

Most game interfaces are far too stylized and obscure.

—Gordon Walton  
(Studio Director, BioWare Austin)

## Goals of Game Interfaces

To design great *user interfaces* (referred to in this book as *game interfaces*, *player interfaces*, or simply *interfaces*) for games, you should first understand their role in game design. While you'll want to use interface conventions in your designs, applying such rules of thumb universally can be detrimental. Knowledge of the fundamental objectives of interfaces will allow you to determine which guidelines apply and which will not work in a specific instance.

### Primary Goals

The main purpose of a game interface is to allow players to communicate with the software (game). Interfaces thus have two primary goals: feedback (receiving information from the game) and control (providing information to the game). All elements of a game interface should further at least one of these two goals.

### Feedback

The interface is responsible for *feedback*—conveying to the player what is happening in the game. What obstacles are you facing? What is your score? How many lives do you have left? Without conveying to the player the *state* of the game, there is no game. Feedback is most often accomplished visually through a monitor, television,

#### ..... Avoiding Conventional Design in *Think Tanks*

GarageGames



In *Think Tanks*, we decided to forgo the health meter in favor of using smoke on the tanks to communicate damage level. I felt it was more intuitive and allowed one to become more connected with the object they were driving (a tank). Our beta testers complained about it constantly during testing. The final game has no health meter, and it may have probably hurt sales, but I think it is a better interface.

—Joe Maruschak (Creative Director, GarageGames)

or display. Feedback has two purposes in game design: indicating progress toward goals and teaching players new concepts (discussed in more detail in Chapter 7).

### Progress

Players like to know **how quickly** they are making *progress* toward their goals, both short-term and long-term, in any game. Feedback allows the player to answer many questions, including:

- *Strategies*: Which strategies should I use?
- *Duration*: How much longer until I achieve my goal?
- *Success*: Am I winning?

Let's consider a few examples. The goal in a fighting game such as *Street Fighter* is to reduce your opponent's health to zero before your opponent can do the same to you. If your opponent is extremely low on health, you don't have to attempt a powerful attack because you can finish them off using a conservative method—such as an attack that deals little damage but doesn't expose you to a counter-attack. The game will likely be over soon—so even though your thumbs might be getting sore from using the controller, you're inspired to finish this part. You also feel good about how you've done (you've almost won!), and if you do end up losing, you feel the satisfaction of at least having put up a good fight—or the frustration of almost having won. Imagine how different the experience would be if you didn't know that your opponent was on the brink of defeat.

#### ..... *Call of Duty 2*: Red Alert for Health

Activision Publishing, Inc.

*Call of Duty 2* managed to create a first-person shooter (FPS) without giant health point numbers anywhere on the screen. The game instead displays health with visual and audio representations; when a player is severely hurt, the screen becomes red—and the character hunches over, breathing heavy and erratic. They pulled that off quite well. Not only is it a step forward in user interface design, but it's also much more engrossing to the player.

—Ian Wall (Senior Artist, Obsidian Entertainment)





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Like many fighting games, *Street Fighter Alpha 3* makes excellent use of the interface to show progress.

Note that in a good interface, even a simple piece of information, such as your opponent's health, is conveyed in many ways. The most obvious method is the length of the power bar at the top of the screen. It is visible at all times and large enough for you to read without taking your focus off the action. The information conveyed through the power bar's length is bolstered by its color. When the bar is green, your opponent is fully healed; when it is red, your opponent is close to death.

### Multiple Interface Mechanisms

You have many tools at your disposal to provide feedback to the player. These include shapes, sizes, colors, sounds, and fonts. For more important information, such as changes to player health, combine several of these tools to ensure that players notice what you are trying to tell them.

Furthermore, the game provides information on when the state of your opponent's health changes. After you hit your foe, the character reacts to the blow. Particularly damaging hits are shown with more powerful graphic and audio effects. In addition, the amount of damage inflicted is not random; each time you complete the same move relative to your opponent's defense, you will inflict the same amount of damage. Over time, you can learn exactly how many of each type of hit is required to defeat a given opponent. All of these components combine to very clearly convey your progress toward completing your goal of defeating this opponent.

On the other extreme in terms of complexity is a turn-based strategy game such as *Civilization IV*. Whereas a game like *Soul Calibur 3* may take a few minutes to play, even a "short" game of *Civilization IV* will require several hours. Your goal is to conquer the game world through one of several different methods, such as eliminating all other civilizations, establishing the dominant culture, or being the first to launch a spaceship for colonization. Fortunately, the game breaks down these epic objectives into short-term goals—such as founding a new city, constructing a temple, or inventing the wheel.

In fact, the *Civilization* series is known for leading its players into taking "just one more turn"—which can keep them engrossed for many hours longer than they had planned. This excellent game design is made possible through what is essentially an

Firaxis Games, Inc.



Firaxis Games, Inc.



The gameplay of *Civilization III* is so complex that the main screen (top) must be replaced with secondary interfaces, such as the domestic advisor screen (bottom), for the player to have enough information.



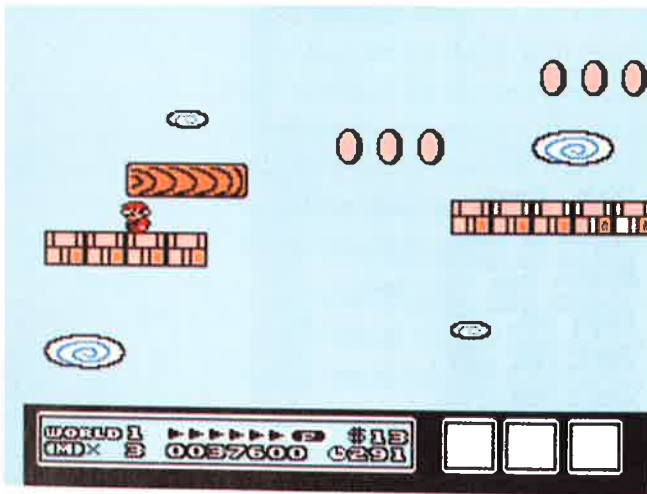
interface feedback issue; by communicating to players just how close the next goal is to completion, the game drives them on.

For such a complicated game, the amount of feedback presented is staggering. The interface includes no fewer than 10 distinct screens for culture, military, foreign relations, espionage, trade, technology, score, and many other elements. These interfaces all serve to inform players about the states of their civilizations so that they can ascertain their progress toward both short- and long-term goals. For example, the technology screen shows what advance (such as the wheel or literature or gunpowder) a player is researching, how long it will take to learn it, and the relationship between all of the technologies (e.g., the development of writing comes before the development of literature). The game's main screen provides abbreviated information for all of the major goals—with the world map working like an aesthetically appealing menu system. Regardless of how simple or complex a game's interface is, it will almost always provide the players with information on their progress toward their goals.

### Instructions

A good interface also uses feedback to help teach players the rules of the game. Players often do not read the game manual. By implicitly including the *instructions* in the interface itself, you can ease the learning curve of a game and allow it to appeal to a busier or more casual gamer. Let's consider an example of how this is done.

Nintendo



The interface in *Super Mario Bros. 3* helps teach players that they should collect coins.

But what do the coins do? The game doesn't tell the player directly, but it does provide a clue. The number next to the coin icon has only two digits. This suggests that reaching 100 coins might cause something to happen. Indeed, 100 coins

One of the goals in *Super Mario Bros. 3* is to collect coins. In the game world itself, a player might see coins in various locations. When the player collides with one (collecting it), it vanishes with a graphical effect and a short, happy sound. This feedback immediately informs players that they've done something good. Near the top of the screen is a small coin icon with a number next to it. When a player collects a coin, the number increases by one. The icon is exactly the same as the coin graphic in the game world—so even if one is playing the game for the first time, it is easy to learn the game mechanic being used.

results in an extra life, which is depicted through another icon and number pair that is also always visible.

Teaching the player through the interface becomes substantially more difficult as the game becomes complicated, however. Returning to the example of the *Civilization* series, it's apparent that a game can become complicated enough that, without a tutorial, players will be unable to learn even the basics without considerable effort. Even so, *Civilization* makes good use of interface to ease the learning curve.

For example, in *Civilization IV*, most goals—such as technology research, training units, and city growth—use progress bars that are labeled with both the goal and the amount of time remaining. *Mouseover* (placing the mouse cursor over a certain location) shows even more detailed information, such as exactly what factors are contributing to the happiness of a city's inhabitants.

### Control

In addition to giving the player feedback, the interface must also allow the player to communicate with the game. Seeing the obstacles presented by the game isn't enough; players must also have a method of overcoming them. An interface provides players with *control* over what happens in the game. For example, analog sticks on most console controllers are interfaces that give players control over the game experience. Control is almost exclusively provided through manual interfaces, which are discussed in further detail in Chapters 3 and 4.

Note that feedback and control interface elements often work in tandem. If activating a control does not provide some sort of feedback, players will not be certain whether their commands were executed. For example, when the player clicks on a button in a menu, the button will graphically appear to be pressed and a sound effect will be played—providing the player with feedback. Similarly, pressing an action button might result in a character action such as jumping or shooting. (You'll learn the details of control scheme design in Chapter 6.)

Firaxis Games, Inc.



Though too complicated to avoid having an involved tutorial, *Civilization IV* employs interface feedback to ease the game's learning curve.

Sony Computer Entertainment America Inc.



Not surprisingly, controllers (PlayStation 2 shown) allow players to control their game experience.

The interface to *Manhunt* is nearly perfect: there practically isn't one. For a suspense-thriller such as *Manhunt*, having a minimal interface allows you to get into the game up to your chin.

—R. Chase Mack  
(Game Art & Design Student)

*Myst* is my favorite visual interface because there isn't one. The gameplay was so tightly integrated into the environment that it let me forget I was playing a game.

—Nicole Lazzaro  
(Founder & President, XEODesign, Inc.)

## Secondary Goals

While feedback and control are critical components of any game's interface, well-designed interfaces can accomplish other objectives as well. Unlike an interface's primary goals, these secondary objectives apply more to games than to other types of software.

## Immersion

A game is said to be "immersive" when players get lost within it, forgetting for a moment that they are playing a game. For most games, *immersion* is a desirable goal. It is thus sometimes said that the best interface is one that players don't notice. It is difficult for an interface to add to a game's immersion, but a poorly designed one will certainly detract from it. Ideally, the interface will convey information to the player in ways that are consistent with the game world. Numbers, text, icons, buttons, menus, and other similar interface components all serve to remind players that they are playing a game—which can break their immersion.

### King Kong's Invisible Interface

Peter Jackson's *King Kong: The Official Game of the Movie*, courtesy of Ubisoft



*King Kong* has no interface at all, making it one of the best game interfaces out there. The game is simple enough that you don't really need an interface, and there are enough visual and audio cues to tell you when you're in trouble, how much ammo you have, and more.

—Troy Dunniway (Lead Game Designer, Midway Los Angeles)

Consider a role-playing game such as *Neverwinter Nights*. During combat, when an enemy is hit, numbers flash over the enemy's head to indicate how much damage has been inflicted. A more immersive method to convey this same information is through the magnitude and type of sound effect of the hit, the animation used in the swing, and the visual damage inflicted upon the opponent.

However, using methods such as these to maintain immersion comes at a price. First, it would require many more resources to develop all of the systems (sound, animation, visible wounding) required to achieve this effect. Second, the details are hidden from the player. For example, if one hit inflicts 20 points of damage and another inflicts 24, will players be able to recognize the difference based upon the speed of the animation their characters use? Probably not. *Neverwinter Nights* is based upon the pencil-and-paper role-playing game (RPG) *Dungeons & Dragons*® (D&D), which utilizes a number-heavy rules system. For all D&D-based games, displaying numbers is not only easier, but also more closely fits the desired experience and fulfills the expectations of the player market. In this case, immersion is not the primary objective. In a simpler RPG, however, a more immersive interface might be preferable. (RPGs and other game genres are discussed in more detail in Chapter 5.)

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In *Neverwinter Nights*, numbers on the interface indicate how much damage is dealt by an attack.

The best visual game interface I've seen is used in LucasArts' *Indiana Jones and the Infernal Machine*. This interface allows for full screen visuals with only a few icons along the bottom of screen. Players can access these icons by pressing the escape key.

—Michael Ortiz  
(3D Animator, ESC Studios)

I enjoy the game interface for *Neverwinter Nights* (PC). The game can be complex—but once you get the hang of things, you basically have so much you can do the longer you stick with the game. When you right-click on a character, more options become available. You can choose to make a pose, taunt, cast a spell, attack physically, talk, and more.

—Marc Sapitula  
(Game Art & Design Student)

I like the radial system in *Neverwinter Nights*. Being able to control your characters' actions and inventory with just the mouse makes the game fun and easy to play. While exploring different dungeons and fighting off hordes of monsters, this interface is essential in keeping your characters alive to progress forward on their journeys.

—Brian Young  
(Game Development Student)



## Anachronox: Interface as Character

Eidos Interactive Ltd.



The interface in *Anachronox* is one of my favorites. The premise was that the interface was actually one of the characters in the game; as a result, it had its own personality and sassiness to it. This made it more interesting than conventional interfaces, since I was never quite sure what would happen when I clicked on a button.

—Chris Avellone (Chief Creative Officer & Lead Designer, Obsidian Entertainment)

## Atmosphere

*Neverwinter Nights* has one of the most versatile interfaces I've come across. The number of features and information that is compacted into a single, main control panel is amazing. If I need to know character info, who's online, or what's in my inventory, then I have all of the information at the click of a button. Not only this, but the assignable quick slots come into play quite often when I don't have the time to go through menus to get to a spell or command. The use of descriptive icons with tool-tips makes it very easy to find what I'm looking for, and the overall style fits with the setting. Creating movable, resizable, and transparent windows has made it one of my favorite interfaces.

—Lisa Hathaway  
(Game Development Student)

A less important but still interesting purpose of the interface is to contribute to the game's *atmosphere*. The nature of the interface is ideally consistent with the type of game being played. For example, though an analog stick and a steering wheel both give the player control, the latter adds to the atmosphere of a racing game. For a shooting game, a gun interface can both provide better control and add to the game's atmosphere.

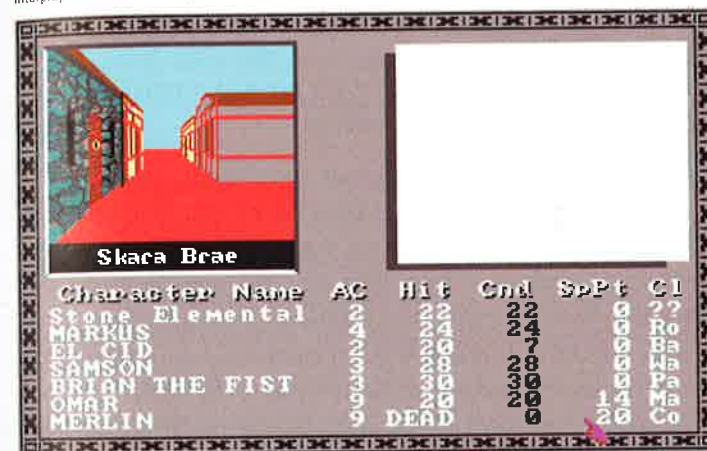
Mad Catz, Inc.



A specialized interface, such as the Mad Catz Blaster (for Xbox), can complement a game's atmosphere.

Although an interface does not add to a game's immersive qualities, it should always add to the game's atmosphere. In *The Bard's Tale*, an RPG, the interface takes up over three-fourths of the available *screen real estate*—displaying names, numbers, and other information to the player at all times. Still, the hewn-stone look of the borders and the dark grey color scheme are well-suited to a game that is largely about *dungeon exploration*. This interface, while non-immersive, supports the atmosphere of the *game*—thus adding to the experience. *Wasteland*, a post-apocalyptic game that features very similar gameplay (and was developed by the same company), utilizes a different aesthetic, making the interface fit the game much better even though it is functionally the same as the one used for *The Bard's Tale*.

Interplay Entertainment Corp.



Electronic Arts Inc.



*The Bard's Tale* (top) and *Wasteland* (bottom) have functionally very similar interfaces that provide very different atmospheres.

One of my favorite manual interfaces is the gun controller. Games such as *Time Crisis*, *Resident Evil: Dead Aim*, and *House of the Dead* would not be the great games they are if it weren't for the gun controllers. Try and imagine killing a zombie or a terrorist with a directional pad and the X button; it just doesn't cut it.

—Brandon A. West  
(Lifetime Gamer)

My favorite manual interface has to be the gun controller in Sega's *Ghost Squad* arcade shooter. Similar to most popular arcade shooter games, this manual interface is much more complete and immersive than any other gun controller interface I've used. The gun is very similar to a real-life submachine gun—complete with recoil vibration. The gun has three buttons/switches—a trigger, an "action" button towards the front grip, and a selector switch for firing modes (which can switch your weapon from semi-automatic, three-burst, and fully automatic).

—Welter Almeida  
(Game Art & Design Student)

## The Importance of Audio

Audio provides important feedback to players on the effect of their controls. For example, instead of using the headphones, the iPod has a small external speaker that clicks as the user scrolls through menu items. This increases its appeal and improves use. Audio is essential for flow and creating a heightened sense of immersion. Audio can also create emotions.

—Nicole Lazzaro  
(Founder & President, XEODesign, Inc.)

Players' actions can be guided by audio so that they more readily immerse themselves into the world of the game and are able to act purposely within it.

—Drew Davidson  
(Faculty, Entertainment Technology Center, Carnegie Mellon University)

Activision Publishing, Inc.



In a fast-paced action game such as *Call of Duty 2*, using too many visual effects could potentially distract the player.

Though achieving these secondary goals is not necessary to a solid, functional interface, their use can greatly influence how players feel about the game.

## Audio as an Interface Component

Audio is an important component of any good interface. Clever use of sound and music can greatly enhance a player's enjoyment of a game and can also improve the feedback provided by a game. During a game, the player is constantly bombarded with visual information because the screen is filled with graphic elements. While some of these elements provide feedback to the player, many others concentrate on providing atmosphere or achieving other goals. This inundation of visual information can make it easy for the player to miss important details.

Audio provides another avenue for the game to communicate with the player, and it's particularly useful for:

1. *Eliminating ambiguity:* Through tone and duration, sounds can clearly convey whether what has happened is good or bad for the player. Visual feedback is not always obvious in this regard.
2. *Providing feedback without interrupting the gameplay:* In the midst of intense action, visual feedback can be either too subtle to be noticed or so dramatic that it distracts players from action that requires their attention. Since sound is (correctly) generally not a core component of gameplay, it can be used to provide feedback without interrupting the player's experience.
3. *Reinforcing visual effects:* Combined with appropriate visual effects, audio can suggest the significance of an event that has just occurred. For example, in *Super Mario Bros. 3*, when the player obtains the 100th coin, a stronger sound effect is used to alert the player that getting that coin did something more than getting the previous 99 did. While visual feedback is also provided to the player (life count increases by one), the sound effect draws more attention to the event.
4. *Creating atmosphere:* Sound effects can be used to help immerse the player in the game even while providing feedback.

Despite the obvious value of audio, it is inadvisable to make it a required part of an interface. Players have many good reasons not to utilize audio in a game: to avoid waking sleeping siblings, parents, or children; to play their own music; or to conserve system resources (on a PC). Incorporate audio into your interfaces, but don't make it a necessity.

## The Challenge of Audio in Game Interface Design

Audio plays a huge part in game interface design. Sound is all around us in everything that we do. Subtle echos and changes in pitch can tell us how big or small a room is. It permeates our lives and gives us a lot of information about the world we exist in, and to an extent that most people don't realize.

As an experiment, I one day wore earplugs so I could not hear anything and tried to go about my normal business. I knew I would have problems with talking, but I was surprised at how difficult it was to type. The reassuring sound of the keys on my laptop really gives me a lot of feedback in the act of typing. I had to look back in a room to make sure I actually did switch off the light when I did not hear the reassuring "click" of the light switch. It really drove it home for me how much we depend on sound and how little we realize it.

Getting an interface to feel natural is very hard because the sound has to play its part and not stand out. It has to work with the rest of the game to reinforce what is happening in the game and try not to take center stage. When done right, it is amazing. How to play with the game is communicated on an almost subliminal level to the player. It is something I want to explore much more.

The sound is always the hardest part for me. Getting the sound to feel just right and communicate to the player what it needs to communicate can be very difficult. I like to attempt to give separate important feedback for all interactions that affect the player—such as if they are hit by something, or if they hit something. I like to have sounds that will allow the player to differentiate between them (and ideally have the sound react to the force of the impact).

It is hard technically, and hard in production, as we usually outsource the sound and music. It is a very interesting aspect of the project for me as I have to explain, sometimes in great detail, exactly what it is I am trying to communicate to the player and how I want them to feel about it. It is often necessary to be there with the sound designer making weird noises with my mouth: "I want something that goes, pfft ... clinkkkk.....ssssssss" and then explaining what is going on while he is looking at boxes on the screen with me saying... "the blue box is a vehicle, and the red one, that is an enemy..."

It is also the part that pushes me the hardest to broaden my skill set. On the game I am currently working on I had to pull my dusty guitar out of the closet and attempt to remember how to play in order to get the idea of what sort of music I was looking for to my composer. It is a great memory for me, sitting there on my porch, cell phone on the ground, trying to coax something pleasing out of a guitar so I could get across what I wanted the music to be. I felt so totally inadequate and underskilled. It is moments like these that let me know I have a long way to go.

—Joe Maruschak  
(Creative Director, GarageGames)



## Aaron Marks on the Role of Audio in Game Interface Design



Aaron Marks  
(President, On  
Your Mark Music  
Productions)

Practically falling into the game industry seven years ago, Aaron Marks has amassed music and sound design credits on touch-screen arcade games, class II video bingo/slot machines, computer games, console games—and over 70 online casino games. Aaron has also written for *Game Developer Magazine*, Gamasutra, and Music4Games.net. He is the author of *The Complete Guide to Game Audio*, an expansive book on all aspects of audio for video games. He is also a member of the advisory board for the Game Audio Network Guild (GANG)—and he continues his pursuit of the ultimate soundscape, creating music and sound for various projects.

Audio plays its biggest role in the design of in-game menus, feature access, and implementation of the activated features. Imagine scrolling through menus and clicking on-screen buttons in complete silence; the immersive effect the developers are striving for in the game will be shattered! Just because the player isn't involved in gameplay, it doesn't mean the game has to stop. Everything you hear, from the music to the sound effects, should keep a player 'in' the game, 'in' the reality created by the game makers—and players should hear the sounds they would expect if they were really there. I mean, you wouldn't use electronic beeps, jet engine, or laser beam sounds in a game based in World War I. While these sounds would be 'cool' on their own, the effect it would have on the game would leave players shaking their heads in bewilderment. A skilled sound designer or composer will ensure all of the sounds in the in-game interface are entertaining but most of all appropriate.

## God of War's Animated Interface

Sony Computer Entertainment  
of America



Sony's *God of War* has a great minimal interface. It's fairly flashy and context sensitive so that it's easy to understand. It's also animated, and shows you exactly what you need to do, which turns out to be a lot of fun and really adds to the game experience.

—Troy Dunnivay (Lead Game Designer,  
Midway Los Angeles)

## Considerations in Interface Design

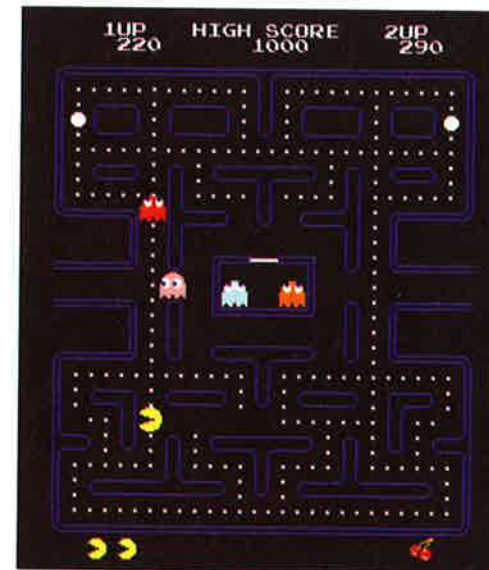
Other factors that play a role in interface design include functionality, usability, aesthetics, and accessibility. Keep these considerations in mind as you try to achieve the goals of feedback and control in your interfaces.

### Functionality

*Functionality* refers to an interface's ability to achieve its goals—primarily providing the player with feedback and control. Does the interface give the player all the feedback that is required? Does the interface allow players to control every element they would want control over? If not, then the interface is not functionally sound. An interface's functionality is defined by *what* it must do.

Functionality is relevant for both feedback and control elements. For example, in *Pac-Man*, the player must be able to move the Pac-Man character in four different directions (control) and be able to determine in which direction Pac-Man is currently moving (feedback). A four-directional joystick provides the control, and the graphic clearly provides feedback on the direction of travel.

PAC-MAN®, ©1980 NAMCO BANDAI Games Inc. All rights reserved.



In *Pac-Man*, the graphic used for the player's character changes appearance to show the direction in which it is moving.

The more recent games in *The Legend of Zelda* series contain scrolling "pause" screens and the use of controller button icons with item/action overlays. This is an excellent way to relay information in a compact fashion, all the while still allowing the player some customization.

—Lisa Hathaway  
(Game Development student)

The game interface for *The Legend of Zelda: Ocarina of Time* (Nintendo 64) was visually appealing and easy to remember when first playing the game.

—Marc Sapitula  
(Game Art & Design Student)



Perfect Dark Zero: Now You See It—Now You Don't

increased complexity of the N64 title.

*Perfect Dark Zero* also has a great minimal, context-sensitive interface that appears and disappears as you need it. In its basic form, it takes up very little screen and is unobtrusive. As you dual-wield additional weapons, use gadgets, or perform special tasks, the interface expands as needed but still stays very minimal and easy to understand.

Microsoft



## Usability

The term *usability* generally refers to the user-friendliness of an interface. For a manual interface, can the player reach all of the buttons easily? In a visual interface, are menus easy to navigate? Are important actions easy to invoke? It is possible for an interface to be functionally sound but still be poorly designed because it is not sufficiently usable. An interface's usability is determined by *how* the interface achieves its functionality. Both usability and functionality are relevant concepts for both feedback and control elements.

The screenshot shows the DooBee! website interface. At the top, there is a navigation bar with links like 'Home', 'About', 'Contact', and 'Privacy'. Below the navigation bar, the main content area features a large, vibrant, circular graphic. This graphic is composed of concentric rings in shades of pink, purple, and blue, with a central spiral. Various icons, including a yellow bird, a green frog, a red apple, and a blue butterfly, are scattered around the spiral. The website's title 'DooBee!' is displayed in a stylized font at the top right of the main content area. The overall design is playful and colorful.

If you find yourself working on a game specifically intended for children, you should study child learning theory, such as Piaget's cognitive stages. Here are some brief examples of how interfaces should be different for children:

1. Children aged three or less usually cannot read, so any games designed for them should avoid the use of text. The website [www.pbskids.org](http://www.pbskids.org) includes a program site called Boohbah, which is text-free.
2. When using a mouse or similar control hardware, a child's ability to select a specific spot on the screen is much less than that of an adult. Therefore, buttons should be larger and precise movements should be less critical.
3. Most children under six are unable to understand abstractions. Therefore, interfaces for these children should avoid the use of complex symbols.

Functionality is a non-negotiable aspect of any interface design. Without a fully functional interface, a game cannot be played.

## Usability and Playability

In game development, you will occasionally hear the term *playability*—which refers to usability with respect to playing a game. These two terms can be used interchangeably.

One way in which an interface can lack usability is by forcing the player to take unnecessary steps in order to complete a task or achieve a goal. For example, if players must press a button every time they want to change Pac-Man's direction, the game becomes unnecessarily tedious. However, the interface is still functional because players can still complete the necessary action of changing direction. In *Civilization III*, conducting espionage and dealing with foreign relations are often done at the same time. However, no method of switching directly from one of these screens to the other is provided.



## How Important is Usability?

Firaxis Games



Firaxis Games



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*Neverwinter Nights* uses sound to add to the game's atmosphere.

Though their functions are related, there is no direct method of switching between the foreign relations (top image) and espionage (bottom image) screens in *Civilization III*. These interfaces illustrate an important point. While it is clear that the design here is suboptimal, *Civilization III* is still an extremely successful game and is considered the front runner of all turn-based strategy games. While interface design is important, a "perfect" interface is not required for a successful game. How resistant a game is to interface problems depends in part on the type of game. Turn-based strategy games (discussed in Chapter 5) are typically quite complex and interface "heavy" (containing many interfaces that convey a wide array of information). Players of these types of games will tend to be more tolerant of minor problems. For an action game, however, interface design mistakes could be deadly—undermining the game pacing desired and frustrating the players.

## Feedback Red Herrings

As a general rule, it is a bad idea to give the player misleading information. Sound can be an exception to this rule, however. In *Neverwinter Nights*, when they're in urban areas threatened by enemies, players can hear the distant cries of peasants. These peasants don't actually exist in the game; the sound misleads players into feeling a sense of urgency and despair, making them feel like they are actually in a distressed city. Note that providing false visual clues is potentially more damaging. For example, if sections of the city are burning, this also adds to the atmosphere. However, since players can see the flames, they initially want to interact with it—to put out the fire, for example. It is less confusing to hear sounds in the distance, especially if their sources can never be reached.

Though technically less important than functionality, usability in practice is just as necessary for a successful interface. One primary difference between the two is that an interface is either functional or it's not—but usability can vary along a spectrum. Very few, if any, game interfaces are perfect in terms of usability. In fact, by its nature, usability can vary depending on player preference.

## Think Tanks: Combining Form and Function

The first step is always to understand, at the most basic level, the functionality required for an interface and implement it. It needs to work before you can start making it pretty. After it works to a basic level, you can start embellishing the functionality with art and make it look aesthetically pleasing. Sometimes this is a back-and-forth process, with art influencing design. For me, the goal is to make the visuals reinforce the design goal. We introduced an interesting effect in the Xbox version of *Think Tanks* for the aiming of the tank weapon.

What we implemented first was to have a series of rings that projected outward from the tank's barrel. When the tank 'locked' an enemy target, the whole series of rings would snap to point at the target. From a functional standpoint, it worked. One could tell when a target was locked, and when one was not locked, but it was very abrupt and a little confusing, and it was not pleasing. What we worked very hard on was the transition of the rings from an unlocked to locked position, and more importantly, from a locked to unlocked position. When unlocking, the targeting rings would deform to a point where unlocking was imminent, looking like a curving slinky. It would then 'pop' off the locked target in a spring like action. The effect was instantly understood by all of the testers. It felt like the locking of the targeting rings was under tension, and the effect in and of itself was both visually pleasing and informative.

—Joe Maruschak (Creative Director, GarageGames)

GarageGames





It's more important to have a functional interface that you dress up aesthetically than to have an aesthetic interface that you have to try and make work functionally.

—Briar Lee Mitchell  
(Co-Founder, Star Mountain Studios)

Once the art style is defined for your product, extending that art style to the interface is crucial for a good interface. The player must feel like every button and every thing they see on the screen works in harmony with each other.

—John Comes  
(Lead Content Engineer, Gas Powered Games)

## Aesthetics

In interface design, form should follow function, but the *aesthetics* of an interface should not be ignored. While the onscreen action may change, the core interface does not. Look at game screenshots on websites or on the backs of game boxes. Note that most of these “screenshots” look cinematic and depict no interface at all! Part of the reason for this convention is to prevent the screenshots from looking too much alike. When advertising a game, you want the consumer to see dynamic, exciting examples of what the game is like. Showing a largely unchanging interface fails to achieve that goal and wastes limited advertising space. Also, it's widely believed (at least from a marketing standpoint) that including an interface in game marketing images can detract from the main in-game art.

Since the interface is always evident, it is especially important that it be attractive. A dull interface will undermine the best graphics and, in terms of total effort, it's much easier to make a beautiful interface than a beautiful game.

That's not to say that designing an attractive interface is easy; it's not—especially because you first have to meet its functional needs. But the actual creation of the art assets used in a typical interface requires much less effort than developing the 3D models and animation sequences used in a game. Therefore, it is worthwhile to expend the energy to properly design an interface's aesthetics.

The aesthetics of an interface are affected by many factors, such as artistic style, color palette, and typography. Aesthetics affect interface elements associated with feedback—but not control.

### Visual Style & Function

A visual style is first determined for the game experience overall. Then, the information is made to come across in the most immediate and understandable way. Finally, both form a framework for the user interface aesthetics. The visuals shouldn't drive the function, but they can certainly bend and influence it.

—Stieg Hedlund (Lead Designer, Perpetual Entertainment)

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In these screenshots of *Dungeon Siege 2*, the top screenshot does not contain the interface, while the bottom screenshot does. Does the interface detract from the game's visual impact?



### Metroid Prime: Setting the Tone

Nintendo



For visual style and pure aesthetic feel, *Metroid Prime* for the GameCube was really well executed. The background animations coupled with an eerie audio overture and simple yet stylistic layout made for a very tight presentation. It has this feel of traveling through an alien organism, and it immediately set the tone for the game.

—Timothy Nixon (Founder & Creative Director, Straylight Studios)

### World of Warcraft: Balancing Aesthetics & Information Overload

World of Warcraft®, StarCraft®, Diablo®, and Warcraft® images provided courtesy of Blizzard Entertainment, Inc.



The interface for *World of Warcraft* somehow manages to communicate a barrage of information to the player quickly—in a way that doesn't make you want to tear your eyeballs out of your head. The depth of the interface is slowly revealed as you play (mostly when players fill up quick slots and gain new powers). It's heavily icon-driven; the aesthetics for the colors and fonts are good and blend well with the game world; and it's unobtrusive to such an extent that it never feels like it gets in the way of the action.

—Chris Avellone (Chief Creative Officer & Lead Designer, Obsidian Entertainment)

My absolute favorite game interface is used in *World of Warcraft*. The whole interface is completely customizable via an easy-to-learn scripting language, and it stays in context with the game's visual themes and textures. That means player-made interface add-ons look like they're still part of the *Warcraft* universe.

—Randy Wallace  
(Game Art & Design Student)

### Ian Wall on Interface Design Aesthetics

Ian Wall first started working with interface design in 1997 designing websites. His initial foray into digital artwork was with Photoshop 2.0.5 (before layers)! Over the years, Ian worked for various companies, did some freelance work, and eventually landed a job working as a web designer at Sony Online Entertainment. During his time at Sony in 2001, Ian designed graphical user interfaces for both *PlanetSide* and *EverQuest*. In 2003, he began doing 3D character artwork for *EverQuest*. He currently works at Obsidian Entertainment as a Senior Artist on *Neverwinter Nights 2*.



Ian Wall (Senior Artist, Obsidian Entertainment)

Strong graphic design and color theory are two major foundations for game interface design aesthetics. I try to keep my user interface designs slim—only using design elements as accents throughout rather than creating large graphical elements. Then I typically use texture, shape, contrast, size, and color break up areas as needed. Interface design is definitely a “less is more” realm of design. Concerning functionality, I try to break things down into flow charts and make all the paths throughout the interface as simple and minimal as possible. If going from point A to point B requires input from the player five different times along the way, I make sure that each of those points of input is necessary, makes sense to the player, and can't be combined or simplified or removed. There are areas of some interfaces that you might assume are fairly straightforward, but they can become extremely complicated for the player if they go unchecked.

### Accessibility

Accessibility is similar to usability, but it applies specifically to players with special needs. People with physical or mental disabilities or impairments can have difficulties using interfaces. Currently, no regulations require accessibility to be implemented in computer software and hardware. It is the responsibility of the game industry itself to accommodate the needs of those with disabilities.



## Why Consider Accessibility?

### Addressing Accessibility

Addressing issues like red/green color blindness, deafness, mobility, and other impairments is important for the industry. In our work in consumer software outside of games, supporting those with disabilities (like curb cuts in sidewalks for wheel chairs) often ends up improving access for everybody.

—Nicole Lazzaro (Founder & President, XEODesign, Inc.)

There are many benefits to implementing accessibility in game interfaces. First, an accessible product—assuming it doesn't compromise its quality for the average player—will reach a larger audience. Since many games do not consider accessibility, the well-designed product will garner much attention and sales from those who benefit from it. Second, consideration of issues such as accessibility is viewed as socially responsible by modern society and aids a company in developing a positive reputation—which has many intangible benefits. Finally, through self-regulation, the game industry gains credibility with society—helping it to overcome the negative stigma games sometimes have.

Physical and mental disabilities include a wide variety of conditions and symptoms. It may not be practical to attempt to address all possible disabilities, but an awareness of common difficulties people might have can help guide your interface design. Accessibility affects interface elements associated with both feedback and control.



Michelle Hinn  
(Vice President,  
Game Division—  
DonationCoder.  
com; Chair, Game  
Accessibility Special  
Interest Group—  
International Game  
Developers Association  
[IGDA])

### Michelle Hinn on Accessibility and the "Right to Fun"

In addition to her involvement with DonationCoder.com and the International Game Developers Association (IGDA), Michelle Hinn is completing her doctorate at the University of Illinois, where she has been teaching courses on game design and adolescent psychology. She has a B.A. in Music Performance, a B.S. in Psychology, and an M.A. in Multimedia Design. Michelle worked at Microsoft Game Studios where she focused on piloting usability tests for Xbox multiplayer games.

Michelle has also worked for Computer Sciences Corporation, the National Center for Supercomputing Applications (NCSA), and the University of Nevada at Reno. She is the co-editor of *Visions of Quality: How Evaluators Define, Understand, and Represent Program Quality* and is on the editorial board of the *Computers in Entertainment* magazine. Michelle is currently working on a Game Accessibility book with the IGDA.

In the game industry, we often talk about quality of life issues as employees—but we rarely stop and think about the positive impact of games on

quality of life. Sure, we have government officials and groups that tell us that violent games are bad for us psychologically, but there are a lot of games out there that are good for us with regard to cognitive-spatial skills, collaboration, and more. There's a "right to fun" that I believe we all have; leisure activities can be healthy for us. Imagine if, as a game designer, you suddenly lost your sight, hearing, or mobility. Would you have a problem with not being able to enjoy playing a game—the leisure activity that ironically led you to work in the industry? Most likely you would. We are all aging—which brings about loss of sight, hearing, and mobility. In this industry, which is no longer composed of the "teenage boy" club, it will be interesting to see how an aging work force will address these concerns. We're already seeing some exciting things from companies such as Nintendo, with its *BrainAge* game series that may have some cognitive benefits for the aging brain.

I've been working to link groups together who are concerned with game accessibility, and I'm starting up some research here at the University of Illinois on game interface design with some college students with disabilities. The IGDA Game Accessibility SIG is working with funded groups such as game-accessibility.com (also SIG members) to start getting the word out about what the industry is doing "right" with game accessibility. Instead of approaching companies to say that their game is not accessible for the following 800 reasons, we let them know that they did five things right for gamers with mobility disabilities, for example. Even when game companies might happen to be doing some things that work well with certain assistive technologies (such as a head tracker), they often just don't know this because it was never brought to their attention that they might have players with disabilities. This is not a stab at the industry—but an indication of lack of awareness of what gamers with disabilities (who are extremely passionate about playing your games) have to do in order to *play*. It's quite sobering to realize that these players are hacking into hardware in order to play your game any way that they can. I think it shows us that even when our games go gold some gamers are still in the "design" phase, so to speak, figuring out how to make your completed project something that they can participate in and interact with.

### Impaired Vision

Perhaps the most common disabilities relevant to interface design are those involving vision impairment.



## Myopia

*Myopia*, or near-sightedness, affects approximately 25% of American adults. Though easily treated through glasses and contact lenses, it's important to recognize that many people using game interfaces do not have perfect vision.

### SANS SERIF FONT SERIF FONT

Arial is a sans serif font, while Times New Roman is a serif font.

#### Consider Color Blindness

Color blindness is an obvious disability that needs to be addressed in a game interface, as it affects 5–10% of the population. If you aren't thinking about this, you probably don't have a good design. Some hints: use more than color to cue the user and take care to pick distinct enough colors.

—Bob Mitchell  
(Senior Programmer,  
Sony Online Entertainment)

For most elements of games, the impact of myopia is minor—but the area to be especially careful about is text. Sans serif fonts (such as Verdana) and fonts with small serifs (such as Times New Roman) are believed to be easier to read in difficult conditions and are thus preferable choices. (*Serifs* are the cross strokes that appear on some letters.)

Having large, readable text is more important in games than in utility software for two reasons. First, console games often use standard televisions—which are less sharp than computer monitors. Second, in any real-time game, the player must be able to read the text quickly so that it does not interfere with playing the game.

#### Color Blindness

Color blindness is estimated to affect as many as 10% of male Americans to some degree. (Color blindness is considerably less common among women.) Most people with color blindness are still able to distinguish between many colors; however, in the most severe cases, color blindness can cause



The above images show a comparison between what a person who is not color-blind (left) and one who is color-blind (right) might see.

someone to see in only black and white. The most common form of color blindness is difficulty distinguishing red from green.

One simple guideline to address color blindness is to never use color contrast as the *only* method of conveying information. For example, a common convention is to use green to indicate full health, yellow to indicate a wounded character, and red to indicate a badly wounded one. However, instead of relying solely on color, a power bar is usually used—with a shorter bar indicating less health. While color plays a large role in depicting a character's health, a color-blind player can gauge health by the length of the bar.

Firaxis Games, Inc.



A special patch is available for *Alpha Centauri* that allows the game to use a "color-blindness friendly" color palette.

A more complete approach to accommodate color blindness is to use color palettes that are friendly to the common red-green blindness. This is generally not a practical solution for a default interface, but it could be provided as an option the player could choose. For example, Firaxis provides a color-blindness patch for *Alpha Centauri* that uses an alternate color scheme.

Always consider ways of reinforcing or even building redundancy into game interfaces to allow for accessibility. Icons are good—but icons with tooltips, color coding, and associated sound effects are better.

—Stieg Hedlund  
(Lead Designer, Perpetual  
Entertainment)

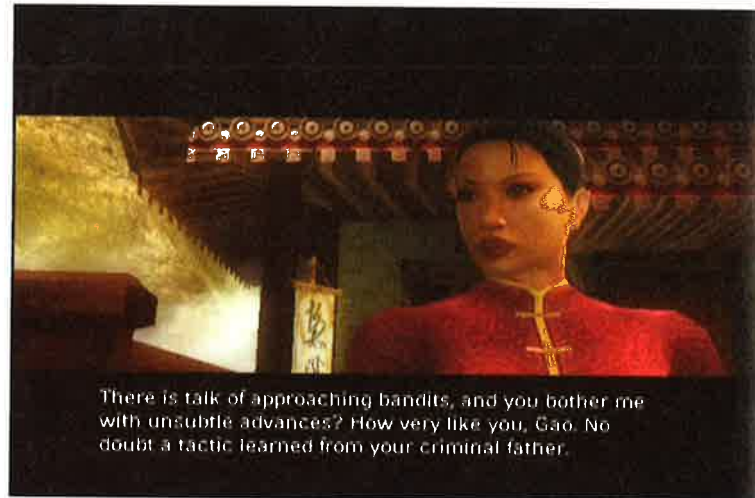


## Making Your Interface Accessible

Interface accessibility for the disabled is extremely important. After all, games are for everyone. Unfortunately for a lot of game companies this is a lot of work, and it's not just the interface designer's responsibility to handle such matters. It's a company-wide commitment and requires input from all departments within a company. Some third-party companies are stepping up to help companies create more accessible games—for example, *Quake for the Blind*, which is a huge landmark for audio interfaces. That being said, there are some things you can do as a designer to help make your interface more accessible. One thing you can do is work with your programmers to make the interface scalable. This will allow people to increase or decrease the scale of the images displayed, so that people who are visually challenged can more easily read small text or recognize icons more readily due to their larger size. Another simple thing to do is to keep in mind the color blind. There are filters for Photoshop that you can download which can be used to color correct your images. This will allow you to see what your images would look like to someone who is red/green color blind. If your image is hard to see or read, then you can adjust it accordingly.

—Ian Wall  
(Senior Artist, Obsidian Entertainment)

BioWare Corp.



Subtitles for games with voiceovers, such as *Jade Empire*, are preferred by some players—especially those who are hearing impaired.

## Hearing Impairment

Designing your interfaces to accommodate hearing impairments is especially critical, since even non-deaf players will often be playing without sound or might

be listening to their own music while they play the game. The best method of accommodating hearing impairments is similar to that for addressing color blindness. Any critical feedback to the player should not be done solely through sound or music. Use audio to enhance your interface, but do not make it a requirement.

## Physical Disabilities

Physical disabilities can range from carpal tunnel syndrome to quadriplegic conditions. Specialized software and hardware have been designed to allow people to interface with a computer through other methods.

The importance of accessibility in interface design should not be overlooked. There has been some discussion among members of the International Game Developers Association (IGDA) about starting a game accessibility initiative similar to the web accessibility initiative that was introduced by the W3C (<http://www.w3.org/WAI/>).

## Production Advantages of Accessibility

Most of my experience with interface issues and the disabled usually come from compensating for color blindness in games (I've worked with a few color-blind designers in the past) and subtitle options for all of our games for the hearing-impaired. It's never been mandatory, but we've found that implementing for the disabled usually has production advantages (such as localization, cleaner interface aesthetics, variety of feedback). Of course, I seem to be becoming deaf as I grow older, so I'm appreciating subtitles more and more as time goes on.

—Chris Avellone  
(Chief Creative Officer & Lead Designer,  
Obsidian Entertainment)

## Specialized Input Methods for the Disabled

Usually, the needs of the disabled are addressed through the use of specialized software or hardware input methods. In the case of voice recognition software, your interface must allow for hotkey activation and/or assignment to be accessible to that particular audience. Some people have looked at games purely based on sound to cater to a blind audience. There are also experiments taking place involving direct control from the nervous system—the initial results of which have allowed quadriplegics to play *Pong* with nearly 80% accuracy.

—Timothy Nixon  
(Founder & Creative Director, Straylight Studios)

## "Switch" Interfaces as Accessible Controllers

Some of the best-designed controllers are hacks by gamers with disabilities or people trying to create accessible controllers for a friend or a family member who has a disability. An example of this would be a "switch" interface (a one-button controller, essentially), that allows players to divide a controller in half if they have mobility limitations; instead of bringing both hands together to play, they can have controllers in each hand. See <http://www.oneswitch.org.uk/> for more examples.

—Michelle Hinn  
(Vice President, Game Division—DonationCoder.com;  
Chair, Game Accessibility Special Interest  
Group—[IGDA])



## Robert Florio on Accessible Interfaces



Robert Florio  
(Artist & Student,  
Game Art & Design  
Program, Art  
Institute Online)



Photo by Diane Yankelwitz, 2005.  
Published with permission of KYE/  
www.QuadControl.com



The QuadControl mouth stick is a well-designed manual interface that Robert uses regularly with games such as *The Matrix: Path of Neo*, *Psychonauts*, and *Devil May Cry 3*.

In 1996, when Robert Florio was only 14 years old, he injured his spinal cord while diving. After the accident, Robert decided to focus on pursuing his dream to be a game designer. Robert is a quadriplegic and creates all of his artwork with his mouth using a tool known as a mouth stick. Game accessibility to him means “finally gaining control over a world I no longer can interact with and reconnecting my senses to those actions.” Robert is now 23 years old and lives in Maryland, working on obtaining his Bachelor of Arts degree in Game Art & Design from the Art Institute Online. He is learning to create his own games from home. Robert feels that many players who cannot physically function to play these games are at a disadvantage—and he hopes to bridge the gap by creating his own company and influencing the structure of games today. Robert can be found online at <http://robertflorio.com>

The most accessible games I’ve played allow the rearranging of all moves, special button selections, and combos of buttons in one—all in the game options menu. Making everything much more simple not only makes it easier for me to play, but it also simplifies games for others to enjoy. So many games on the market are becoming more complicated in design—especially with regard to the design of player interaction with the controller and the environment.

Game interfaces will eventually be even more interactive—with the senses implemented into the game control and environment. For example, I could use my mouth (by breathing in and out), chin, or bottom lip for certain

functions. There could possibly be “mind control” through computer chips for those with complete quadriplegia. I would love to see the day where I could get a physical workout while playing a video game specifically tuned to my needs and functions as a quadriplegic.

### Challenges and Rewards of Designing for Accessibility

Ideally, when I am thinking about a game, I strive to make everything intuitive. I try to use as many subtle visual and audio cues as possible to inform the player of what is going on. Ideally, both the visual and audio components should be able to stand on their own to inform the player, but this can be quite a challenge. I would be hard pressed to design a shooter for the blind. I am sure that it could be done—but it would be very difficult, and it would have to address the way that a blind person interfaces with the world.

I think about it, but I try not to go too overboard thinking about it. Game players with sensory disabilities have learned to cope with a world where interface is not designed for the most part to accommodate them. If the game world reflects the real world well enough, they can cope with it using the coping mechanisms that they have already acquired. I do try to the best of my ability to make sure that all feedback has both a visual and audio component, as I don’t like to rely solely on audio as a feedback device (although at times it is the only option).

For those with disabilities that interfere with input (paralyzed), it can be quite difficult. I would relish the chance to design a game for the disabled . . . say, have an interface device that allows one to fly by controlling their breathing . . . unfortunately the economics of the industry don’t really make that a probability. The hope is that the cost of creating specialized interface devices may decrease as technology improves. I can imagine, say, if cell phones had motion-sensing technology in them. If the software had an API that allowed this to be easily accessible, one could make the ‘flying’ game, make a module for a cell phone, and by having someone place the phone of the chest of the paralyzed individual, allow them to play the game by breath control.

Is it important? From a sales perspective, probably not. From a human perspective, most definitely so. Games and simulations are something that can be used to improve the quality of life for severely disabled people. If we can give those who are disabled the ability to interact with the world, socialize with others, and play in worlds where they are not held back in ways they may be in the ‘real’ world, we can make a real difference in their lives.

I would love to be able to somehow be a part of something that attempts to make the world more accessible to the disabled. As part of the legacy of life, this would be something far more important to me than making a ton of money.

—Joe Maruschak  
(Creative Director, GarageGames)