3 Uncertainty

Uncertainty, in fact, is a primary characteristic of all sorts of play, and not of games alone; if you think like a programmer, you might say that Game is a subclass of Play, and inherits from Play the characteristic of Uncertainty.

In *Les jeux et les hommes,*[1] the sociologist Roger Caillois says: "Play is . . . uncertain activity. Doubt must remain until the end, and hinges upon the denouement. . . . Every game of skill, by definition, involves the risk for the player of missing his stroke and the threat of defeat, without which the game would no longer be pleasing. In fact, the game is no longer pleasing to one who, because he is too well trained or skilful, wins effortlessly and infallibly."

Caillois calls simple play, unencumbered by rules, *paidia*, and rules-bound play *ludus*. As I prefer to eschew obscurantism, I believe "simple play" and "game" will suffice. Even in simple play, uncertainty is necessary; if, for instance, your older brother always beats you in a footrace, you will quickly lose interest in playing with him. If your friend Jessica always wants to be the princess and insists that you must belong to the supporting cast—prince, ogre, ugly stepsister—and particularly if she never permits a reversal in the story whereby her premier status is

overturned—you will want to find another way to play. Simple play is, in the ideal, joyful and inventive; if it becomes predictable, both the inventiveness and the joy are lost.

The need for uncertainty is, if anything, even truer in games; if our expectation is of predictability, we are unlikely to enjoy the game.

Consider, for example, the game of *Tic-Tac-Toe* (or *Noughts and Crosses*, as the Brits call it). Unless you have lived in a Skinner box from an early age, you know that the outcome of the game is utterly certain. Whoever goes first will take the central square, because occupying it is advantageous, and unless one player is naïve or stupid, players will prevent each other from winning by blocking any attempt to get three in a row. It is a solved game, and a trivial one, and no one beyond a certain age can play it with enjoyment, because no uncertainty about the game's path exists.

And yet the game survives, is taught to each new generation, and is played, by children, with every evidence of enjoyment. The explanation for this is simple: the naïve player has not yet learned, or figured out, that the game has an optimal strategy. To the child, the outcome seems uncertain—as it is, since two players, both playing without an understanding of the game's strategy, produce an uncertain outcome. Thus, a naïve player may experience fiero in winning *Tic-Tac-Toe*, or the fleeting sadness of loss upon losing. In other words, *Tic-Tac-Toe* can be experienced as enjoyable only by naïve players, because only for them is its outcome uncertain.

Caillois's discussion of uncertainty, however, implies that the *outcome* of a game must be uncertain for it to be enjoyable; in this, he is incorrect. The outcome of *Space Invaders* (Nishikado, 1978) for example, is certain: The player will lose. Sooner or

later, the player will be overwhelmed by the serried ranks of invading aliens, and the game will end in a loss. *Space Invaders*, like many of the early arcade games, has, curiously, no win state. But "win or lose" is, after all, merely a binary; *Space Invaders* has a numerical score, which increases with each alien slain, and with no theoretical upper bound to the score. Moreover, a player who achieves one of the top scores on the machine with which he engages may enter his name (or a few characters, anyway), with his score thereafter recorded for everyone to see for all time to come—or until the machine is reset, of course. The goal of *Space Invaders* is not to "win," for you cannot, but to achieve a high score—perhaps bettering your own previous score, perhaps achieving a place on the high score list, perhaps outdoing a friend, perhaps achieving the top slot on the list. The uncertainty of the game lies not in its ultimate outcome, but in the final score.

Based on this, you could argue that Caillois was wrong only in failing to see that the outcome of a game can be more than a binary "win" or "loss" state—that it can be expressed numerically, with a wider range of possibilities. But actually, there's a deeper problem here; not all games have outcomes.

This is a problem not only for Caillois, but also for Salen and Zimmerman, authors of the landmark game studies volume, *Rules of Play*. They define a game as follows: "A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome."[2]

There's a fair bit to unpack there, and I don't propose to critique the definition word by word; I'm concerned only with "quantifiable outcome," here. Certainly, both win/loss and a score are "quantifiable outcomes"; but what is the "quantifiable outcome" of a game of *Dungeons & Dragons* (Gygax and Arneson,

1974)? *Dungeons & Dragons* has numbers, of course: experience points, player levels, hit points, and so on. It quantifies a great deal. And while the game offers players the implicit goal of improving their character and its capabilities by earning experience points and thereby increasing in level, this is not a competition among the players, who are instead expected to cooperate rather than oppose one another. Nobody "wins." A single session of *Dungeons & Dragons* may come to an outcome—a logical break point in the story is reached, or the players get tired and go home—but unless the gamemaster chooses, for his own reasons, to impose some arbitrary stopping point to the game, it can go on, in principle, forever. Indeed, some games have gone on for decades, with a degree of continuity in terms of the players, their characters, and the setting.

In short, a game of *Dungeons & Dragons* can end, and, if tied to a story, there may be some narrative outcome; and much of the game is quantified. But no outcome is necessary, and quantification is irrelevant to the outcome, if any; outcomes are narrative in nature, not imposed by the game system.

Dungeons & Dragons is far from unique in this regard; *World of Warcraft* (Metzen, Pardo, and Adham, 2004) is the same. There are lots of numbers, and characters work to increase them, but there is no leaderboard, no end of game, no wins or losses or competitive ranking. If *World of Warcraft* ever has an "outcome," it will be because Blizzard tires of the game, or its player base erodes over time to render it unprofitable, and someday the operators close it down. It has no outcome in any meaningful sense.

World of Warcraft is, of course, ultimately derivative of *Dungeons & Dragons*; but the same characteristic pervades today's most popular and commercially successful game form, the

so-called social game. *CityVille* (uncredited, 2010) and *Mobsters* (uncredited, 2008) have no "outcomes"; like *Dungeons & Dragons* and *World of Warcraft*, they are "games neverending."

Certainly these games contain uncertainty; if they were entirely predictable, people would long ago have stopped playing them. The uncertainty is not in the *outcome*, however, because there *is* no outcome. The uncertainty is in the path the game follows, in how players manage problems, in the surprises they hold.

Caillois is correct, therefore, in his assertion that uncertainty is a key element of play, and by extension all games, and incorrect only in his suggestion that uncertainty of *outcome* is essential; uncertainty can be found almost anywhere, as we will see when we begin to analyze individual games.

What Caillois and I call uncertainty, the cultural anthropologist Thomas Malaby[3] calls "contingency." Interestingly, he claims that the main reason games are compelling is that our experience of the real world is "contingent"—the world is unpredictable—and that grappling with the same kind of unpredictability in the more constrained context of the game appeals to our fundamental nature. In other words, he's making essentially the same claim I made at the beginning of this book; that part of the reason games appeal is because they allow us to explore uncertainty, a fundamental problem we grapple with every day, in a nonthreatening way.

I don't have any greater use for the term "contingency" than I do for Caillois's "paidia" and "ludus," however; it obscures rather than reveals. Contingency merely implies that one thing depends on another. The statement "If A, then B" is contingent; the truth of B is contingent on the truth, or falsity, of A. But it

is also perfectly certain; if we know the state of A, we know with certainty the state of B.

Indeed, the distinction between contingency and uncertainty is illustrative of the distinction between games and puzzles. Puzzles are full of contingencies; the solution to one clue in the crossword is contingent on the letters revealed by a cross. The solution to a logic puzzle is contingent on the clues provided. The solution to Sudoku is contingent on the arrangement of the prefilled squares. The only uncertainty involved is in the solver's ability to sort through the contingencies; or to put it another way, a puzzle is static. It is not a state machine. It does not respond to input. It is not uncertain; and it is not interactive.

All games are interactive—nondigital games just as much as digital ones. To be "interactive" means that there are two (or more) parties to a phenomenon, and the actions of one meaningfully affects the state of the other, and vice versa. Conversation is a form of interaction. So, for that matter, is using a light switch; the user's flick causes a change in the state machine that is your house's electrical system, which produces a stream of electricity to a light bulb, which casts illumination on you.

Consider the game of *Chess* as an interaction between two players. The game itself is a state machine whose state is recorded in the positions of the pieces on the board. The players impose a culturally agreed-upon set of algorithms to determine how and under what circumstances the state of the game may be modified, which involves each player responding to the actions of the other sequentially, until a particular state, known as "checkmate," is reached. The fact that the gamestate is represented in physical form, and that the algorithms used to modify its state

are applied by live people rather than a computing device, does not alter the fact that, at its core, the game is interactive.

What would a "noninteractive game" be like? Games by nature either involve multiple players, who interact with each other in some fashion—or a single player attempting to deal with a system that poses some kind of challenge, whether that be 'beating' a level-based videogame or applying the rules of *Klondike Solitaire* to move all cards legally from the tableau to piles sorted by value and suit. In short, even soloplay games are "interactive," albeit in this case the interaction is between a single player and some algorithmic system that responds to the player's actions.

If you took the pieces of a *Chess* set and nailed them to the board, you might have a "noninteractive game," in some sense, but it would no longer be playable.

So all games are interactive. Of course, many other things are interactive as well—the light switch we alluded to, the word processor on which I am composing this book, Google, eBay, and the American political system, for instance. None of these things are games.

To say *why* these things are not games would require us to define "the game"; while trying to do so is an enjoyable pastime in its own right, one in which I have indulged elsewhere, it could produce a book in its own right, and not this one. But it's worth noting one major distinction between games and just about every other form of interaction; games thrive on uncertainty, whereas other interactive entities do their best to minimize it.

Indeed, in the realm of interactive applications, whole disciplines—information architecture, human–computer interaction (HCI), and user-centered design (UCD)—have been invented

precisely to help people create *less* uncertain interactions. If we are shopping online or operating an air conditioner, or for that matter electing a congressman, uncertainty and challenge are the *last* things we want. Rather, we prefer simplicity, surety, and consistency.

You often hear people saying that they want to make their applications or websites more "gamelike." They do not, in fact, mean it. I could make Microsoft Word more gamelike; let us say that in order to make text boldface consistently, I need to be a level 12 Word user. Before I get to that level, every time I try to boldface something, the application does a check, rolling against my level, in effect. If I fail the check, it applies a random font effect instead of boldface. This would not be "more entertaining"; it would be infuriating.

In short, in designing most interactive products, the elimination of uncertainty is desirable. In designing games, a degree of uncertainty is essential. This is why people who try to apply, say, the theories of HCI expert Jakob Nielsen to games often err; interface clarity may still be desirable, but eliminating challenge and uncertainty is not. Games are *supposed* to be, in some sense, "hard to use," or at least, nontrivial to win.