Adelaide Productions Inc.)

Figure 1–3 *Max Steel* (TM & © 2001 Adelaide Productions Inc.)

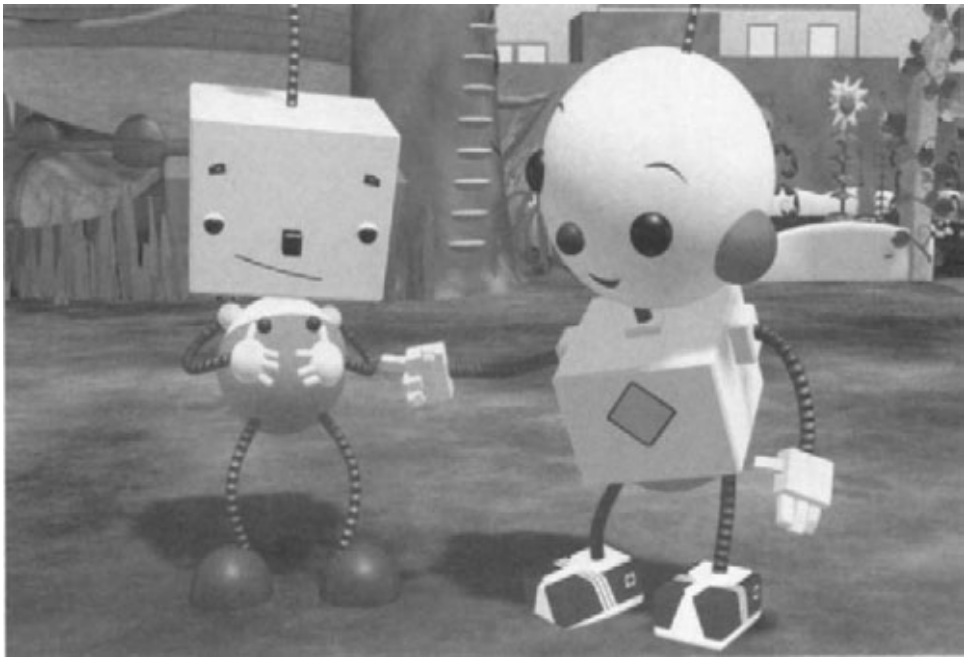

Figure 1–4 *Rolie Polie Olie* (Rolie Olie Polie Series ©1999 Nelvana Limited/Metal Hurlant Productions s.a.r.l. All rights reserved. Provided courtesy of Nelvana.)

Also on the rise are projects that use a combination of hand-drawn animation and CGI. In such films, characters, props, or environments may be generated in the computer and then combined with traditional animation. An example of this type of hybrid animation can be seen in Warner Bros.' *Iron Giant*. All the main characters are hand drawn, but the Iron Giant was created on the computer. Another title that fits into this category is Disney's *Tarzan*, in which the background elements such as the trees and bushes are 3D computer objects composited on traditionally drawn backgrounds and painted to look 2D. An impressive integration of 2D and CG imagery can also be seen in 20th Century Fox's *Titan A.E.* (see Figure 1–5). On this feature, close to 90 percent of the scenes contained CG elements either as the environment, character, or prop.

It used to be that creating CG animation was exclusive to production studios that were willing to invest millions of dollars in both cultivating talent and developing computer programming. Development of new software such as Flash, however, has turned the once elite form of filmmaking into a medium available to any individual with access to a desktop computer. Flash offers the animator step-by-step guidelines on how to use its tools to draw and time the animation and then import the finished product onto the web. Although web animation presently is limited, it is only a matter of time before the color depth and size of the file are no longer an impediment. Once the project is placed on a website, it has a potential viewership of over 100 million users. Since there are no intermediaries such as a distributor or an exhibitor, there are no commercial expectations for the project. This method of production enables the artist to have ultimate creative

Figure 1–5 *Titan A.E.* (TM and © 1998 Twentieth Century Fox Film Corporation. All rights reserved.)

control and the most direct relationship with the viewer possible. (See the Appendix, "Animation Resources," for book titles on Flash animation.)

How does the production timeline for a CG television show compare to a television show that is produced traditionally?

Television shows that use the CG technique can definitely benefit from a shorter production schedule. One example is the Decode Entertainment Inc. television series *Angela Anaconda* (see Figure 1–6). This is a cut-out animation show that is produced entirely with computers. While traditionally drawn television shows take an average of 6 to 9 months to complete after the voice track has been recorded, *Angela Anaconda* is ready for delivery in three weeks. It all depends on the style of the show. It should also be noted that the increased speed in production is typically a direct result of being able to spend substantial time and money to develop and tailor the necessary software required for the show. These funds have to be spent up front in order to secure a functional production pipeline that will support the progression of a CG show from one stage to the next. This money is also used to cover the development of new software. It is a common misconception that there are existing software products in stores that can immediately result in savings as soon as the decision has been made to produce a show

Figure 1–6 *Angela Anaconda* (© 2000 DECODE Entertainment Inc. *Angela Anaconda* is a registered trademark of Honest Art, Inc. All rights reserved.)

using CG rather than traditional animation. See Chapter 9, "Production," for more information on the 3D CG pipeline.

What are the deciding factors for using CG elements on a traditionally animated show?

Two factors are involved in making such a decision: creative and production efficiency. At times, the director might select to have a CG character or background because of the actual look that the computer is capable of producing. Or, it may be a matter of speeding up production. Speaking in general terms, the option to create a character, background, or prop in the computer becomes a viable one when it is too difficult to animate or paint traditionally or when the element is an integral or recurring part of the show. In this case, the characters that are digitally produced tend to require no subtle acting, but are difficult to animate (such as the monster with multiple heads in Disney's *Hercules* or generic characters such as a herd of traveling oxen). Other items that are great candidates for CG production are vehicles with moving parts (such as wheels) or other types of props that can be easily created and reproduced. In choosing to use CG elements, it is critical to determine how much time will be involved in producing the CG elements in addition to the number of artists needed prior to the start of production. The amount and complexity of the artwork should also be considered in relation to the compositing and rendering capabilities available on the project.

What are the average budget and schedule for an animated show?

To obtain the most recent and accurate figures, we contacted a number of independent production houses and large studios with specific questions for each format. However, it is difficult to say exactly how much a project may cost since there are so many variables. Key items to be considered when putting together a budget include the project's purchase price; the cost of the key creative talent attached to the property; the type of story being told; the style, technique, and complexity of the animation; the format; where the animation is being produced; and the delivery schedule. (For more detailed information on how to budget, see Chapter 6, "The Production Plan.") Figure 1–7 presents a sample budget and schedule for features, direct-to-video, and television projects.

The budget for a feature film can be as low as 15 million dollars and as high as 100 million dollars and up. Direct-to-video projects range from 5 to 25 million dollars. A television series, depending on the number of episodes produced and the complexity of animation, has a very broad budget range. A low-budget show can start at 250,000 dollars per episode, while more high-end shows such as a primetime show like *The Simpsons* (see Figure 1–8) can reach over 1.5 million dollars.

THEATRICAL						
FORMAT	LENGTH	AVERAGE FOOTAGE	AVERAGE # OF SCENES	DELIVERY FORMAT	PRODUCTION SCHEDULE	AVERAGE BUDGET (U.S.$)
FEATURE - 2D and 2D/CGI COMBINATION	75-85 min.	6750-7650	1250-1500	35mm, 70mm film	2-3 1/2 years	Low $15,000,000 High $120,000,000
FEATURE - 3D CGI	75-85 min.	6750-7650	1350-1700	35mm film	2-3 1/2 years	Low $25,000,000 High $100,000,000

FORMAT	LENGTH	AVERAGE FOOTAGE	AVERAGE # OF SCENES	DELIVERY FORMAT	PRODUCTION SCHEDULE	AVERAGE BUDGET (U.S.$)
VIDEO - 2D	75-82 min.	6750-7380	900-1100	D-1	1-2 years	Low $5,000,000 High $25,000,000

DIRECT - TO - VIDEO

TELEVISION						
FORMAT	LENGTH	AVERAGE FOOTAGE	AVERAGE # OF SCENES	DELIVERY FORMAT	PRODUCTION SCHEDULE	AVERAGE BUDGET (U.S.$)
SHORTS - 2D	7 min.	630	60-130	D-1, D-2 Digital Betacam	3-6 months per episode	Low $75,000 High $650,000
NETWORK SERIES - 2D	22 min.	1980	300-450	D-1, D-2 Digital Betacam	9-12 months per episode	Low $350,000 High $1,500,000
NETWORK SERIES - 2D CGI and 3D CGI	22 min.	1980	350	D-1, D-2 Digital Betacam	14-18 weeks per episode	Low $300,000 High $450,000
CABLE SERIES - 2D	22-28 min.	1980-2520	250-475	Digital Betacam	3-12 months per episode	Low $250,000 High $850,000
TV SPECIALS - 2D	22 min.	1980	450-600	D-1, D-2 Digital Betacam	9-15 months	Low $650,000 High $1,000,000
	48 min.	4320	800-950	D-1, D-2 Digital Betacam	12-18 months	Low $1,200,000 High $2,000,000

Figure 1–7 Sample Budget and Schedule for Features, Direct-to-Video, and Television Projects

Figure 1–8 *The Simpsons* (TM and © 1998 Twentieth Century Fox Film Corporation. All rights reserved.)