

# Getting into the Game

## Skills & Careers in Game Development

**S**o you think you want to be a game developer? Good for you — it's a young, exciting, and fast-growing field. It's not as hard to break into as you might think, either. In this article I'm going to tell you how the industry builds games, and then show you how to become one of the people who makes it happen.

The term "interactive entertainment" covers a vast amount of territory, from huge computerized ride simulators at theme parks down to little electronic keychains that only play one game. Games are popping up everywhere — in airplane seats, cars, mobile phones, robotic toys, exercise equipment, and on and on. But when most people talk about interactive entertainment, they mean games that can be played on a home game console like a Playstation 2, Xbox, or Gamecube, or on a personal computer. These products are produced by game publishers and sold in retail stores, and for the most part that's what I'm going to be talking about in this article. Creating other kinds of games, such as gambling machines and arcade games, requires many of the same skills as developing home video games does. However, companies that develop those kinds of games tend to be organized differently because they serve different markets.

### Skills the Industry Needs

**A** common misconception about developing computer software — whether it's games or anything else — is that you need to be a math genius. That's just not true, though programming jobs in certain areas may require advanced math, and for some others, it's helpful. A good half of all game developers, or even more, need nothing more than arithmetic and geometry, because less than half of all game development jobs are programming jobs. That's another misconception — that the majority of game developers are programmers. In fact, no one skill dominates game development.

Game development is not a high-tech industry in the same way that electronics or biotechnology are. Rather, the game business is an entertainment industry with a high-tech component. Saying that videogames are about computers is a little like saying that movies are about photography. There's a lot more to it than that.

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**ERNEST ADAMS** | Ernest is an independent game design consultant and a member of the International Hobo design consortium. He has been in the game industry for 13 years, and was most recently employed as a lead designer at Bullfrog Productions on the *Dungeon Keeper* series. For several years before that he was the audio/video producer on the Madden NFL Football product line at Electronic Arts. Ernest also writes the popular "Designer's Notebook" columns for the game development web site [Gamasutra.com](http://Gamasutra.com). His web site is at [www.designersnotebook.com](http://www.designersnotebook.com).



Videogames are, very roughly, made up of four things: pictures (animation and two- and three-dimensional artwork); sound (music, sound effects, and speech); a playable game idea or design, which may or may not include a story and characters; and a computer program that implements the game and presents the pictures and sound. These components translate into four sets of development jobs required by the industry: artists and animators, composers and sound engineers, writers and designers, and programmers. There are other specialties as well, but these are the main four groups.

## How Games Are Funded, Built, and Sold

The backbone of the game industry — at least the creative part of the industry — is the publishing company. A publisher funds the development of new games, manufactures them, advertises them to the public, and sells them at wholesale to retailers like Wal-Mart and Electronics Boutique, who resell them to the public. Since the publishers provide the money for development, they're the ones who decide what games will and won't get made for retail.

Building a videogame typically costs between \$250,000 and \$5 million, although in rare cases it can go up to \$10 million or more if a game is particularly large (or particularly behind schedule). Games are normally built in one of two ways. Either a publisher has employees on its staff who can do it (in-house development), or they make a deal with an outside development company to do it. In-house development is usually expensive for the publisher during the development process, because it has to pay the salaries of all those employees, offer them benefits, throw them company Christmas parties, and so on.

If a publisher makes a deal with a development company to make a game, it's a lot like a book publisher's deal with an author. The publisher gives the developer some money, called an advance, to pay employees and run the company while the game is in development. This is cheaper for the publisher, because development companies often pay lower salaries and have fewer benefits. When retailers buy the game, however, the publisher pays the developer royalties, a percentage of the wholesale price of each copy sold. The developer doesn't get the royalties right away, though; it has to pay back the advance money. The publisher withholds the royalties earned until the advance is recouped. If the publisher doesn't sell enough copies to repay the advance, the developer may never get any royalties

at all, but it doesn't owe the remaining money back. It's up to the publisher to make the game sell.

Sometimes a development company will decide to develop and publish a game itself, using its own money. It might sell the game via mail order for example, and skip the retailers entirely. This is called self-publishing, and although it typically doesn't make as much money as traditional published games, it does mean the developer gets to keep total creative control, which is important to some people.

**What this means to you.** This system, with publishers and developers, has defined the nature of the majority of jobs available in the industry. It has tended to divide jobs into two career tracks: the production track, which is chiefly administrative, nontechnical, partly creative, and always inside the publishing company; and the development track, which is concerned with building the actual game itself, is creative, and occurs in the development company. If development happens in-

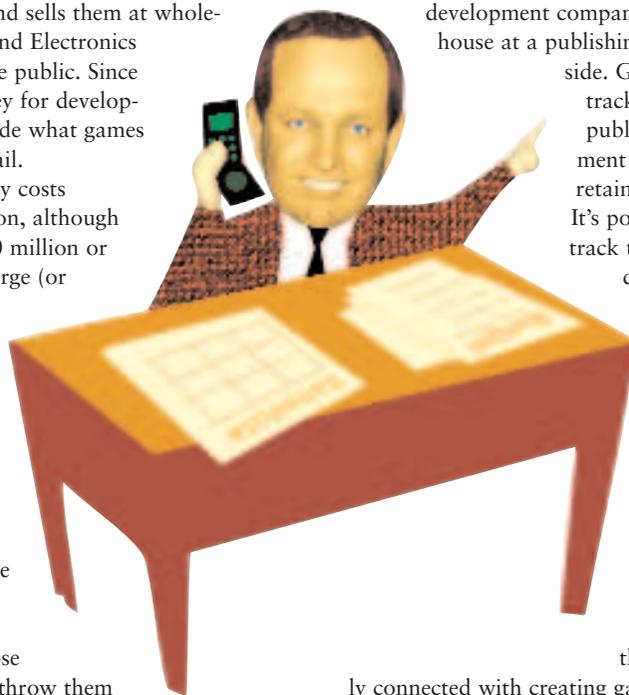
house at a publishing company, the two exist side by side. Game design is almost a separate track of its own, which can exist in the publishing company or the development company, depending on who retains the authority to design the game. It's possible to switch from one career track to another, as long as you can

demonstrate that you can do the job. I went from being a programmer to a lead designer to a producer and back to a lead designer again. It's a matter of convincing whoever's in charge that they should give you the chance. People are often given responsibilities above their actual job description just because the work needs to get done and there isn't anyone else to do it.

Finally, there are a lot of jobs in the game industry that aren't directly connected with creating games. Like any other business, the game industry needs accountants, lawyers, marketing people, public relations specialists, and sales people. There are also a number of subcontractors in the industry who have specialized tasks: manufacturing and disk-duplication companies, testing companies, and recruiters. This article focuses on the jobs that are actually concerned with creating games, but there are many other opportunities out there.

## A Note about Job Titles

Most other entertainment industries, such as film, television, and theater, have formal job titles that tell you exactly what each person does, because those industries are unionized. Over the years the unions and craft guilds established well-defined



ways of working and standard terminology to go with them. If someone tells you he's a production coordinator or a casting director, you can be pretty sure of what he does no matter who he works for.

This is absolutely not true of the game industry. It's a much younger medium, and because it's highly entrepreneurial, there seems little likelihood that it ever will be unionized. Thus, job titles vary considerably from company to company, and even from project to project within a single company. You can get a job offer from one company to be a "line producer" and another company to be a "supervising producer," and have no way of knowing which is the more senior position. Even when a title is the same at two different companies, there's no guarantee that the actual job responsibilities will be identical. In game development, tasks tend to be assigned on an ad hoc basis depending on the talents, skills, and interests of the individuals who make up the team. It isn't unusual for task assignments to change in mid-project, either, and some companies will let you define your own idiosyncratic title.

The only way to find out about specific responsibilities related to any given position — and it's true whether you're a wide-eyed wannabe or an experienced veteran — is to ask lots of questions at your job interview. Find out who you'll be reporting to and get that person to describe his or her expectations about the job in as much detail as possible. Don't be overly influenced by an impressive-sounding title. When everybody is testing like mad two weeks before the final deadline, you'll have to pitch in and help with the rest of them, even if your business card does say "senior research scientist."



## The Production Track

The production track consists of jobs associated with creating a game that don't always involve building something that ends up on the disk or cartridge. Production is about guiding and facilitating the building of the game in a variety of ways. People who go into production are usually highly experienced game players and should be highly knowledgeable about a wide range of games and gameplay.

Here, from bottom to top, are the typical jobs in the production track, although as I said before, not all companies will use exactly these job titles.

**Customer service and returns.** A good many people in the game industry start by simply answering the phone. This might entail trying to solve the customers' problems with the game and processing warranty returns when faulty products come in. To do this job you need to be technically competent, an experienced game player, and very, very patient. It's a good entry-level position for someone who doesn't have any development credentials but has been around games all of his or her life and knows them well.

**Testing.** People who seem to be good at customer service — figuring out where problems lie — are candidates to be testers. Testing games doesn't mean playing them for fun; it means playing them over and over and over for days on end according to a specified test plan. It also means being observant enough to know what was happening when a bug popped up and articulate enough to describe it accurately for the programmers. Because a game doesn't need to be tested all throughout the production process, testers may work on several different games a year.

**Quality assurance.** Often referred to as QA, this is the process of making a final, independent check on the game before it goes to manufacturing. QA typically runs the game for a certain number of hours to make sure it doesn't crash, comparing every screen and button in the game against the manual to be sure it's accurate. The production team can claim that the game is ready, but only QA can actually declare it to be "gold" (referring to the "gold" master disk from which final copies of the game will be made). The QA team is usually separate from the production team, so it's immune to pressure from the producer.

**Assistant producer.** Assistant producers are usually the lowest people directly involved with the production of a particular game throughout the development process. They do all kinds of grunt work: making backups, burning CDs, shipping needed data or equipment to developers, managing the database of bugs in the testing process, and doing basic research required for the game. If you're building a flight simulator, an assistant producer might be assigned to find sources of aerial photographs or to obtain maps of airports that will appear in the game.

**Associate producer.** A game typically has several associate producers, whose responsibilities may be divided up in different ways depending on the nature of the game. If the game is being

shipped on more than one platform, one associate producer may be assigned to the Xbox version and another to the Playstation 2 version. Or one can oversee art production and another code development. In any case, the associate producers troubleshoot problems, and keep track of whatever is going on in their areas of responsibility and report progress to the producer.

**Producer.** Traditionally the producer is responsible for a single game. The producer is usually the “keeper of the vision” for that game, the one who resolves any creative (or other) disputes on the team. The producer is also the one who determines whether the game is “fun enough” and progressing in the right direction. However, producers don’t spend much time doing creative work themselves. Unless the producer is also a game designer (which is rare nowadays), he or she is chiefly concerned with the budget and schedule for the game — tracking development progress and approving milestone payments to the development company when they have met their targets.

**Executive producer.** Executive producers are typically in charge of an entire product line. If a company publishes a line of games for children, or of sports games, the executive producer may oversee production of all of them. He or she negotiates development contracts with the development companies, if the work isn’t being done in-house; negotiates licensing deals if a game uses characters or images owned by someone else (such as the James Bond line for Electronic Arts); and works with the marketing and public relations departments to help create ad campaigns and other publicity. Executive producers may also be involved with other kinds of merchandising, such as toys and T-shirts. They give the products some creative direction, but only at the most general level. The executive producer’s job is almost entirely administrative. They are ultimately responsible to the publisher for making the product line a success.

Jobs in the production track require administrative skills and a peculiar quality called “product sense.” Product sense isn’t just knowing whether a game is fun, but whether a lot of other people are going to think it’s fun; so much fun, in fact, that lots of them will buy it. It’s possible to possess no technical or artistic skills, to be completely unable to build a game yourself, and yet to have brilliant product sense.

If you have great product sense, you can go all the way to the top and eventually become the president or CEO of the company (assuming you also know how to run a business). The advantage of being in the production track is that the sky’s the limit. The disadvantage is that there’s a lot of low-paid donkey work at the bottom.

## The Development Track

The development track consists of the people who actually build the game: programmers, artists and animators, and audio engineers or musicians. They make the software, pictures, and sound, and they are rewarded on the basis of the speed and quality of their work. I’ll go over each of these skills in turn.

**Programming.** Game programming is divided into subdisci-

plines: artificial intelligence programming, physics programming, graphics programming, and others. To be a programmer you need a logical mind and love of computers for their own sake — knowing what makes them tick and how to get the best out of them. To be a graphics or physics programmer, you should also have a good working knowledge of trigonometry, analytical geometry, and calculus. There are other specialties as well, such as user interface programming, device control, network programming, and audio/video compression and decompression.

Most games are written in the C or C++ languages, with smaller games for the web usually being written in Java. Courses in AI, simulation, and graphics will be more useful to you as a game programmer than database design or operating systems.

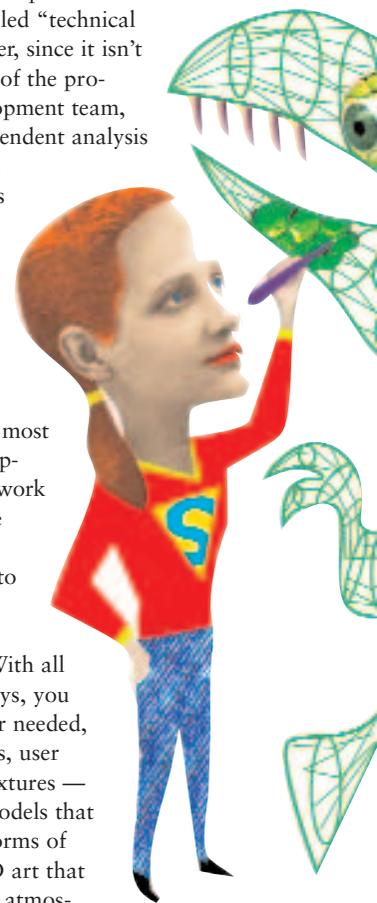
Programmers are typically divided into junior, regular, and senior, depending on their experience. All the programmers on a project typically report to a lead programmer. Leads spends up to half of their time doing administrative work — managing the programming process — as well as writing code of their own.

In addition there’s one other, quite specialized role. Some publishers have a position called “technical director.” This is a bit of a misnomer, since it isn’t a leadership position. TDs are part of the production team rather than the development team, and their job is to provide an independent analysis of the development team’s technical progress. The TD also sanity-checks the game design in its early stages to make sure it’s actually doable, and offers advice and troubleshooting to the development team on an as-needed basis. The technical director is usually a very experienced programmer.

**Art and animation.** These days the most time-consuming task in game development is creating the pictures: the artwork and animation that display the game and its user interface on the screen. Like programming, this is broken into subdisciplines:

- 2D art, or pixel painting, is the oldest kind of computer artwork. With all the emphasis on 3D games these days, you might think 2D artists are no longer needed, but that’s dead wrong. Backgrounds, user interface elements, and above all textures — the images on the surfaces of 3D models that give them their “skins” — are all forms of two-dimensional art. Indeed, it’s 2D art that creates the art style of the game, its atmosphere. Artists who work in 2D should know software tools such as Adobe Photoshop.

- 2D animation is the business of making sprites, that is, two-dimensional images that look as if they’re moving. This is



the same skill that is used in creating animated movies and television shows on cellophane (cel animation), only done with pixel editors rather than paint.

- 3D modeling is about making three-dimensional models of objects that are going to appear in the game. In a way it's a kind of sculpting, done in a 3D editing tool such as Discreet's 3DS Max or Alias/Wavefront's Maya. Most 3D models are made up of triangles, usually generically referred to as polygons, in space. Positioning these polygons creates the shape of the object. The smaller and more numerous the polygons are, the more precisely the object will resemble its real-life equivalent. The 3D acceleration hardware that is built into videogame consoles and PC graphics cards determines how many polygons the machine can display at one time, and hence, the visual accuracy of the models.

- 3D animation makes a 3D model move. In the case of animals and human beings, this is done by defining a bone structure inside the 3D model and indicating how its joints are hinged and what their ranges of motion are. This can then be used to produce standard animation cycles, such as walking, running, climbing, and so on, as well as special moves such as falling down or reaching out to pick something up. 3D animation can also be done by using motion capture equipment to record the motion of a real person for a true-to-life effect.

Like programmers, artists are typically divided into junior, regular, and senior based on their experience. They report to a lead artist or art director, who sets the overall style of the game and manages the art creation process.

**Audio.** Videogames today use sound in four ways: as music, to create an emotional mood; as ambient noises in an environment (waterfalls, traffic noise, and the like, which also contribute to mood); as sound effects triggered by particular events (footsteps, doors opening, or explosions); and as speech (either narration or constructed dialogue). All this material is recorded and assembled by audio staff consisting of musicians and sound engineers.

Regrettably, audio has traditionally been the poor relation of the other game development crafts, scheduled last and given the fewest resources. The reason for this is largely historical: early game equipment wasn't capable of much more than beeps.

Now that games ship on DVDs or multiple CDs with high-quality audio, there's lots of room to devote to audio resources.

Audio engineering requires good ears and an understanding of the basic principles of sound, both analog

(frequency, volume, stereo separation) and digital (sampling rates, bits-per-sample, data compression techniques). A number of tools enable engineers to manipulate audio data digitally. You can learn to use these tools in trade schools and community colleges, or in a recording studio. Even though developing audio for a game is not the same as amplifying live music, experience with a band can give you useful exposure to the core concepts.

Music is a special talent. A composer needs to be able not only to play, but also to use music composition tools, such as MIDI editors and the like. Few games need a full-time composer, although there are exceptions for highly musical games, such as REZ from Sega.

The audio career track is a short one. Beyond recording, composing, and editing, there isn't much of anyplace else to go, although if you are especially talented you can go freelance and charge large sums for your services.

**Managing development.** At a development company, the lead artist, lead programmer, and lead audio engineer typically report to a person called the project director or project manager. This person has overall responsibility for all the development tasks and is the analogue to the producer at the publishing company. This role is entirely administrative, and the vast majority of one's time is spent making up task lists and schedules and running meetings. If development is done in-house at a publisher, the producer may take the role of the project director.

The development track doesn't offer as many opportunities for promotion to positions of power that the production track does. Beyond lead programmer or art director there's no place else to go unless you stop programming or doing artwork. And if you're a brilliant musician, a company is going to want to keep you composing music, making use of your strongest talent. Your company won't have much incentive to give you a managerial job unless you can demonstrate that you're actually a better manager than you are a composer. In production, you can start at the very bottom and rise to the very top. In contrast, developers start at a much higher level, earning several times as much as a tester or customer service representative, but they can only rise so far before they have to leave the development track.

## Game Design

Game design is probably the most highly sought, least-understood job in the business. It seems like every junior employee in the game industry wants to be a game designer, in the same way that every properties manager in Hollywood is working on a film script. Let's clear up one thing right away. You will not get an entry-level job as a lead game designer nor be hired straight out of college to invent completely new games — at least not at a large company. Most people pay their dues for years in other roles before they get that degree of creative control. And once you do get the job, it doesn't actually confer as much freedom as you might expect. As a game designer, it isn't



## Designing Monopoly

**Lead designer:** “This is a board game about buying and selling real estate. There will be properties, and they will cost money to buy. You can charge rent if someone lands on your property. If you own properties in certain groups, that’s called a monopoly and you can build houses and hotels there and charge more. The game ends when one player has bankrupted all the others.”

**Game designer:** “I’ve collected up names of streets in Atlantic City, New Jersey, to use for the properties, as well as a few other things like railroads and utilities. You’ll get \$200 every time you go around the board, so a certain amount of money will keep flowing into the game. I’ve also designed a set of Chance and Community Chest cards to redistribute some of the money randomly. The water and electric companies will charge four times a die roll if you own one of them, or 10 times a die roll if you own them both.”

**Level designer:** “Here’s how the board is laid out. Notice that the prices go steadily up as players move around it. This will create tension as they move into expensive regions and relief when they get into the cheap regions again. I’ve sprinkled the specialty squares around evenly so there’s always a chance that you’ll be able to sneak past someone’s line of hotels.”



your job to create your ideal game, the game that you would most like to play. Rather, it’s your job to create the game that the company needs from you: one that fits well into their product line and appeals to their target audience.

I’ve put game design in a separate track from production or development because it can occur in either place, and in some respects it partakes of both. At a development company the lead game designer reports to the project director; at a publisher, to the producer.

A game designer needs imagination above all, but imagination alone is nowhere near enough. He or she also needs to be organized and resourceful, able to do research, and able to work well in a team. Because everybody wants to contribute ideas to the game’s design, it’s up to the designer to choose the good ones and integrate them successfully.

The designer’s primary skill is communication, chiefly through writing. The design of the game has to be transmitted to the other members of the team. In practice a lot of this happens in meetings, but written documents are vital as a record of decisions made: they prevent the team from wasting time going over old ground. Design documents must be clear, consistent, comprehensive, and unambiguous. It also helps a great deal to be able to draw at least pencil sketches. Designers often create the first concept drawings of vehicles, creatures, buildings, the user interface, and anything else that might appear on the screen.

There are typically three levels of game design jobs, though small games may use only one. From bottom to top, they are:

**Level designer.** Most videogames consist of levels (or in war games or flight simulators, “missions”): a series of separate scenarios, each with its own victory condition and often its own music and artwork. The term “level” goes back to arcade games, in which you play through scenarios at increasing levels of difficulty.

Level designers, as the most junior members of the design team, have little say in how the game works. Paradoxically, however, they do the most to create the player’s experience of actually playing the game, because they construct the challenges that the players will face. Their job is to take the mechanisms and the features provided by the lead and other game designers, and the art and audio elements created by those teams, and use them to build worlds for the players to play in, as well as setting the starting conditions and the victory condition for each level. War games, for example, usually come with 15 or 20 different missions and different initial conditions (numbers, types, and positions of forces) on each, all created by level designers.

The primary talents required for a level designer are imagination to think up new kinds of levels that will keep the game interesting and offer a mix of challenges, and an ability to balance a game with the mechanisms provided. Testers who were particularly good at finding problems in the level designs of games that they were testing, and making suggestions about how to fix them, often go on to become level designers.

**Game designer.** A game designer reports to the lead designer and creates the details that make the game work the way it does. Given the general mechanisms that determine how points

are won and lost in a game, for example, it's the game designers who decide how many points are won and lost and under what circumstances. The game designers work to make sure that the game is fair and balanced and that it doesn't go on too long or end too quickly. They also flesh out details about the user interface, options, customizability, network play, and many other less obvious features.

**Lead designer.** The lead designer is responsible for the overall functioning of the game, answering its most essential questions. What is the player's role? What challenges does the player face? What is the player trying to achieve? What constitutes victory? Where does this take place? How does the internal economy of the game work? The lead designer may have had the idea for the game or be bringing someone else's idea to life. The lead designer's authority is not absolute. He or she must collaborate, and often compromise, with the producer, the art director, and the lead programmer to create an enjoyable and aesthetically coherent game. The role is partly managerial, making sure that all aspects of the game's design are covered and nothing is missed. A game has one lead designer.

In addition to game designers, a project may also have a dedicated writer. Until recently few development companies hired

experienced writers, and sadly it has shown in some of the clichéd plots and corny dialogue you may have experienced in some games. This is starting to change as the production values for games improve. Some games, but not all, include plot, character, narrative, and theme (consider the writing needs for a role-playing game versus those for a puzzle game), so writers are not as essential to interactive entertainment as they are to movies, and there are far fewer jobs. Writers are also needed to write the manuals and the copy that appears on the box, but in these cases they usually work for the marketing department rather than development or production.

## How to Decide What You Want to Do

I get a lot of e-mail from people asking, "I want to make games, but I don't know whether I should be a programmer or an artist or a writer or what. What do you think I should do?" The answer is, I don't have a clue, because I don't know anything about you. Only you can answer that question. Here's how.

First, you need to figure out what you like to do. What do you enjoy? You probably first started drawing and painting about age two. Did you have a good time? Do you still do it as a

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hobby? At some point you probably had a music class, even if it was all the way back in elementary school. Did you feel drawn to music? Maybe you play or even compose for fun. How about writing? Ever written a short story? Did you take pleasure in doing it? Or computer programming? If you haven't tried it, maybe you should. You can get Visual Basic for the PC and create simple games in just a few hours. If you find yourself completely fascinated, staying up all night to add new features, that's a good sign. Ever been a dungeon master for a role-playing game? Did you enjoy designing the map, creating all the traps and treasures, devising non-playing characters for your players to interact with? You might have potential as a game designer.

Second, figure out what you're good at doing. Unfortunately, it's not enough just to like doing something; you also have to do it well. If you love drawing but your mother never once put one of your drawings up on the refrigerator, take a hint. Fortunately, however, liking something and doing it well usually go hand in hand. What are your natural talents? Have people been impressed by your artwork, your musicianship, your writing? If you program, do you find that you do it swiftly and without many bugs?

Once you've decided what you both like to do and are good at doing, then you can see if those skills are used in the game industry. If the answer turns out to be gardening or breeding bloodhounds, you're out of luck, but if it's a skill the industry needs, the next step is to develop it. Practice. Experiment. Build up a portfolio. Take classes. Educate yourself. Practice some more.

### Some Hard Truths

Now it's time for a few hard truths about the game industry, things that you might as well know before you get into it.

**Publishers and developers don't buy game ideas.** Like most people interested in getting into the game industry, you've probably got a fantastic idea for a game. That's great — the industry needs new ideas — but you're not going to be able to sell that idea to a game publisher or developer. Everyone in the industry is constantly having game ideas, and only a tiny fraction of them are ever developed. Publishers don't pay for ideas. What they're looking for are development teams capable of turning an idea into a successful product, on time and under budget. Ideas are a dime a dozen, but really good developers are hard to find.

Also, most game ideas can't be patented, so you can't think of one and make sure

that nobody else can ever do the same thing. On the other hand, game ideas aren't like consumer fads: you don't have to be first to market or lose all chance of doing it. Because game hardware keeps changing, the same game idea can be developed again and again by different people on different machines. So if you don't have any way of developing an idea now, you can afford to wait a while and try another time. I've wanted to do a game about fighting forest fires for the last 20 years. One of these days, I'll get my chance. Maybe somebody else will do one in the meantime, but that won't prevent me from doing the same thing if I want to.

**Don't go into the game industry just for the money.** If you're a programmer, you can usually make more money in traditional software industries: database programming, management information systems, defense industries, and so on. It's simple supply and demand; a heck of a lot of people want to be in the game industry, and the competition drives salaries down.

It used to be that game developers could make huge fortunes in royalties from hit games, but that was back when only one or two people could build an entire game. Now that development teams consist of anywhere from 10 to 50 people, the royalties are spread awfully thin — and in fact many employment contracts don't give individual developers royalties anyway.

Instead developers tend to get bonuses or stock options in the company.

The best reason to get into game development is because you love it and it's what you want to do. If it's just money you're after, you're better off elsewhere.

**The work can be long, hard, and exhausting.** Game development involves engineering, and engineering is inherently unpredictable because it's problem solving.

Publishers, on the other hand, want fixed development schedules so that they can ship in time for a certain release time-frame (often it's the holiday retail season).

The two aren't compatible, and the result is often a terrible period known as "crunch time," when everyone on the project works 80-hour weeks to try to get the game done on an unrealistic schedule. Game development is fun, exciting, and enormously creative, but make no mistake, it burns people out. It's rare to find a programmer over 40 years old, not because of age discrimination, but just because the pressure can be enormous and relentless.

**If you work for somebody else, your job is to make their game, not yours.** As I said previously, everybody has a game idea, but only a few people get to work on their own idea. In 13 years in the industry, I've had the opportunity to work on my own game ideas for at most a year, and I've never had the chance to bring one of them to market. As an employee you're not being paid to develop the game



you most want to make, but the game your employer wants you to make. Your job is to lend your talent, intelligence, and imagination to the project you're on.

All this isn't intended to discourage you from getting into the game business. If you've read this far, you're probably fascinated by games and filled with a creative desire to build them. That's great — the industry needs energetic, enthusiastic, motivated people — but I'd hate for you to think you're going to spend your time sitting around thinking up cool games all day. Not even the greatest designers in the industry like Sid Meier, Will Wright, and Peter Molyneux get to do that. They spend a lot of their time reading, writing, planning, organizing, and sitting in meetings. And so will you.

## Get to Work

Breaking in to the game industry isn't as hard as, say, breaking in to the movies. You don't have to join a guild or a union. You apply for jobs the same way you would anywhere else: read developer web sites and magazines, send in résumés, and attend industry events, some of which will have job fairs and all of which offer networking opportunities. Build up a portfolio of work you've done, even coursework is fine, that you can show when you go to an interview. Finding a job is hard work in any business, but persistence and flexibility will pay off in the end and hopefully land you a job doing something you love. 🐉

## RESOURCES

### Web Sites

The International Game Developers Association "Breaking In" Site	<a href="http://www.igda.org/breakingin">www.igda.org/breakingin</a>
Gamasutra	<a href="http://www.gamasutra.com">www.gamasutra.com</a>
GameDev.Net	<a href="http://www.gamedev.net">www.gamedev.net</a>
Flipcode.com	<a href="http://www.flipcode.com">www.flipcode.com</a>
The Game AI Page	<a href="http://www.gameai.com">www.gameai.com</a>

### Magazines

<i>Game Developer</i>	<a href="http://www.gdmag.com">www.gdmag.com</a>
<i>Develop</i> (UK)	<a href="http://www.developmag.com">www.developmag.com</a>

### Events

Game Developers Conference	<a href="http://www.gdconf.com">www.gdconf.com</a>
Game Developers Conference Europe (UK)	<a href="http://www.gdc-europe.com">www.gdc-europe.com</a>
ECTS (UK)	<a href="http://www.ects.com">www.ects.com</a>
Electronic Entertainment Expo (E3)	<a href="http://www.e3expo.com">www.e3expo.com</a>
Milia (France)	<a href="http://www.milia.com">www.milia.com</a>

### Organizations

International Game Developers Association	<a href="http://www.igda.org">www.igda.org</a>
Interactive Digital Software Association (publishers' trade association)	<a href="http://www.idsa.com">www.idsa.com</a>