

Angie Jones

<http://www.spicycricket.com>

<http://www.thinkinganimation.com>

### **-Gnomon Job Strategies Talk-**

There is no genius, only people who work very hard to get good at what they do.

“If people knew how hard I worked to get my mastery, it wouldn't seem so wonderful at all.”

Michelangelo di Lodovico Buonarrotri Simoni

#### **Bio Angie Jones:**

Animation Supervisor, Angie Jones, has worked in the animation industry for more than 12 years with a wide ranging experience in film, commercial, television and video games. She specializes in character and creature animation and enjoys moving back and forth between the "sweet and endearing" to the "evil and deadly." Angie's strengths include pre-visualization, early development of motion and character personalities, leadership and mentoring of animation teams, pipeline consulting and organization of shows both film and commercial. Currently, she is available for off-site or on-site production. She also develops original content...go to <http://www.spicycricket.com>.

Angie Jones has worked on 12 features, 16 commercial spots, and 32 AAA PSX-PS2 video games including:

DISNEY'S 50TH ANNIVERSARY COMMERCIALS

THE HITCHER

ZOOM: ACADEMY FOR SUPER HEROES

STEALTH

PAN'S LABYRINTH

THE CAVE

NATIONAL TREASURE

SCOOBY DOO 2

GARFIELD

CHRONICLES OF NARNIA

FREDDY VS JASON

XMEN 2

STUART LITTLE 2

ODDWORLD: ABE'S EXODDUS & MUNCH'S ODDYSEE

DINO CRISES 3

Angie has also written a book with her co-author Jamie Oliff on animation called Thinking Animation <http://www.thinkinganimation.com/> published by Thomson Course Technology.

Check out Angie's blog for the latest going on in Animation and Visual Effects  
<http://thinkinganimationbook.blogspot.com/>

## Outline

### I. Intro. What makes a good artist?

1. "Good" in the sense of artistically mature,
2. second, in the sense of technically proficient and savvy,
3. and lastly, "good" in the sense of relatively stress-free people doing what we love doing.
4. The term "digital artist" was almost nonexistent as few as 20 years ago. There weren't tools to do what we do today in visual effects and animation 20 years ago. The industry has grown large and fast in a very short period of time.
5. In the 1980's, people running around with no idea what digital artistry is all about. Because the field was so new, people were being hired with no experience or even worse a varied experience in a lot of things.

### II. Some History

1. Specific ideas visible in the history of digital artistry important to understand.
  - a. In the 80's, one artist and one programmer made one digital artist having entirely different minds and backgrounds.
  - b. In the early 90's, entire scenes in film and television projects began to merge both sophisticated computing knowledge with the basics of visual design and aesthetic problem solving. Digital art had a new set of problems that had never been applied to art before.
  - c. The influence of technology upon the art of filmmaking changed Visual Effects and Animation production forever. This new approach to hiring people was not familiar to the film industry's long-term apprenticeships approach to cultivating production talent.
  - d. Enter late 90's, digital artist began to be strongly affected by pure economic forces - quality and well roundedness is replaced by skill sets gained in 3-4 months of training. In the early 90's the software skills became more important than the actual artistic talent and acting skills that takes years to develop.
  - f. By 2000, the entertainment industry and the general public grows more expectant of first-rate, realistic digital effects. More selective hiring criteria for digital artists begins.
  - g. We have come full circle. Now the public and the industry are educated on what is good digital art and the expectations are higher. Understanding of the basics and fundamentals of the profession are now equally important to the software.

2. So, where does that leave us? Find out what you need to know and learn it somehow and get the job. Forget the hype and ground your self in the arts and computer sciences. Attending Gnomon is the first step. Get the tools, skills and talent you need to land that job.

### III. Defining yourself as a Digital Artist

#### 1. What Type of Digital Artist? Finding Balance.

- a. This term has different meanings and expectations in different segments of entertainment production. (see list at the end of this document)
- b. Digital Artists are building their careers moving from one type of digital production to another.

#### 2. What a Digital Artists Is and Is Not.

a. Anything associated with the entertainment industry uses hype to define itself. Unfortunately this is a fact. Especially in Hollywood, people tend to concentrate on what software they did the work on instead of what they could do no matter what software they are using. This point reflects on grounding yourself in the arts and computer sciences.

b. "Core and Glitz" skills.

i. A core skill is a body of knowledge associated with either a professional degree and or long term association with a specific body of knowledge. Core = Basics and Fundamentals. For example: Full understanding of the "Principles of Animation" and their use in CGI.

ii. A glitz skill is a specific set of abilities for a specific software package on a specific piece of hardware. Glitz = Software specific Issues. For example: mel scripting, rigging tricks, understanding eh tools to work better etc. in order to animate in CGI.

c. Natural selection. It's that simple. The people who get the jobs will be the ones with the most core AND glitz skills together with a sense of reliability and maturity as well as the added skills they have to push them past those "who just fulfill the needs of the scene."

c. The hybrid digital artist - both technically and aesthetically savvy. You got to have a balance of both sides of the coin. Work on the part of your core or glitz skills that need development.

d. Finding ways to distinguish your talents with core skills.  
Things to do to accomplish this:

- i. Go to Professionally accredited Characters Classes,
- ii. Life Drawing is a must,

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- iii. Traditional Cel Animation studies,
- iv. Sculpture Classes

What else do you bring to the company besides your computer skills. Have others critique your work so you can find out what skills you are lacking.

e. Ability to work within a rapidly developing profession. Do not be a software jockey. Someone who is not afraid of crossing platforms, software and skill sets in order to get the job done is a more valuable person.

f. Self Assessment. You have got to be your own worst critic. You have got to be able to trash something you have worked weeks on because you know you can do better.

#### IV. How to Get a Job

1. \*Know what you want to do, where you want to go. This is simple, but KEY to getting there.

a. Know what you want to do...this is key!!!

b. If you want to do something specific in this industry, you must find a way to visually prove it first. I can't hire you if I don't see it. Don't send me a reel full of spaceships flying around if you want to do character animation.

c. You cannot set a path for yourself until you at least have a vague idea of where you are going. If you are still unsure, take classes and expose yourself to all the different facets of CG and it will reveal itself to you.

b. Know yourself and your capabilities. Generalists can be valuable...but don't stand out - find out what you need to know, learn it, try again. Just knowing some software and little about animation will not cut it in today's market. The expectations are too high. You must be competitive in a competitive field.

c. Shamus Culhane said in his book "Animation, From Script to Screen", "...over 90 percent of any group of workers are unwilling to further their abilities by study -- unless it happens during working hours and the boss supplies the means. ...So, for the ambitious neophyte, these figures should be reassuring: The competition consists of less than 10 percent of the animation profession."

c. Digital artists - getting more technical all the time. They are continually raising your personal threshold of understanding of aesthetic or technical issues. Raise your technical skills. Go back to school and/or buy books at college bookstores. Special classes specific to the work you want to do. If they want UNIX, learn UNIX...period.

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## 2. Attacking your weaknesses, based on your background. Balance your skills.

a. Transferring from another career? Your largest obstacle will be convincing others that you have enough skill to sit in front of a 5 thousand dollar work station and help keep the company afloat. People in this particular situation should promote their work ethic and maturity as additional skills to sell themselves.

b. Already enrolled and focused in digital artistry? If you do intern, take it seriously, and you'll have a very good chance of getting a real job there. Interns: be reliable, respectful, professional, DO NOT give off sense of entitlement. Many times a company will be in the position to hire a new person and have the choice between an intern who already knows the set-up, software and structure of the company, or an outsider. If you were an intern they looked upon as reliable, they will call you back.

c. Getting through the door with support positions. Tape operators, network support, computer support, PA's and render support. Get access to a computer like describes in a. and then use it during off hours to get the experience. Take advantage of access to the people around you.

d. While you are submerged in all the great tools, learn to ask yourself how and why - all the time. Forgetting to continually expand your knowledge of computer graphics will work against you. Actively pursue and appreciate all forms of time saving and experimental pursuits. Buy trade magazines and go to conferences that are technically driven so you understand why a new dynamics plug-in works and not just how to make the software run for your purposes and your purposes only. Ask questions about different software and what makes one better than the other, then try to find a creative way to emulate that function in the software you are using.

e. Got a computer science degree? Get your nose out of the shader you're hacking and learn to paint a texture map. Those with programming experience have the capability to leap frog their competition simply because they are creating a tool, not just using it. You determine how far and for what purpose you use your talents. Push yourself and let the good digital artists push you as well. The new digital artist of the 90's must have both great programming skills as well as an understanding of motion and the arts.

## 3. Finding Work and Getting Hired.

a. When starting out, saturate yourself with information about the industry. Magazines, books, animation festivals, forums, blogs, trade shows, and conferences.

b. Collect and maintain contacts. Reach out to these people, show them your work, and really listen to their comments and criticisms. Ask to see their work, their work environment, their work habits. Send new work to your contacts all the time. \* I've found that many people in this industry respond very favorably to you AFTER you've quit talking and actually done something to talk about. Continue a dialogue with HR people to

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show that you are improving and taking their criticism seriously. Use email. It will not put the person on the spot and they can respond in their own free time.

c. Through these activities you will gain much needed skill and reel material, earn the respect of those in a position to recommend you for jobs and critique your work.

d. When a human resource director tells you something specific they are looking for, go out and learn it, polish your reel, then try again. Listen to what they ask for and DO IT! If you don't enjoy doing that part of the job then maybe you are trying to get a job at the wrong studios.

e. Do not get frustrated, simply WORK to get your job. When you put in the hours and act on the criticism your reel and resume receives, people will know it. The absolute worst thing you can do is nothing except talk. The digital artist may spend much time writing and using code, but all that's important is the image you produce, because that's what companies get paid for.

#### 4. The Resume.

a. The resume. Find several entertainment related resumes and use these to format yours. Keep it simple, one page.

b. The cover letter should be professional and brief, yet also give a sense of what kind of person you are. Keep in mind your distinguishable core talents. Attention to detail is important! Remind them of your core skills. Try to keep it to one paragraph.

c. Remember, part of the reason they're hiring you is for your visual skills and attention to the finest details. Please no grammar or spelling errors!

#### 5. The Portfolio.

a. Should convey a sense of professionalism through the quality of the printed or sketched image.

b. 8.5" by 11" Book. Copies Only. Do Not send Originals. Bigger books get cumbersome.

c. If hand drawn, the images chosen should be the best of your best. 8-10 images is enough to inform the viewer with the level of your visual skills. Ask the HR dept. if they want a portfolio at the time of reel and resume...different companies want different things.

d. Online portfolios should be clean and easy to navigate.

## 6. The Demo Reel.

- a. Very simple. Again, only your best work here please. Be your own worst critic.
- b. When finished, give to mentor, get criticism, re-render and re-animate until blue in the face. \*Be extremely hard on your self here\*.
- c. Most reels have similar ceilings of creativity and technicality. Find a way around this fact. Less & better quality is always best.
- d. The reel should make very limited use of filtered effects. The intro should not be longer than the content. Your name, contact info and that is it...no fancy animation is needed.
- e. The reel doesn't require fancy editing, but should exhibit a high degree of professionalism in how you choose to represent yourself. Finished product centers around your work and your work only!
- f. Any music? keyword: tasteful. Only use Metallica if your animation is a strong and bold as Metallica is.
- g. Make sure the reel centers around your sequences and not someone else's audio tracks and cheesy filtered effects.
- h. Label everything, send no masters, most recent work first, and include credit list of what you did using what tools.

## 7. Keeping the Work - The Issue of Time.

- a. Acknowledge the difference between your time and your employer's time. When telling the producer how long it will take you to complete something...always guesstimate it taking 4 times as long as predicted.
- b. Make internal deadlines. AM and PM expectations.
- c. ALWAYS look for ways to streamline your work. Learn to savor the task of time related problems.
- d. Do not confuse your employer's time with the time I mentioned earlier concerning your endless personal development. Learn to respect your employer's needs first - using your personal time for personal discovery and self advancement. Realize that sometimes home life is just non-existent after working 60 hours for your regular job you must make time to work on your own self development.

## V. Some Things I've Learned Over the Years.

1. Your success as a digital artist is based on your understanding of problems based on previous experience and your knowledge of the tools you use, or can create. In other words...be solution oriented!

a. Never assume you are "above" a particular job description or category. Your ability to solve problems is based on the skill sets you build over years of investigative problem solving in many different job positions.

b. Complaining about doing jobs artists think are "below" their abilities? Stop, these are job opportunities to learn more.

c. Embrace working outside of your element...its pushes you as an artist.

## 2. "Pigeon-holing".

a. Pigeon-holing is a condition which many employees feel themselves because of their lack of willingness to be aggressive in an aggressive industry.

b. Being a digital artist is about keeping pace with the endless developments around which the career is based.

d. Advancement in this industry - about putting yourself in a position to advance. Earning the respect of your boss and your peers technically and artistically. More specifically, enhancing the breadth of your knowledge outside the scope of your current job title. Again, what skills can you offer above and beyond the average Joe artist.

## VI. Conclusion.

1. When you think a project is finished, you've only just begun. Successful digital artists demand more from themselves technically and artistically with each successive project.
2. "Front Loading." Learn to live comfortably with these aspirations by planning for the extra time required. Stick to your guns on what you want to do...and make it happen.

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*What is the difference between a creature animator, character animator, fx animator and motion design animator?*

Animators come in all forms in the Computer Graphics Entertainment Industry. There are Special Effects Animators (i.e. Twister, 5th Element Matrix, Star Wars), Flash Animators (i.e. Homestarrunner, Mondo Media, Joe Cartoon), Broadcast Motion Design artists (i.e. Spinning Logos, Advertising, Multimedia, Sports Statistics), Creature Animators (i.e. Star Wars, Jurassic Park, Godzilla, Kong), and Character Animators (i.e. A Bug's Life, Shrek, Pillsbury Dough Boy). Below are some brief definitions of each. Many of these disciplines overlap on shows, so refer to these definitions loosely.

**FX Animation:** usually involves forces like wind, rain, snow, explosions, etc. This is a very difficult form of animation to produce because it is based in a reality. We all know what a wave, tornado or explosion should look like so it involves a lot of math, cinema and camera work to make it convincing.

**Flash Animation:** refers to animation produced with the Flash software that utilizes vector and bitmap graphics. The software is great at producing limited animation for television, commercials, games and web content.

**Motion Design Animation:** these animators have to be fast with turnarounds, have a terrific sense of design and wear many hats. Everything from that spinning football that reveals the scores for your favorite football game to the logo that flies across your favorite morning show falls into this category.

**Creature Animation:** Animation based on life-like motion that is infused with weight and believability, and "usually" obeys the rules of gravity in the real world. Mechanics of motion and weight are extremely important to this believability.

**Character animation:** When life is breathed into an artificial character creating the nuances, gestures, distinct movements, and patterns of speech that will make an audience believe that the character is actually alive and thinking.

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*Describe a typical workday in CG, as an Animator:*

This is another broad question and depends on which area of the industry listed above you might be working in. A general workday *during a production* for a CG animator would be about *10 - 12 hours long*. This may seem intense, but it is standard in the industry for games, commercials and film. The good thing about the job is that we also have "*down time*" in between projects that equals sometimes as much as 6 months of a year. You can use this time to get rested, improve your technical skills or be creative in ways you cannot within the production atmosphere. If you are freelance, your "downtime" might be more or less than those of staff depending on your ability to get work.

The hours during "down time" are much more lax if you are staff employee. Also, because the hours are so intense during production, the set hours at *most studios* are pretty open. You can come in 10am and work til 8pm or if you are an early bird - come in at 7am and leave at 5pm. If

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you are productive, you also take as many breaks or as long a lunch as you want at most studios. Many studios provide meals for you to keep you working at your desk. A computer animator is usually at their desk working on a computer with 3D software. However, you do have creative meetings and dailies to go over the progress of your shots to attend here and there. Again this applies to commercials, games or film. Of these creative meetings, you will also attend the necessary production meetings. These are usually held every week, in order to keep abreast of what is going on in all the departments or the studio. Finally, contact with the producers and art directors is very important to find out if your work is going in the right direction creatively and to get the animations approved. You will need good communication skills and a good attitude under pressure.

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*What is the difference between a studio that creates "In-house" content vs. one that is hired to work on a show?*

When the content is *owned* by the studio like a Disney, Dreamworks, Pixar or game company like Oddworld Inhabitants and CAPCOM, the process of approval is a little more direct. This means these studios create their own product and intellectual properties. This *creative in-house situation* enables so much more control creatively than the "studios-for-hire". The levels of approval stop at the owner of the studio and do not go to outside sources that are paying the bills. These studios also have many more people hired on as staff employees because they can ensure the workload is steady, by continually producing their own content. This kind of studio is not subject to the waves of production and bidding on projects. Commercial houses rarely fall into this category since most products do not have their own studio that makes commercials. Instead they have a marketing team that helps drive the studio they hire in the right direction.

A "studio-for-hire" like Digital Domain, Sony Imageworks, Rhythm and Hues and Will Vinton are working for the Director of a Film (i.e. Steven Speilberg, Robert Zemekis or Michael Bay) and the Production Company (i.e. MGM, Paramount, Fox), or a Client and their Ad Agency (i.e. Pillsbury, M & M, Coke) and in the case of games a Developer or Platform (i.e. Infogrammes, RockstarGames, XBox, Playstation). These studios get all kinds of different jobs involving many different styles of animation. Their staff is always in flux according to what they are bidding on and what shows are in house at the time. Freelancers make up a big part of these studio's work force because of the seasonal nature of the work.

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*What kind of equipment and tools do CG animators use?*

**HARDWARE:**

The standard machines used for CG animation in the entertainment field are Silicon Graphics Machines (SGI), PC and even a growing Macintosh base is now happening. These machines are pretty expensive workstations, starting at \$3,000 and going upwards of \$10,000 (USA dollars). However, you can introduce yourself to the field through the new less expensive PC workstations also, as they are getting cheaper and faster everyday. A good PC with enough power to do CG can be bought under \$1000 these days if built from scratch and can be upgraded as your interests expand.

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#### SOFTWARE:

We do not want to start a software war here. There are many applications out there that create beautiful images and animation. Here is a list of the top ones out there.

[Autodesk now owns Alias/Maya products and that was quite a merger.](#)

[Houdini](#) is another favorite amongst animators.

[Softimage](#) is another 3D package that is used for film and television mostly.

[Lightwave](#) users are the most loyal out there.

[Hash Animation Master](#) is a great piece of software that starts at \$200.00 for the base package and runs on both PC and Mac desktop machines.

#### TRADITIONAL:

Before jumping into CG, it is best to try your hand at Traditional Cel Animation. The hands-on Traditional approach with pencil and paper (like Disney animators) will teach you so much about weight, timing, lag, overshoot and just plain teach you the basic mechanics of how things move. We encourage you to explore this avenue first, whether or not you can draw. Working on every single frame of your animation on paper will teach you more than you realize, until you actually do it. It is less expensive too! The classes at [1on1animation.com](http://1on1animation.com) can give you a boost in the right direction, check them out!

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#### *What is the recommended training for a CG animator?*

As the field matures, it is becoming more and more critical you attend a school well known for animation and complete your degree. The demand for animators today is so high that many visas are being made available to those who are more qualified outside of the U.S. This is why it is so important that you get the best education you can to be competitive in today's job market. Do not be discouraged! The jobs are there, you will just need to prove yourself worthy of sitting in front of that expensive machine! Although Cal Arts does not have the kind of instructors they once had in their heyday or animation, the school still holds a valued esteem among animators as creating a pedigree of animator that is above the rest. If you can go to this school, the name alone and your connections made while attending will open many doors for you!

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#### *What is the cost of animation schools today and length of attendance required?*

Levels of cost of animation schools vary from \$1,400 - \$15,000 a semester. There are many financial aid programs and some companies even sponsor students to go to these institutions, since the amount of talent is far less than the demand for animators. Some of the recommended schools are 4 year institutions and some are only two year programs. The two year schools (Vancouver Film School, Gnomon) concentrate only on computer graphics and provide no core classes involving history, traditional animation, math sciences, etc. There is something to be said about attending a 4 year school that provides a wider exposure to other things besides how to animate on a computer. Also, a student who has spent 4 years at an institution has had time to develop and mature as an artists and will be more prepared to work in a professional environment.

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### *What can we expect to make as an animator?*

The average salary of those who enter the industry today is \$75,000 a year, which comes out to approx. \$38.00 an hour and \$1400 a week (there are approx 2000 working hours in a salaried year). As you progress as an animator or whatever part of CG you choose to be a part of, you can expect anywhere from a 3% to 20% increase in salary a year. The average salary span would be from \$75,000 to as much as \$250,000 and upwards for animation directors. The CG field is wrought with one problem. Since most of the work out there is provided by out-of-house clients...many CG artists are hired for a project and then laid off when the project is complete. There are jokes about working in CG animation that we are the migrant workers of the millennium. You must save your money, so that if you are out of work you can float until your next gig. Luckily, animators are paid very well for their work and can manage these highs and lows of the CG industry. In turn, CG freelancers reap the rewards of only working about 8-6 months out of a year if they manage their finances well.

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### *What are the advantages and disadvantages to working in animation?*

We mentioned the biggest disadvantage of this field is the insecurity and unstable nature of consistent work. You must go where the work is. The work comes and goes and many animators choose to freelance in this atmosphere. This kind of workforce exists in many other fields besides animation and is becoming more of the norm today considering the flux of virtual offices through the internet and the increased use of temp work forces.

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### Reality of today's workforce:

Most of our parents told us if we went to college, we would find a good job and work there forever. Not true today. With temp agencies, headhunters and freelance contracts fueling the workforce, it becomes harder today than ever to work anywhere for more than five years. Five years at one company in the CG industry is a lifetime and very rare. Most projects last anywhere from 4 months (broadcast series) to 2 years (film). This could be a disadvantage or an advantage depending on how you look at it. If you save your money and are smart with your expenses, you can only work 6 months a year and really enjoy life when you are between jobs. Some studios offer money or incentives to encourage their staff animators to pursue other interest during downtime. This way they have less burn-out among staff animators. Beware, CG is a very creative field, the time constraints on most projects can make it feel like work sometimes, just like any other job.

### *Advantages of CG Field:*

.....you don't wear a suit. Average dress for CG people are t-shirt, jeans, sneakers and headphones to tune out the world while you work

.....you don't have to work standard hours. Most studios are pretty open to what hours you would like to work as long as you get your work done

.....you can see your contribution to the world through the high profile product of entertainment.

.....you are creating and learning something new every day because this field is ever-changing.

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### *Trends and Opportunities:*

The only economic change that effects the CG industry is the flux of the type of entertainment people flock to each year. The internet is opening even more worlds up to this industry and we believe as long as you are working with computers you are guaranteed a solid future for years to come. As long as you are flexible to the advancements in technology (virtual worlds on the horizon), you should have a long and fulfilling career in CG.

### *There are some specific ideas visible in the history of digital artistry important to understand:*

- a. In the 80's, one artist and one programmer made one digital artist having entirely different minds and backgrounds.
- b. In the early 90's, entire scenes in film and television projects began to merge sophisticated computing knowledge with the basics of visual design and aesthetic problem solving.
- c. Relationship not similar to the film industry's long-term apprenticeships approach to cultivating production talent.
- d. Expectant clientele, fiction created from pure intellectual problem solving. The approach to digital art had a new set of problems that had never been applied to art before.
- e. Enter late 90's, digital artist began to be strongly affected by pure economic forces - quality and well roundedness is replaced by skill sets gained in 3-4 months of computer training. In the early 90's the software skills became more important than the actual artistic talent and acting skills that takes years to develop.
- f. The Millennium!-- Entertainment industry and the general public grows more expectant of first-rate, realistic digital effects. More selective hiring criteria for digital artists begins. Full circle. Now the public and the industry are educated on what is good digital art and the expectations are higher understanding of the basics and fundamentals of the profession are now equally important to the software.
- g. Find out what you need to know and learn it somehow and get the job. Forgetting hype and grounding yourself in the arts and computer sciences. Go back to school if necessary to get the tools, skills and talent you need to land that job.

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### *Core and Glitz Skills:*

In order to excel in CG you need to cover both sides of this important coin. Core and Glitz skills are necessary to excel in this field. A core skill is a body of knowledge associated with either a professional degree and or long term association with a specific body of knowledge. A glitz skill is a specific set of abilities for a specific software package on a specific piece of hardware.

Core = Basics and Fundamentals. For example: Full understanding of the "Principles of Animation" and their use in CGI.

Glitz = Software specific Issues. For example: Setting up skeletons, sliders for expressions, etc. in order to animate in CGI.

### *Foot in the door:*

The most important thing you need to know about working in CG is communication. If it takes a long time for you to communicate your vision to others you will sink. The second most important

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thing to arm yourself with is a good attitude. This is true for most jobs, but especially in the world of CG. The hours are long and things get intense so you need to be able to brush it off when the going gets tough. Once you decide if you're more of a technical minded person or an artistic person, you can devise your plan of attack. If you are more technical, try to get into studios through the system administration (upkeep of the computer systems). Stay late and prove that you can migrate into other positions and the people in charge will notice. If you are more of the artsy type you could attempt internships as a foot in the door. Most studios sponsor internship programs because the demand for good artists is high compared to the supply. Since CG encompasses so many disciplines you could come from most any background and bring skills to the table.

Important skill sets to concentrate on are: Sculpture, Photography, Video, Film, Mathematics, Drawing, Anatomy, and any art form like music dancing, acting, etc. High school courses you should be concentrating should cover the aforementioned disciplines. Again, there are many people who stop in mid life and pursue a career in CG. James Cameron (Director of Titanic) used to be a truck driver! In his spare time he would go to Cal Arts and get books and class syllabuses for film and Xerox them to no end. He studied that mound of paper and look where he is today! You most marketable part of your presentation is your portfolio/demo reel. Next, would be your own personality. It is very important to get along with people and have good communication skills in this field. we cannot stress this to you enough. Good Luck with your career endeavors!

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*What exactly are the positions available in the CG industry?*

Character Animator  
Creature Animation  
Technical/Mocap Animator  
Digital Painter/Textures  
Modeling Technical Director  
Shader Technical Director  
Lighting Technical Director  
Render Wrangler  
Music/Sound Director  
Director  
Art Director  
Story Developer  
Production Designer  
Sculptor  
Executive Producer  
Producer  
Producer Assistant  
Programmer

Within the Computer Graphics industry there are many different positions. Below is a list of some of them with a brief description, qualifications, salary and training:--all of the salaries were estimated from information at <http://www.awn.com/MPSC839/MNWG.HTM> or our own experience

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## PRODUCTION STAFF

### CHARACTER ANIMATOR

Character Animators are strictly in charge of making characters come to life through movement, so that the audience can see them think, feel and act. While some animators help out in lighting, set-up, modeling, scripting and other areas of production, the job itself is primarily concerned with storytelling through motion.

**Qualifications:** Anyone who demonstrates brilliance as an animator would be perfect for this job. While some familiarity with technical tools can be helpful on the job, computer experience is not always required. Many animators land jobs in CG with stop motion or traditional cel experience only. We encourage you to attend one of the suggested Animation Schools because the competition is fierce today with the growing industry and the recommended schools apply the important principles of animation in their programs.

**Positions and Titles:** Entry Level--Assistant Animator, Animator, Senior Animator, Lead Animator  
**Salary Range:** \$40,000 - \$90,00 + a year

**Suggested Training:** A 2 or 4 year degree from a qualified animation school (see Animation School List for the top animation schools). Possible training under a mentor animator that has worked in the field for many years can help too! Your reel is EVERYTHING! There are people out there who have only attended a few semesters of school and have an incredible reel, but these folks are few and few between. Studios like PIXAR, PIDI and ILM recruit directly from schools on the listing provided like Cal Arts, Sheridan and Ringling.

### DIGITAL PAINTER

Traditional and digital painting techniques are both in demand. Digital painters create textures, flats, backdrops, character patterns and colors, and graphics; facilitate the use of texture maps (for shaders) and backgrounds (flats) through digital painting; retouch and enhance faulty computer renderings; work under the Art Director in pre-production to develop the look of the film, including particular sets and objects. Sometimes their duties even overlap into storyboards.

**Qualifications:** Artistic portfolio-driven, not usually computer-skill driven. Painting and illustration work in a portfolio should demonstrate consistency and control of brush use; the ability to create surface texture; solid knowledge of light and how it affects objects; staging as it applies to color; and ability to key environments with color. Skills needed are experience in painting texture and surface detail, scenic/background creation, color knowledge, and the most rudimentary computer basics.

**Positions and Titles:** Assistant Paint Artist, Paint Artist, Senior Paint Artist, Lead Paint Artist  
**Salary Range:** \$30,000 - \$50,000 + a year

**Suggested Training:** A 2 -- 4 year degree at one of the suggested art schools would be best. Like the animator the portfolio is everything and this job can be attained with a strong portfolio aside of schooling. However, art schools provide the basic fundamentals in drawing, painting, light and texture needed for this position.

### MODELING TECHNICAL DIRECTOR

Modeling TDs work from modeling packets (drawings and all kinds of visual info) produced by the Art department and turn them into three-dimensional geometry for use in the production. Equally important is to provide articulation points in the geometry that can be used by animators in an intuitive way and make deformation of the skin easy.

**Qualifications:** A supreme understanding of how to build a model in 3D software is the basis of the position. Ability to sculpt is equally important in visualizing the objects in 3 dimensional space.  
**Positions and Titles:** Modeler, Senior Modeler, Lead Modeler, Modeling Technical Director

**Salary Range:** \$40,000 - \$75,000 + a year

**Suggested Training:** A 2 – 4 year degree or experience with CG modeling software or equivalent, especially in production or industrial design environments.

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### SHADER TECHNICAL DIRECTOR

Shader TDs are responsible for taking a description of the appearance and optical properties of an object, and creating a "shader", a procedural embodiment of that surface in software shading language. The color and the ways in which an object reacts to light are all determined by shaders. Shader development employs a wide range of techniques, including 3D-paint and regular texture painting done by the Paint Department, existing shading functions, and original algorithmic work. The Shader TD works with the modeling, art, digital paint and lighting departments to create shaders which serve the aesthetic goals of a production. Those needs may be expressed as drawings, paintings, photographic and motion picture references, and/or actual reference objects or locations, but may also take the form of vague verbal descriptions accompanied by furious hand waving.

**Qualifications:** A 2 – 4 year degree or experience with CG shaders or equivalent, extensive knowledge of graphics programming and techniques, including rendering, lighting, illumination models and linear algebra and a compelling portfolio.

**Positions and Titles:** Assist. Shader, Shader Artist, Sr. Shader, Lead Shader, Shader Technical Director

**Salary Range:** \$40,000 - \$90,000 + a year

**Suggested Training:** A 2 --- 4 year degree at one of the suggested art schools would be best and any additional courses in computer sciences are also important. The ability to fuse technology and art is very important to the Shader. Like the animator the portfolio is everything and this job can be attained with a strong portfolio aside of schooling. However, art schools provide the basic fundamentals in drawing, painting, light and texture needed for this position. Good "people-skills" are essential, as much of what the Shader TD does is intimately tied to the work of other departments. Ability to work under deadline pressure and under an Art Director also essential.

### LIGHTING TECHNICAL DIRECTOR

Computer-graphic scenery requires lighting in a fashion exactly analogous to live-action photography and cinematography. Lighting artists create lighting effects for each shot to produce a color balance and range that is consistent with the aesthetic and emotional needs of the shot, as determined by the Art Director and Director; make each character and object stand out from its background and reveal its shape; subtly helps direct the viewer's eye to the important elements of the scene; and has aesthetic appeal. Similar to animators, lighting artists use interactive tools to do their work. Therefore, lighting talent takes precedence over technical expertise.

**Qualifications:** A 2 -- 4 year degree or experience with CG lighting or equivalent, extensive knowledge of lighting techniques. A portfolio of illustration work demonstrating a facility with light OR compelling photography or cinematography; production experience helpful.

**Positions and Titles:** Assistant Lighter, Lighting Artist, Senior Lighter, Lead Lighter, Lighting Technical Director Salary Range: \$40,000 - \$90,000 + a year

**Suggested Training:** A 2 --- 4 year degree at one of the suggested art schools would be best. Like the animator the portfolio is everything and this job can be attained with a strong portfolio aside of schooling. However, art schools provide the basic fundamentals in drawing, painting, light and texture needed for this position. Good "people-skills" are essential, as much of what the Lighting TD does is intimately tied to the work of other departments. Ability to work under deadline pressure and under an Art Director also essential.

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### RENDER WRANGLER

Render Wranglers take the shots as they are finally animated and lit, deploying and managing the resources needed to create final digital images suitable for scanout to film. The process includes managing the "render farm" of workstation computers, untangling Unix directory structures, debugging files, systems maintenance and programming, and checking finished frames for consistency with the expected result.

*Qualifications:* Unix shell scripting and systems-level programming; familiarity with 3D computer graphics; personal organization and focus.

*Positions and Titles:* Render Wrangler

*Salary Range:* \$30,000 - \$50,000 + a year

*Suggested Training:* This tends to be a transient position. It's a kind of a "foot in the door" position for many who move up the ranks of producer.

### MUSIC/SOUND DESIGNER

Sound designers produce feature-quality tracks for CD-ROMs and beyond. A sound designer's responsibility is to enhance and authenticate animation, living up to the standards and style of the images. The tasks may encompass the entire process from original effects recording through final data compression (including logging, transferring, converting and processing sound files; maintaining databases of sounds, dialog sessions and sound effects; and coordinate media between sound designers, composers and programmers), in a collaborative, personal-computer based production environment.

*Qualifications:* At all levels, experience in CD-ROM development and manipulation of sound on computers, and high-quality examples of recent work.

*Positions and Titles:* Sound Assistant, Sound Designer, Sound Engineer Salary Range: \$40,000 – 75,000 + a year

*Suggested Training:* A 2 or 4 year degree involving sound creation. See the listing of schools.

The same schools listed for animation production have equally great programs for sound engineering. One of the most important parts of being a sound designer is to have more than one style. You will need to accommodate many styles in your work.

### DIRECTOR

The director of any project oversees the entire creative process. The director's primary responsibility is to envision the work as a whole and direct all other creative artists in implementing that vision.

*Qualifications:* A Director must have a portfolio that demonstrates his or her ability to creatively direct a project. Skill at managing, motivating and supporting creative partners is also essential.

*Positions and Titles:* Assistant Director, Art Director, Animation Director, Director Salary Range: \$60,000 - \$150,000 + a year

*Suggested Training:* A director comes from many walks of life. This person has to have quite an extensive background in CG and the production of CG. The director can move up from the ranks of animation, story telling, and even programming. This person should develop the skills to switch gears quickly while speaking with all facets of the production. This is not exactly an Entry Level position and one that is attained after at least 15 years or more in the industry.

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## ART DIRECTOR

Following the plan initiated by the Production Designer, the Art Director fleshes out and develops ideas into real models and forms, and works closely with the Production Designer and technical directors to ensure consistent results and follow-through in modeling, shading, and lighting. Half creative, half management, the job requires a myriad of design, color and lighting decisions to be created and then tracked through the various phases of production (with help from the Art Department Manager). The Art Director implements the Production Designer's vision; knowing what to look for technically, how to catch problems and think of solutions and manage the day-to-day art production.

*Qualifications:* Ability to visualize, design, draw, and manage production of visual elements, and realize the Director's and Production Designer's vision. Positions and Titles: Assistant Art Director, Art Dept Manager/Producer, Art Director

*Salary Range:* \$60,000 - \$150,000 + a year

*Suggested Training:* we felt the need to explain the Art Directors position more clearly even though it basically falls under the above Director position. Many times there is a need for multiple Art Directors to handle different art departments and keep the consistency of the product throughout.

## STORY DEVELOPER

Ability to tell a great story that is both dramatically compelling, humorous and family-friendly. The story department is a group that works as a team to create stories, and its stars understand entertainment, comedy and drama as well as filmmaking, cutting, timing, staging and composition. The ideal story developer is an artist who can also draw storyboards that, though simple or sketchy, communicate acting, ideas, emotions, moods and feelings: drawings that live.

*Qualifications:* Demonstrated ability to develop the kinds of stories described above; personality capable of close collaboration with others; ability to render storyboards desirable. A reel and/or storyboards that show mastery of the above skills are very helpful.

*Positions and Titles:* Story Board Artist, Story Developer

*Salary Range:* \$40,000 – 100,000 + a year *Suggested Training:* A 2 or 4 year degree in any major that requires a lot of creative writing. Communication and Advertising majors can also be helpful. Story People also come from many walks of life and are the link between the vision of the director and how it is executed by the production staff.

**PRODUCTION DESIGNER** Works closely with the Story department to define the visual design of a project; identify thematic underpinnings; sketch out major set pieces and moods of film; set color and design guidelines for interpretation by the Art Director; inspire the visual style of a production. Tasks include designing and maintaining the Production Workbook, addressing layout, set dressing, lighting, and other continuity issues. The Production Designer should be the overall Designer and the eye of continuity. *Qualifications:* Production experience at above tasks; ability to design effectively, maintain channels of communication, and keep the "big picture" in mind.

*Positions and Titles:* Layout Artists, Sketch Artist, Storyboard Artist, Sculptor, Assistant Production Designer, Production Designer

*Salary Range:* \$40,000 – 150,000 + a year

*Suggested Training:* A 2 or 4 year degree in any major that requires a lot of creative vision. A strong portfolio and drawing skills are important. The Production designer is another crucial link between the Director's vision and the production staff. Many times sculpture is part of this person's job. See Below.

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**SCULPTOR** Produces traditional scale models of characters for use as reference or actual models to be digitized into the computer as 3D models. This position can overlap in the Production Designers tasks.

*Qualifications:* Strong portfolio; history of completing work to spec and on schedule.

### EXECUTIVE PRODUCER

An Executive Producer is the "CEO" of the business, with responsibility for running the business, overseeing the planning, budgeting, hiring and production processes, managing sales representatives and sales, and determining the focus and direction of the business as a whole.

*Qualifications:* A history of commercial-industry experience, preferably in Executive Production roles, but outstanding performance as a Producer may qualify. Understanding of the commercial advertising community a plus.

*Positions and Titles:* Executive Producer Salary Range:\$80,000 - \$250,000 + a year

*Suggested Training:* This is not exactly an Entry Level position and one that is attained after at least 20 years or more in the industry.

**PRODUCER** A Producer manages an individual project from beginning to end, writing proposals, schedules and budgets, working with the client, and taking overall responsibility for the smooth delivery of the finished work.

*Qualifications:* Demonstrated skills at project management, writing proposals and/or business plans, writing and performing to schedules and budgets, people/sales skills, a high level of overall responsibility. A Producer for Features carries a much greater burden of responsibility than that for Shorts or Interactive and thus requires much greater experience.

*Positions and Titles:* Assistant Producer, Producer

*Salary Range:*\$40,000 - \$60,000 + a year

*Suggested Training:* This is not exactly an Entry Level position and one that is attained after at least 7 years or more in the industry.

**PRODUCTION ASSISTANT** Production Assistants are the "gofers" of a production, running errands, making copies, delivering materiel, etc. A Production Assistantship is the position in a production with the least rigorous qualifications, and is frequently an entrée to the rest of the hierarchy.

*Qualifications:* A high level of personal energy and a willingness to do anything it takes to further a production.

*Positions and Titles:* PA

*Salary Range:*\$40,000 - \$60,000 + a year

*Suggested Training:* producers come from many walks of life. A degree in Business, Communication, or Psychology is helpful, but any degree that requires a high level of organizational and communication skills is a big plus. This is another position that can help you get your foot in the door".

**PROGRAMMER** The programmers are responsible for making the art and the design come alive. All of the graphics. Special effects, character movements and everything else has to be coded into the game. This is not easy, so getting a B.A. in Computer Science is a minimum. You also need to know math and physics to make the game look realistic. One thing you should know is that there is a serious shortage of programmers. The problem is that the number of jobs for programmers is growing fast, but the number of Computer Science graduates is dropping. This means, as a programmer, you will have an excellent choice of positions, and the pay will be good.

*Qualifications:* 4 year degree in Computer Science

*Positions and Titles:* Assistant programmer, Programmer, Senior Programmer, lead Programmer

*Salary Range:*\$40,000 - \$75,000 + a year *Suggested Training:* A 4-year degree in Computer Science is a must. Cal Poly in San Luis Obispo has one of the top rated Computer Science programs in the country, so don't feel like you need to go far to learn these skills.

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## Other resources to reaching a career in Computer Graphics/ Books and Web Sites

### Books for CG Animation---

Below is a list of the books we use regularly in my daily routine as an animator and are all worth every penny!

### Books on Traditional Animation Techniques and Principles

#### [Thinking Animation: Bridging the Gap Between 2D and CG \(You know I had to put my book here!\)](#)

Angie Jones and Jamie Oliff / Published 2007 ISBN: 1-59863-260-4

List: \$40.00

#### [Disney Animation: The Illusion of Life \(This is THE book to have folks!\)](#)

Frank Thomas, Ollie Johnston / Published 1995 ISBN: 0786860707

List: \$60.00

If you get any book, get this one. You will continue to refer to it over the years and even see what you read differently as you grow as an animator.

#### [Animation from Script to Screen](#)

Shamus Culhane ISBN: 0312050526

List: \$14.95

Extremely inspiring and motivating book that describes what it takes to be an animator through the eyes of Shamus Culhane.

#### [Timing for Animation](#)

By Harold Whitaker, John Halas

Printed out of the country, so Barnes & Noble can't get it

Price in Pounds Sterling = £ 19.99 with an additional £ 3.00 delivery

we think we paid \$20.00 or so for the book in American currency

Publication date: October 1990

Thin little paperback absolutely PACKED with all the important information you will need to understand about timing!

#### [Cartoon Animation](#)

Preston Blair / Paperback / Published 1995 ISBN: 1-56010-084-2

List: \$19.96

Great bunch of reference material for poses, arcs, facial, character design, timing anticipation, rhythm, balance, weight, attitude, cycles...we mean you name it!

#### [The Animator's Workbook](#)

Tony White / Paperback / Published 1988 ISBN: 0823002292

List: \$15.16

Step by Step instruction on how to animate for traditional cel. Breaks down the entire process for you.

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### **Books specific to Digital Character Animation**

#### [Digital Character Animation](#)

George Maestri / Paperback / Published 1996 ISBN: 1562055593

List: \$44.00

First book of its kind to introduce the basic principles of animating in CG. Explains in an attempt to be non-reliant on software specific issues how to animate in CG from modeling, lighting, skeleton set-up, animation and rendering.

#### [Digital Character Animation Advanced Techniques](#)

George Maestri / Paperback / Published 1996 ISBN: 1562055593

List: \$44.00

This one is going to be a great continuation of the first!

#### [Character Animation in Depth](#)

By Doug Kelly Paperback / Cd Rom edition Published 1998 ISBN: 1566047714

List: \$59.99

Huge reference resource on tips and tricks to creating character animation in CG from actual working animators.

### **Books with live action photography of motion**

#### [The Human Figure in Motion](#)

By Eadweard Muybridge, Eadweard Muybridge, R. Taft (Designer) Dover Pubns; ISBN: 0486202046

List Price: \$27.95

You really must have some Muybridge in your collection even if you have no interest in doing realistic animation.

#### [Animals in Motion](#)

by Eadweard Muybridge, Lewis S. Brown (Editor) Dover Pubns; ISBN: 0486202038

List Price: \$29.95

Even Disney understood that live action reference is a great template to work from.

### **Facial and character design books**

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[The Artist's Complete Guide to Facial Expression](#)

By Gary Faigin Watson-Guption Publications ISBN: 0823016285

List: \$35.00

The best book you can buy for facial muscle set-up. We HIGHLY recommend this book!!!

[Cartooning the Head and Figure](#)

by Jack Hamm Perigee; ISBN: 0399508031

List Price: \$9.95

Huge for character design and even has one of the most complete breakdowns of how the muscles of the face create expressions.

**Books on skeletal and proportional study of the body and creature structures**

[Anatomy Coloring Book](#)

by Wynn Kapit, Lawrence M. Elson (Contributor) Addison-Wesley Pub Co; ISBN: 0064550168

List Price: \$19.98

Excellent resource for learning how the skeleton and muscles work together. Use it when designing your skeletons!

[Realistic Figure Drawing](#)

by Joseph Sheppard North Light Books; ISBN: 0891343741

List Price: \$19.99

Great reference for proportions. Even if you plan on working in a more cartoony genre, it's always best to understand the actual proportions of the human body and then exaggerate from there.

[Drawing Animals](#)

by Norman Adams, Joe Singer (Contributor) Watson-Guption Pubns; ISBN: 0823013669

List Price: \$18.95

Has a breakdown of many animals starting with a geometric drawing, then showing the skeleton, then muscles and finally the final rendered drawing. Great reference book!

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**Web sites to check out---**

These are all links we check out on a regular basis for their vast information.

<http://www.pixar.com>

PIXAR

Toy Story, A Bug's Life

<http://www.CG-char.com>

CG Character Animation Mailing List

email list with 1,000 of WORKING animators on it talking about Character Animation

<http://3dark.com>

3D Ark - tons of CG links, jobs and resources

<http://www.animag.com>

Animation Magazine

<http://www.3dsite.com>

3D Site - tons of CG links, jobs and resources

<http://www.awn.com>

Animation World Network

– Can't say enough about this site

<http://www.VFXPro.com>

VFX Pro Huge resource of what is going on in the entertainment industry and job info

<http://www.CGw.com>

Computer Graphics World Magazine

<http://www.siggraph.org>

SIGGRAPH

Special Interest Group on Computer Graphics/ Largest Convention for CG

<http://www.visualfx.com>

Visual Efx

Loads of links, jobs and resources

<http://www.awn.com/ads/9705masterclass/index.html>

Richard Williams Animation Masterclass

<http://3dreview.com>

3D Review

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<http://www.spicycricket.com>

<http://www.thinkinganimation.com>

[http://www.education.siggraph.org/materials/hypgraph/animation/principles/lasseter\\_s94.html](http://www.education.siggraph.org/materials/hypgraph/animation/principles/lasseter_s94.html)

John Lasseter himself

(Toy Story and A Bug's Life) talking about animation

<http://www.vfxhq.com>

Visual Effects Head Quarters

<http://www.animationtoolworks.com/article1.html>

[Animation Toolworks](#)

[Great tips, tricks and this link is the 12 principles of animation](#)

<http://www.spikeandmike.com>

Spike and Mike's Animation Festival

<http://women.in.animation.org>

Women in Animation

Great group to belong to and keep up with what's what in the field

### Bibliography

Below are links to places that the information above was sourced from besides my own personal experience.

<http://www.pixar.com>

<http://www.awn.com/MPSC839/MNWG.HTM>