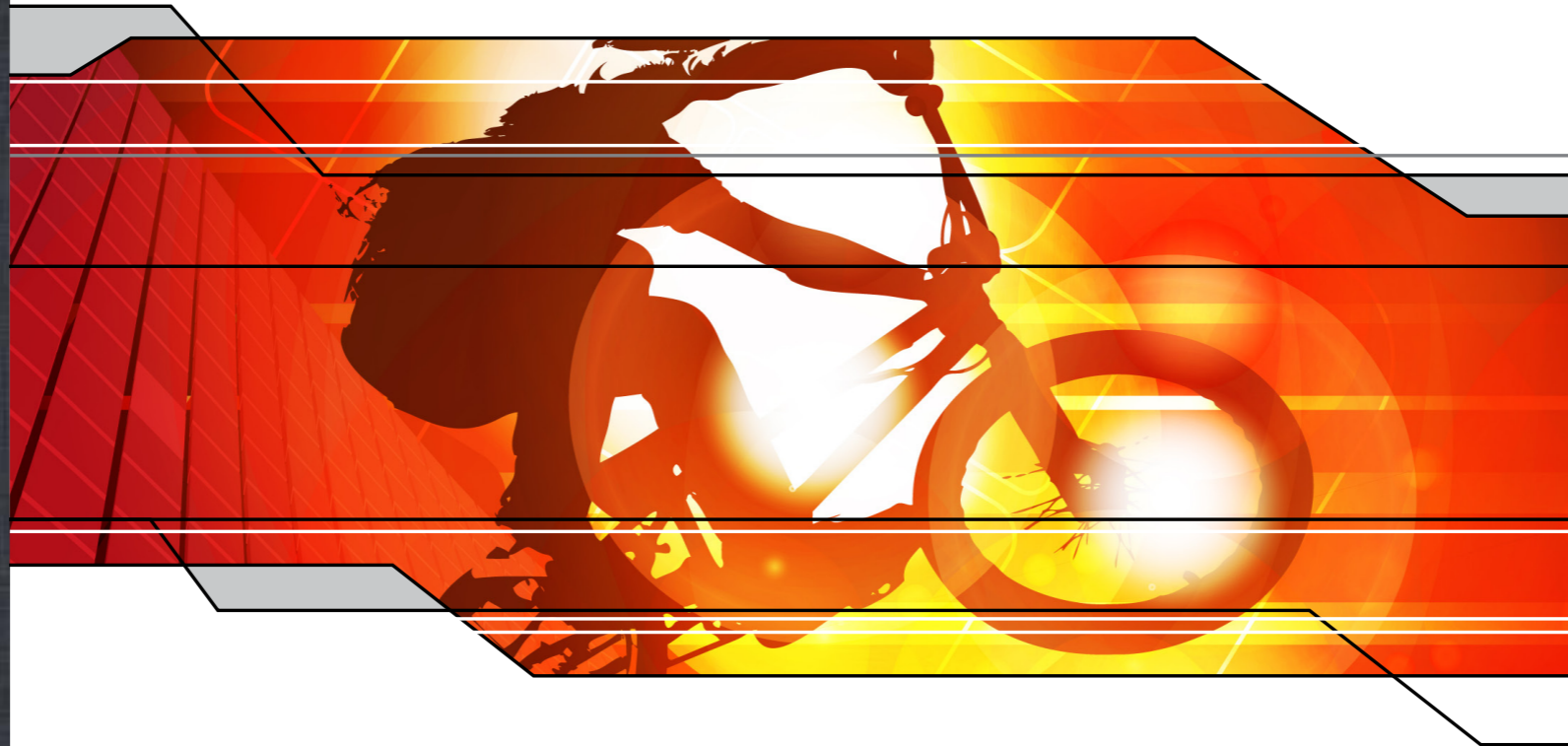


Fundamentals

of Sports Game Design



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New
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About the Author

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Introduction

This book discusses how the principles of game design apply to sports games. We'll begin by formally defining sports games and then address in detail the features that characterize them. We'll also talk about the legal issues you'll encounter if you make a game with a team or league license. Most of the book is dedicated to the structure of sports games: the types of gameplay, the problems of mapping actions to user input devices, and the design of athlete AIs for a rewarding experience. For a designer, sports games offer the unique challenge of simulating a well-known sport while at the same time modifying its mechanics to work with the video game hardware their players are using.

What are Sports Games?

Sports games create a special challenge for the game designer. So many people play or watch sports that they come to a video game with high expectations about what the game will be like, and a designer must learn to meet those expectations. Sports games are one of the most popular genres in all of video gaming, and a well-tuned game can turn into a highly enjoyable—and profitable—product line.

Unlike most other games, which take place in a world the player knows little about, sports games simulate a world the player knows a lot about: sporting events as they are in real life. No one has ever really led an army of elves into combat, and only a small number of people know how it feels to fly an F-16 fighter jet, but a great many people know what professional football looks like and how the game is played. Sports games encourage direct comparison with the real world.

Not all sports games are ultrarealistic, of course. Some, such as *FootLOL: Epic Fail League*, are fantasy games even though they are based on real sports. Others, such as *Deca Sports Extreme*, simplify a sport and deliberately make it more extreme for dramatic purposes. Most of these kinds of games are designed to appeal to the casual player,

who might not know much about the real sport or want a complex experience. But for dedicated fans, the game must be a reasonably accurate depiction of the real thing, and fans will see any deviation as a flaw.

In addition to games based on a single sport, the industry offers many titles that are compilations of multiple sports, such as *Wii Sports*. These tend to simulate sports with simpler rules, such as tennis, archery, or Olympic field events. These are popular as multiplayer local games.

SPORTS GAMES

Sports games simulate some aspect of a real or imaginary athletic sport, whether it is playing in matches, managing a team or career, or both. Match play uses physical and strategic challenges; the management challenges are chiefly economic.

This book discusses athletic sports, as opposed to sports such as motor racing. Although racing games are often sold in the sports category, from a design standpoint, they really belong in the *Fundamentals of Vehicle Simulation Design* e-book, which you can find more about at www.peachpit.com/ernestadams.

The Presentation Layer

Sports games offer some of the most beautifully realistic graphics and audio of any genre, and their presentation features borrow heavily from those seen on television. TV sports presentations have their own particular look and feel, which change from time to time, and many game art directors take their cue from them. Don't copy them exactly however; the looks of TV sports presentations are copyrighted.

Interaction Model

The interaction model in sports games varies considerably depending on the sport, but in most cases, the player controls an avatar who is an athlete in the match. In one-on-one sports such as tennis, this is straightforward, but in team sports, the player's control typically switches automatically from one athlete to another as the focus of play changes. In basketball games, for example, control switches to the athlete who has the ball. If the player's team is on defense, most games allow the player to choose which athlete to control and allow him to switch quickly from one athlete to another as conditions change. This often requires significant changes to the user interface as play progresses; the functions of the buttons have to change if the player assumes control of an athlete with a specialized function—for example, switching from the thrower to a sweeper in curling after delivering the rock.

Camera Models

In one-on-one sports games or individual competitions, such as gymnastics or diving, the camera model is seldom difficult to manage. Choose a spot where the camera gives a clear view of the athletes and where their movements and activities will map neatly onto the machine's input devices. As a general rule, you shouldn't do sports games in the first person. A lot of the fun of watching a sport is in seeing the athletes exercise their skills. For example, you could make a tennis game in the first person, but you wouldn't get to see your athlete playing tennis, and you might not even get to see your racket hit the ball. An overhead perspective, with your tennis player at the bottom of the screen and your opponent at the top, presents a much more natural view and lets you see both athletes running, jumping, serving, and so on.

NOTE:

Some angles don't work at all. American football is almost unplayable from a sideline view because too many athletes block the player's view of other athletes, and he can't see gaps in the line.

Managing the camera for a team game is trickier, particularly when the focus of attention moves from place to place. With most soccerlike games, an end view or a side view, from a somewhat elevated position, works best. With large fields, you won't be able to get the whole field on the screen, so you'll need to design an intelligent camera that follows the ball.

Sports in which actions take place at widely separated locations pose a special challenge in choosing a perspective. In most sports, the action takes place around one focal point: the leader of a race, the ball in most ballgames, the skier on the slope. Sports such as baseball and cricket, however, offer two focal points: on the ball and on the runners. In baseball, the two focal points can be separated by as much as 400 feet. You can't show both the runners and the ball without zooming out to a blimp view so high that it's difficult to see anything clearly.

Most baseball video games use graphical overlays to show what's going on: The camera follows the ball, but a small

diagram of the baseball diamond in one corner of the screen shows the positions of the runners, often indicated by colored dots. When a runner reaches a base, his dot changes color to indicate that he is safe. The player controlling the fielders watches the main screen, and the one controlling the runners watches the diagram (keeping one eye on the main screen to see if the ball is coming). Others include picture-in-picture images of the baserunners as well (see Figure 4). Because cricket uses only two stumps instead of four bases, this arrangement works even better.

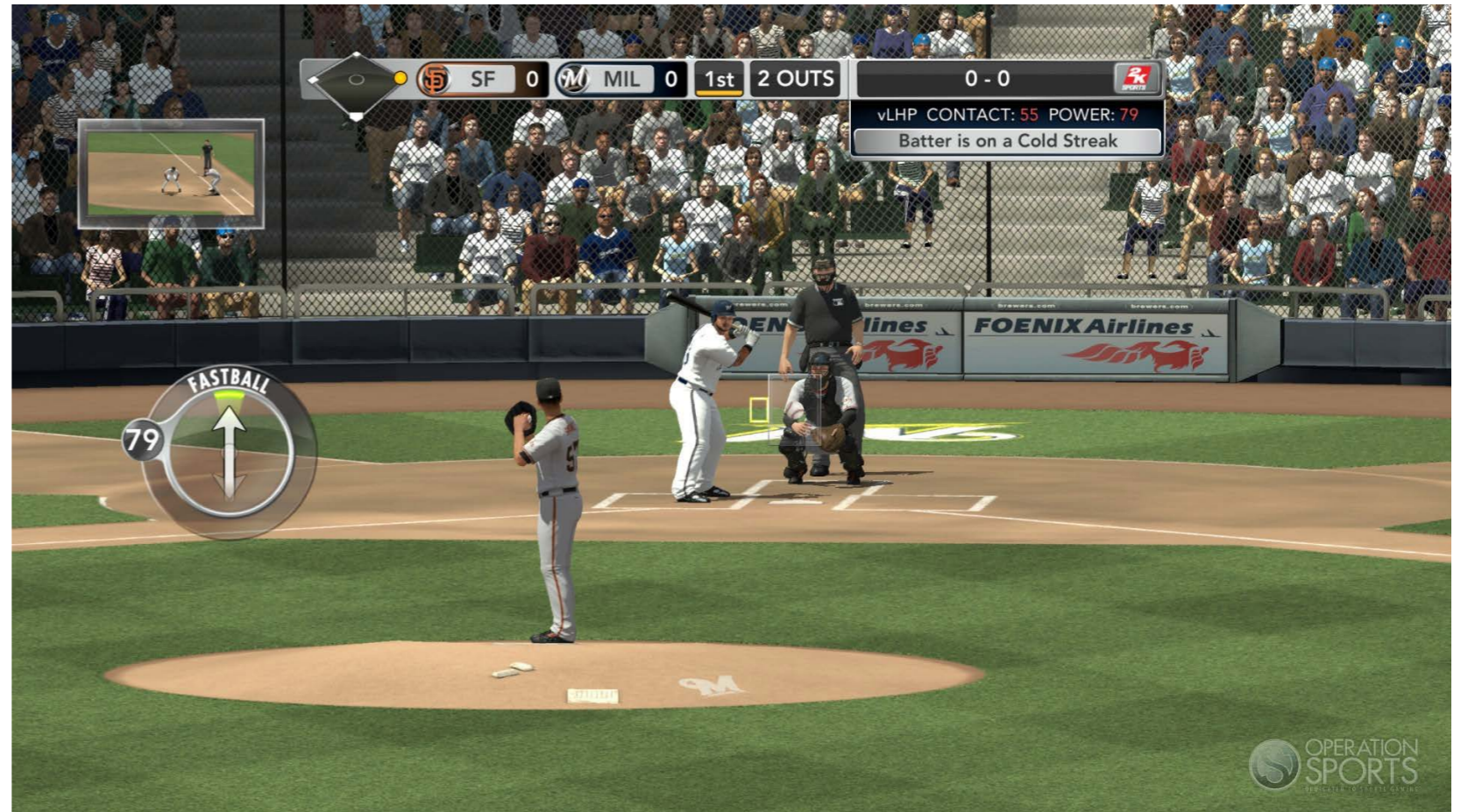


Figure 4 The pitcher's view in Major League Baseball 2K11. Note the inset showing the baserunner's position as a yellow circle on the diamond and the small window showing the runner himself.

User Interface Design

In most other genres, the controls work the same way in most situations, and if their functions change, they do so only in response to explicit actions by the player. Sports games are unusual in this regard; the user interface changes on a second-by-second basis, depending on conditions in the match itself. American football is a particularly complex example. On each play, the player on offense selects the formation and play to run; calls signals and makes adjustments at the line of scrimmage; and then takes the snap and either hands off the ball, passes it, or runs with it himself. If he passes it, control switches to the receiver and a whole series of new options for running, jumping, diving, and dodging defenders comes into play. Each of these different states requires that certain moves or choices be assigned to buttons on the controller, and these assignments change rapidly as play progresses.

TIP:

Be forgiving. The Nintendo Wii owes its huge success to the fact that inexperienced players can pick up the *Wii Sports* game and have a good time. Wisely, Nintendo adjusted the game so that even poor players can hit a fastball or bowl a strike now and then.

Input Devices

The hardest thing about sports game UI design is that you have to map athletic activities—complex motions of the whole human body—onto a game machine’s input device, which until recently was typically a handheld controller with joysticks and binary buttons. Of all the genres of game, the motion-sensing features of the Wii controller, controller-free Kinect, and PlayStation Move (and other new devices) have had the biggest effect on sports games. Now players can swing virtual bats and golf clubs, bowl balls, jump, lean, and do all sorts of other physical activities by enacting the motion in real life. Sports games appeal to players of all ages, so try to be inclusive—if your game requires the reflexes of a teenager, you will limit your market unnecessarily.

Think about what kinds of things the player will want to do at each stage of the game and how best to make them available. Whenever possible, make sure that similar actions in different modes use the same buttons; for example, if the athlete can jump in both offensive and defensive modes, assign *jump* to the same button in both cases.

In team games, normally the player controls one athlete at a time. Generally the game displays a circle or a star under the feet of the athlete currently being controlled. A good many games also draw symbols on the field to help the player overcome the lack of depth perception—the spot where a flying ball is due to land, for example.

When the player's team is on the defensive, include a button to automatically change control to the most appropriate defending athlete (in soccerlike games, this is usually the one nearest to the ball). Another useful pair of buttons allows the player to cycle control forward and backward through all the athletes on the team.

Displays

Most sports games avoid pull-down menus and anything else that resembles the user interface for a computer's desktop so as not to interfere with the fantasy pop-up windows and semitransparent overlays make more sense, particularly if you can design them to look like the graphics seen on TV. Styles vary from year to year as TV sportscast technology advances; watch matches on TV for examples of how to handle overlay graphics.

The features you will need to display vary so much from sport to sport that there isn't room here for a list of them.

Generally speaking, borrow all the ones you see on TV, then add more to help the player and to compensate for her lack of depth perception. Aiming tools let the player see where a thrown or kicked ball will go; these are especially valuable.

Unless you're simulating archery or bowling (the athlete aims and lets go), a sports game is essentially an action game. No matter how complex the sport is, the user interface must be as smooth and intuitive as you can make it.