CHAPTER FIVE

The Game Consists of *Elements*

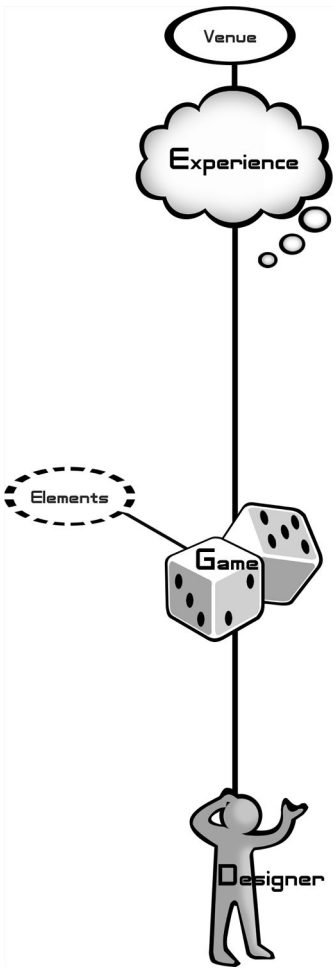
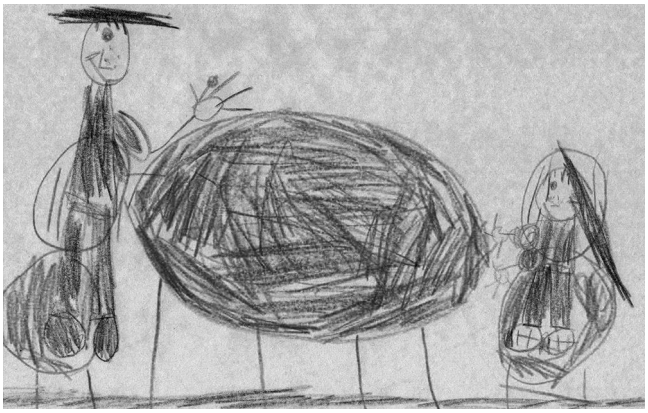


FIGURE
5.1

What Are Little Games Made Of?

FIGURE
5.2



When my daughter was 3 years old, she became quite curious one day about what different things were made of. She ran around the room, excitedly pointing to things, trying to stump me with her questions:

"Daddy, what is the table made of?"
"Wood."
"Daddy, what is the spoon made of?"
"Metal."
"Daddy, what is this toy made of?"
"Plastic."

As she looked around for a new object, I turned it around on her, with a question of my own.

"What are *you* made of?"

She paused to consider. She looked down at her hands, turning them over and studying them. And then, brightly, she announced:

"I'm made of *skin*!"

And for a three-year old, this is a perfectly reasonable conclusion. As we get older, of course, we learn more about what people are really made of—the complex relations between bones, muscles, organs, and the rest. Even as adults, though, our understanding of human anatomy is incomplete (can you point to your spleen, for instance, or describe what it does or how?), and this is acceptable for most of us, because we generally know enough to get by.

But we expect more from a doctor. A doctor needs to know, really know, how everything works inside us, how it all interrelates, and, when something goes wrong, how to figure out the source of the problem and fix it.

If you have just been a gameplayer up until now, you probably haven't thought too much about what a game is made of. Thinking about a videogame, for example, you might, like most people, have a vague idea that a game is this kind of story world, with some rules and a computer program lurking around somewhere in there that somehow makes it all go. And that's enough for most people to know in order to get by.

But guess what? You're a doctor now. You need to know, intimately, what your patients (games) are really made of, how their pieces all fit together, and what makes them tick. When things go wrong, you'll need to spot the true cause and come up with the best solution, or your game will surely die. And if that doesn't sound hard enough, you'll be asked to do things that most doctors are never asked: to create new kinds of organisms (radically new games) no one has ever seen before and bring them to life.

Much of this book is devoted to developing this essential understanding. Our study of anatomy begins with an understanding of the four basic elements that comprise every game.

The Four Basic Elements

There are many ways to break down and classify the many elements that form a game. I have found that the categories shown in Figure 5.3, which I call the *elemental tetrad*, are very useful. Let's look briefly at each of the four and how they relate to the others:

1. **Mechanics**: These are the procedures and rules of your game. Mechanics describe the goal of your game, how players can and cannot try to achieve it, and what happens when they try. If you compare games to more linear

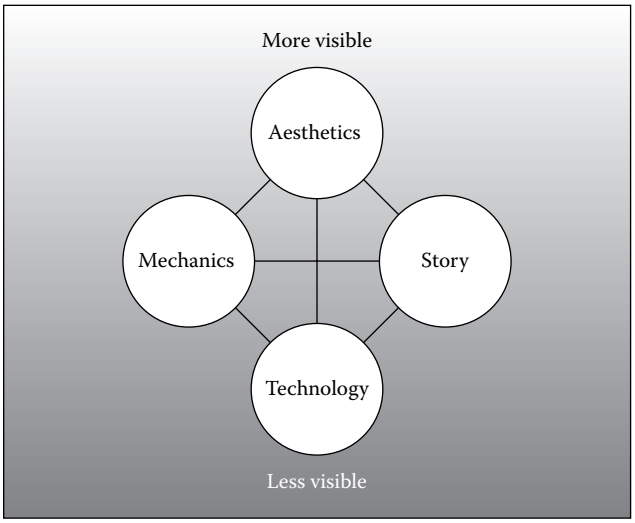


FIGURE 5.3

entertainment experiences (books, movies, etc.), you will note that while linear experiences involve technology, story, and aesthetics, they do not involve mechanics, for it is mechanics that make a game a game. When you choose a set of mechanics as crucial to your gameplay, you will need to choose technology that can support them, aesthetics that emphasize them clearly to players, and a story that allows your (sometimes strange) game mechanics to make sense to the players. Mechanics will be given detailed attention in Chapters 12 through 14.

2. **Story**: This is the sequence of events that unfolds in your game. It may be linear and prescripted, or it may be branching and emergent. When you have a story you want to tell through your game, you have to choose the mechanics that will both strengthen that story and let that story emerge. Like any storyteller, you will want to choose the aesthetics that help reinforce the ideas of your story and the technology that is best suited to the particular story that will come out of your game. Story, and its special relationship with game mechanics, will be studied in Chapters 17 and 18.
3. **Aesthetics**: This is how your game looks, sounds, smells, tastes, and feels. Aesthetics are an incredibly important aspect of game design since they have the most direct relationship to a player's experience. When you have a certain look, or tone, that you want players to experience and become immersed in, you will need to choose a technology that will not only allow the aesthetics to come through but amplify and reinforce them. You will want to choose the mechanics that make players feel like they are in the world that the aesthetics have defined, and you will want a story with a set of events that let your aesthetics emerge at the right pace and have the most impact. The skill of choosing aesthetics that reinforce the other elements of the game to create a truly memorable experience will be examined in Chapter 22.
4. **Technology**: We are not exclusively referring to "high technology" here, but to any materials and interactions that make your game possible such as paper and pencil, plastic chits, or high-powered lasers. The technology you choose for your game enables it to do certain things and prohibits it from doing other things. The technology is essentially the medium in which the aesthetics take place, in which the mechanics will occur, and through which the story will be told. We will talk in detail about how to choose the right technology for your game in Chapter 28.

It is important to understand that *none of the elements are more important than the others*. The tetrad is arranged here in a diamond shape not to show any relative importance but only to help illustrate the "visibility gradient," that is, the fact that technological elements tend to be the least visible to the players, aesthetics are the most visible, and mechanics and story are somewhere in the middle. It can be arranged in other ways. For example, to highlight the fact that technology and mechanics are "left brain" elements, whereas story and aesthetics are "right brain"

elements, you might arrange the tetrad in a square. To emphasize the strong connectedness of the elements to one another, they could be arranged as a tetrahedral pyramid—it really doesn't matter.

The important thing to understand about the four elements is that they are all essential. No matter what game you design, you will make important decisions about all four elements. None is more important than the others, and each one powerfully influences each of the others. I have found that it is hard to get people to believe in the equality of the four elements. Game designers tend to believe that mechanics are primary; artists tend to believe the same about aesthetics; engineers, technology; and writers, story. I suppose it is human nature to believe your piece is the most important. But, believe me, as a game designer, *they are all your piece.* Each has an equally powerful effect on the player's experience of your game, and thus, each deserves equal attention. This point of view is crucial when using Lens #9.

Lens #9: The Lens of the Elemental Tetrad

To use this lens, take stock of what your game is truly made of. Consider each element separately and then all of them together as a whole.

Ask yourself these questions:

- Is my game design using elements of all four types?
- Could my design be improved by enhancing elements in one or more of the categories?
- Are the four elements in harmony, reinforcing each other and working together toward a common theme?

Consider the design of the game *Space Invaders* (Taito 1978) by Toshihiro Nishikado. If (somehow) you aren't familiar with the game, do a quick web search so that you understand the basics. We will consider the design from the points of view of the four basic elements.

Technology: All new games need to be innovative in some way. The technology behind Space Invaders was custom designed for the game. It was the first videogame that allowed a player to fight an advancing army, and this was only possible due to the custom motherboard that was created for it. An entirely new set of gameplay mechanics was made possible with this technology. It was created solely for that purpose.

Mechanics: The gameplay mechanic of *Space Invaders* was new, which is always exciting. But more than that, it was interesting and well balanced. Not only does a player shoot at advancing aliens that shoot back at him, the player can

hide behind shields that the aliens can destroy (or that the player can choose to destroy himself). Further, there is the possibility to earn bonus points by shooting a mysterious flying saucer. There is no need for a time limit, because the game can end two ways: the player's ships can be destroyed by alien bombs and the advancing aliens will eventually reach the player's home planet. Aliens closest to the player are easier to shoot and worth fewer points. Aliens farther away are worth more points. One more interesting game mechanic is that the more of the 48 aliens you destroy, the faster the invading army gets. This builds excitement and makes for the emergence of some interesting stories. Basically, the game mechanics behind Space Invaders are very solid and well balanced and were very innovative at the time.

Story: This game didn't need to have a story. It could have been an abstract game where a triangle shoots at blocks. But having a story makes it far more exciting and easier to understand. The original story for *Space Invaders*, though, was not a story of alien invaders at all. It was originally a game where you fired at an army of advancing human soldiers. It is said that Taito decided this sent a bad message, so the story was changed. The new story, a story about advancing aliens, works much better for several reasons:

- Several war-themed games had already been released (e.g., *Sea Wolf*, 1976). A game where you could be in a space battle was actually novel at the time.
- Some people are squeamish about war games where you shoot people (*Death Race*, 1976, had made violence in videogames a sensitive issue).
- The "high-tech" computer graphics lent themselves well to a game with a futuristic theme.
- Marching soldiers are necessarily walking on the ground, which means the game would have had a "top-down" view. *Space Invaders* gives the sense that the aliens are gradually lowering toward the surface of your planet and you are shooting up at them. Somehow, hovering, flying aliens are believable and make for a more dramatic story—"if they touch down, we're doomed!" A change in story allowed for a change in camera perspective with a dramatic impact on aesthetics.

Aesthetics: Some may sneer at the visuals, which now seem so primitive, but the designer did a lot with a little. The aliens are not all identical. There are three different designs, each worth a different amount of points. They each perform a simple two-frame "marching" animation that is very effective. The display was not capable of color—but a simple technology change took care of that! Since the player was confined to the bottom of the screen, the aliens to the middle, and the saucer to the top, colored strips of translucent plastic were glued to the screen so that your ship and shields were green, the aliens were white, and the saucer was red. This simple change in the technology of the game worked only because of the nature of the game mechanics and greatly improved the aesthetics of the

game. Audio is another important component of aesthetics. The marching invaders made a sort of heartbeat noise, and as they sped up, the heartbeat sped up, which had a very visceral effect on the player. There were other sound effects that helped tell the story too. The most memorable was a punishing, buzzing crunch noise when your ship was hit with an alien missile. But not all aesthetics are in the game! The cabinet for *Space Invaders* had a design that was attractive and eye-catching that helped tell the story of the evil alien invaders.

Part of the key to the success of *Space Invaders* was that the four basic elements were all working hard toward the same goal—to let the player experience the fantasy of battling an alien army. Each of the elements made compromises for the other, and clearly deficits in one element often inspired the designer to make changes in another. These are the sort of clever insights you are likely to have when you view your design through the Lens of the Elemental Tetrad.

Skin and Skeleton

We will be discussing the four basic elements in more detail throughout this book as well as many other aspects of game anatomy. It is a wonderful thing to learn enough so that you can see past the skin of a game (the player's experience) into the skeleton (the elements that make up the game). But you must beware of a terrible trap that many designers fall into. Some designers, thinking constantly about the detailed internal workings of games, forget about the player experience. It is not enough to merely understand the various game elements and how they interrelate with one another—you must always consider how they relate to the experience. This is one of the great challenges of game design: to simultaneously feel the experience of your game while understanding which elements and elemental interactions are causing that experience and why. You must see skin and skeleton at once. If you focus only on skin, you can think about how an experience feels, but not understand why it feels that way or how to improve it. If you focus only on skeleton, you can make a game structure that is beautiful in theory, but potentially horrible in practice. If you can manage to focus on both at once, you can see how it all works while feeling the power of your game's experience at the same time.

In Chapter 2, we discussed the importance and the challenge of observing and analyzing your own experiences. As challenging as that is, it is not enough. You must also be able to think about the elements in your game that make the experience possible. This takes practice, just as the observation techniques of Chapter 2 take practice. Essentially, the skill you need to develop is the ability to observe your own experience *while* thinking about the underlying causes of that experience.

This important skill is called *holographic design*, and it is detailed in Lens #10.

Lens #10: The Lens of Holographic Design

To use this lens, you must see everything in your game at once: the four elements and the player experience, as well as how they interrelate. It is acceptable to shift your focus from skin to skeleton and back again, but it is far better to view your game and experience holographically.

Ask yourself these questions:

- What elements of the game make the experience enjoyable?
- What elements of the game detract from the experience?
- How can I change game elements to improve the experience?

In future chapters, we will say much more about the elements that make up a game. Now let's turn our attention to the reason these elements need to work together.