VIDEO GAMES AND THE CLASSIC GAME MODEL

The eight games in figures 2.1–2.8 look to be quite different: One might be tempted to conclude that they have nothing in common and that their sharing the term "games" is an insignificant linguistic coincidence. In the words of Ludwig Wittgenstein, "What is common to them all?—Don't say: 'There *must* be something common, or else they would not be all called "games"'—but *look* and *see* whether there is anything common to all" ([1953] 2001, 27). Indeed, this is the subject of this chapter. Building on seven game definitions by previous writers, I create a new game definition that I call the *classic game model*.[1] The model is *classic* in the sense that it is the way games have *traditionally* been constructed. It is also a model that applies to at least a 5,000-year history of games. Although it is unusual to claim that any aspect of human culture has remained unchanged for millennia, there are strong arguments for this. In the introduction, I mentioned the Egyptian board game of senet, which appears to be a precursor of contemporary games such as backgammon and Parcheesi (Piccione 1980). Additionally, the board and card games developed during the past few thousand years commonly have a shared European-African-Asian history, and the American anthropologist Stewart Culin has documented the games of the North American Indians (Culin 1907). This means that games following the classic game model have been known in the vast majority of human cultures.[2] While many definitions of games have been attempted, the one I will propose here has the goal of explaining what relates video games to other games and what happens on the borders of games. What should the definition look like? We are probably interested in understanding the properties of the games themselves (the artifact designed by the game developers), how the player interacts with them, and what it means to be playing rather than, say, working. So let

us assume that a good definition should describe these three things: (1) the system set up by the rules of a game, (2) the relation between the game and the player of the game, and (3) the relation between the playing of the game and the rest of the world.

As demonstrated by Bernard Suits (1978), the simplest way to test a game definition is to test it for being either too broad or too narrow. To set up the test before the definition, I will assume that *Quake III Arena* (ID Software 1999), *Dance Dance Revolution* (Konami 2001), checkers, chess, soccer, tennis, and Hearts are games; that open-ended games such as *The Sims* (Maxis 2000) and *SimCity* (Maxis 1989), gambling, and games of pure chance are borderline cases; and that traffic, war, hypertext fiction, free-form play, and ring-a-ring o' roses[3] are not games. The definition should be able to determine what falls inside from what falls outside the set of games, but also to explain in detail why and how some things are on the border of the definition. The existence of borderline cases is not a problem for the definition as long as we are able to understand *why* and *how* something is a borderline case.

In the big perspective, practically every single game found in any compilation of traditional card games, board games, or sports falls squarely within the classic game model I describe here. It appears that it is only during the last third of the twentieth century that new game forms have challenged the classic model.

Like the fact that mentioning the rules of a game can make it sound dull, the idea of a definition may sound limiting but it is really the opposite. In fact, to define games is to create what Douglas Hofstadter (1985) has termed a *productive set*. An example of a productive set is the set of all shapes that represent the letter *A*, where the mere description of the properties of the set help show how the set can be expanded. Having described all possible *A*'s makes it much easier to come up with new typographical designs for the letter *A*. Having a definition of games also points to how we can create new kinds of "games" that try new things that games have not tried before. It is easier to break the rules once you are aware of them.

The Language Issue

The first thing to note is that it may be easy to accept that there is a difference as well as a close relation between *play* and *game*.[4] *Play* is mostly taken to be a free-form activity, whereas *game* is a rule-based activity.

The problem is that this distinction is very dependent on the language used, and much confused by the fact that in French, Spanish, or German, neither *jeux*, *juego*, or *Spiel* has such a distinction. In English, this is also a bit muddled since "play" is both a noun and a verb (you play a game), whereas "game" is mostly a noun. In English, it is common to see *games* as subset of *play*. Scandinavian languages have a stronger distinction with *leg* = play and *spil* = game with verbs for both—you can play play (*"lege en leg"*) and game game (*"spille et spil"*), so to speak. When writing about games in Danish, it is therefore not self-evident that games are a subset of play, whereas while writing about *Spiel* in German, it is not obvious that one should distinguish between games and play from the outset. This manifests itself with the English translations of writers such as Ludwig Wittgenstein and Roger Caillois who write in languages with no clear play/game distinctions.[5] At the same time, even within the English language, our focus is not on the letter sequence g-a-m-e, since we probably consider big *game* hunting to be a slightly different thing. To clarify, the focus here is on the set of games that we can describe as *rule-based games*.

Some Previous Definitions

Let us go through some previous definitions of games, focus on their similarities and point to any modifications or clarifications needed for our current purpose. First, we should note that the definitions do not necessarily try to describe the same aspect of games: Some concentrate purely on the game as such, some on the activity of playing a game. Additionally, it turns out that many things can be expressed in different ways. When one writer talks about goals and another discusses conflict, it is possible to translate between them: conflict entails (conflicting) goals; the notion of goals entails the possibility of not reaching the goal, and thereby a conflict. We will get back to this, but let us simply list seven game definitions, which we will categorize afterward (table 2.1).

There are more similarities than differences in these definitions. If we want to look at games on three different levels, we can sort the points of the individual definitions according to what they describe. For example, "rules" describes games as formal systems. That a game is "outside ordinary life" describes the relationship between the game and the rest of the world. That a game has an "object to be obtained" describes the game as a

Table 2.1
Seven game definitions

Source	Definition
Johan Huizinga 1950, 13.	[...] a free activity standing quite consciously outside "ordinary" life as being "not serious," but at the same time absorbing the player intensely and utterly. It is an activity connected with no material interest, and no profit can be gained by it. It proceeds within its own proper boundaries of time and space according to fixed rules and in an orderly manner. It promotes the formation of social groupings which tend to surround themselves with secrecy and to stress their difference from the common world by disguise or other means.
Roger Caillois 1961, 10–11.	[...] an activity which is essentially: free (voluntary), separate [in time and space], uncertain, unproductive, governed by rules, make-believe.
Bernard Suits 1978, 34.	To play a game is to engage in activity directed towards bringing about a specific state of affairs, using only means permitted by rules, where the rules prohibit more efficient in favor of less efficient means, and where such rules are accepted just because they make possible such activity.
E. M. Avedon and Brian Sutton-Smith 1971, 7.	At its most elementary level then we can define a game as an exercise of voluntary control systems in which there is an opposition between forces, confined by a procedure and rules in order to produce a disequilibrial outcome.
Chris Crawford 1982, chapter 2.	I perceive four common factors: representation ["a closed formal system that subjectively represents a subset of reality"], interaction, conflict, and safety ["the results of a game are always less harsh than the situations the game models"].
David Kelley 1988, 50.	[...] a game is a form of recreation constituted by a set of rules that specify an object to be attained and the permissible means of attaining it.
Katie Salen and Eric Zimmerman 2004, 96.	A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome.

formal system *and* the relationship between the player and the game. If we allow ourselves to translate between different points, seeing for example "goals" and "conflict" as different ways of expressing the same concept, we can group all the points of the definitions according to the level(s) they describe: the game as a formal system, the player and the game, and the game and the rest of the world (table 2.2).[6]

The definitions have many overlaps, but with some work, it is possible to separate the actual disagreements from mere differences in wording.

Rules and Outcomes
All writers agree that games are rule-based (Crawford calls this a "formal system"). While there are many things to say about rules (see chapter 3), let us for the time being focus on the fact that rules are designed to be above discussion—it is supposed to be clear whether a given action is or isn't allowed by the rules of a game.

The question of outcomes is more interesting: It is a salient feature of games that they have variable outcomes—if the outcome is the same every time, it does not qualify as a game. The variability of the outcome follows from Crawford's mention of conflict (only one side can succeed).

Salen and Zimmerman's contribution (2004) here is to point out that the outcome of a game shares some features with the rules of the game: the outcome of a game is quantifiable, meaning that it—like the rules—is designed to be above discussion.

Goals and Conflict
Only Bernhard Suits talks explicitly about goals (a specific state of affairs to be brought about) but goals are implicit in Salen and Zimmerman and Crawford's *conflict*—a conflict presupposes mutually contradicting goals between two entities or, in a broader sense, between a player and the difficulty of reaching a goal. As we will see later, a game without a goal is a borderline case.

Voluntary
Roger Caillois claims that games are voluntary. The problem is that it is quite unclear what this means. Is it not a game if social pressure forces the player to play? Because human motivation is too complex to be simply explained in terms of its being voluntary/involuntary, I believe that it is

Table 2.2
Game definitions compared

	The game as formal system	The player and the game	The game and the rest of the world
Rules Fixed rules (Huizinga) Rules (Caillois) Rules (Suits) Procedure and rules (Avedon and Sutton-Smith) Formal system (Crawford) Rules (Kelley) Rules (Salen and Zimmerman)			
Outcome Uncertain (Caillois) Disequilibrial outcome (Avedon and Sutton-Smith) Changing Course (Kelley) Quantifiable outcome (Salen and Zimmerman)			
"Goals" Bringing about a state of affairs (Suits) Opposition (Avedon and Sutton-Smith) Conflict (Crawford) Object to be obtained (Kelley)			
Interaction Interaction (Crawford)			
Goals, rules, and the world Artificial conflict (Salen and Zimmerman)			
"Separate" Outside ordinary life/proper boundaries (Huizinga) Separate (Caillois) No material interest (Huizinga) Unproductive (Caillois)			

Table 2.2
(continued)

	The game as formal system	The player and the game	The game and the rest of the world
"Not work" Free/voluntary (Caillois) Voluntary control systems (Avedon and Sutton-Smith) Recreation (Kelley)			
Less efficient means Less efficient means (Suits)			
Social groupings Promotes social groupings (Huizinga)			

not possible to meaningfully describe whether games are voluntary or not. However, it could be said that games are primarily autotelic; that is, they are mostly used for their own sake rather than for an external purpose. It is very hard to set this up as a clear criterion—the game definition I am proposing at least partly explains *why* games are such that this issue cannot be settled.

Separate and Unproductive

In Johan Huizinga's description, play is an activity that has "no material interest, and no profit can be gained from it" (1950, 13). Roger Caillois points out that this leaves no place for gambling and suggests that in games, "Property is exchanged, but no goods are produced" (1961, 5).

Both Huizinga and Caillois describe games as being outside "normal" life: They are assigned a separate space and separate time. In Huizinga's description, games take place inside a *magic circle*, outside which the game does not apply. There are some obvious objections and counterexamples to this description—I will return to this.

Less Efficient Means

Bernard Suits famously describes games as permitting players to use only the "less efficient means" in order to reach the goal (Suits 1978, 34). I will

contend that this description is interesting but ultimately misleading. Suits's argument hinges on the fact that it is (mostly) possible to describe a game as the effort to reach what he calls a *pre-lusory goal*, a goal which can be said to exist independently of the game, and that there is always an optimal but disallowed way of reaching this goal. This idea is in itself quite problematic.[7] The concept of inefficient means makes sense in Suits's prime examples of the race where it is not allowed to cut across the infield and the high jump where using a ladder is disallowed. The problem is that it would always be possible to set up a game using the *most* efficient means possible: a racing game where cutting over the infield was allowed; a race to climb a ladder, etc. And the concept of less efficient means completely breaks down in the case of video games. In *FIFA 2002* (a soccer game) (Electronic Arts 2002) and *Virtua Tennis* (Hitmaker 2000), the video games are much easier to master than their real-life professional counterparts are—namely, soccer and tennis. If we look at *any* video game, how can we say that the player is using less efficient means? Would this be compared to making the game yourself? Hacking the game? Using a cheat code?

Bernard Suits's definition is exemplary in that it shows how a feature of a definition can be alluring, in this case not because "less efficient means" is actually part of what makes a game a game, but because it *entails* some other features that are important, namely some player effort, some kind of separation of the game from the rest of the world, and some element of acceptance of the rules—in a way, Suits hints at the characteristic of games being *voluntary*.

Fiction
As already discussed, the issue of fiction depends much on the games discussed. *Some* games have a fictional element, but this is not universal to games. I discuss fiction in chapter 4 of this book.

Social Groupings
Since some games are solitary, social groupings are not a universal aspect of games, but game rules and social groupings interplay—a group may form around the playing of a specific game, and an existing group may decide to play a game. The way a game can build community is discussed in chapter 3.

The Game and the Player: A Second Look at Goals

The list of examples gives us two border case examples of the concept of goals: *The Sims* and *SimCity* are often labeled games even though they do not have explicit goals. While the game designer, Will Wright, claims that they are not games but toys (Costikyan 1994), they are nevertheless often categorized as "video games." The proposal here is to be more explicit about the player's relation to the game by dividing the concept of *goals* into three distinct components, namely:

1. Valorization of the possible outcomes: Some outcomes are described as positive, some as negative.
2. Player effort: The player has to *do* something.
3. Attachment of the player to an aspect of the outcome: The player agrees to be happy if he or she wins the game, unhappy if he or she loses.

Separate and Unproductive: Negotiable Consequences

In Roger Caillois's definition, games are *separate* in time and space from the rest of the world and *unproductive*. It is fairly easy to find examples of games that transgress the first aspect: It is after all possible to play chess by mail, in which case the game overlaps with daily life, both in the sense that the time span of the game overlaps a non-game part of life and in the sense that it is possible to consider the moves one wants to play while going about one's daily business. Likewise, many Internet-based strategy games stretch over months or even years. The second feature, *unproductive*, is dubious if productivity can mean something other than the production of physical goods. Caillois's suggestion is that gambling does not *produce* anything. From an economic viewpoint, this is problematic since gambling is a huge industry. Also note that it is possible to bet on the outcome of any game,[8] and that many people do make a living playing games.

Separation is a special issue in live action role-playing games (games where players typically dress up as characters to play the game), where the games may be played in spaces also used for "normal life." In these cases, specific descriptions have to be made as to what interactions are allowed between non-playing people and players.[9]

Taking a step back, we can see that the notions of games being *separate* and *unproductive* are quite similar in two respects. Both specify what

interactions are possible (and allowed) between the game activity and the rest of the world, and neither are perfect boundaries, but rather fuzzy areas under constant negotiation.

When Caillois claims that a game played involuntarily is not a game, there is a distinction between a given game and a given playing of a game. All copies of a given title do not suddenly cease to be games because someone is making money playing them. Since all games are potential targets for betting and professional playing, I suggest that games are characterized as activities with *negotiable consequences*. A specific playing of a game may have assigned consequences, but games are characterized by the fact that they can be assigned consequences on a per-play basis. That games carry a degree of separation from the rest of the world is entailed in their consequences being negotiable.

A New Definition: Six Game Features
From this, the game definition I propose has six features:

1. *Rules:* Games are rule-based.
2. *Variable, quantifiable outcome:* Games have variable, quantifiable outcomes.
3. *Valorization of outcome:* The different potential outcomes of the game are assigned different values, some positive and some negative.
4. *Player effort:* The player exerts effort in order to influence the outcome. (Games are challenging.)
5. *Player attached to outcome:* The player is emotionally attached to the outcome of the game in the sense that a player will be winner and "happy" in case of a positive outcome, but a loser and "unhappy" in case of a negative outcome.
6. *Negotiable consequences:* The same game [set of rules] can be played with or without real-life consequences.

In short form:

A game is a rule-based system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels emotionally attached to the outcome, and the consequences of the activity are negotiable.

Table 2.3
The classic game model and the game, the player, the world

	The game as formal system	The player and the game	The game and the rest of the world
1. Rules			
2. Variable and quantifiable outcome			
3. Value assigned to possible outcomes			
4. Player effort			
5. Player attached to outcome			
6. Negotiable consequences			

In diagram form, the new definition can be visualized as six features, spanning the three categories of the game, the player, and the world (table 2.3). Features 1, 2, and 4 describe the properties of the game as a formal system; 3 describes the values assigned to the possible outcomes of the system—the goal that the player must strive for; 4 and 5 describe the relation between the system and the player (feature 4 describes both the fact that the game system can be influenced by player input and that the player does something); 6 describes the relation between the game activity and the rest of the world. Each of these features can be elaborated.

1. Rules
Games have rules. The rules of games have to be sufficiently well defined that they can be either programmed on a computer or that players do not have to argue about them every time they play. The playing of a non-electronic game is an activity that in itself involves trying to remove any lack of clarity in the game rules: If there is disagreement about the rules of a game, the game must be paused until the disagreement has been solved. In a commercial non-electronic game, the developer will

(hopefully) have made sure that the rules are unambiguous, but what about non-commercial games? A non-electronic and "folk" (non-commercial) game tends to drift toward becoming unambiguous. This explains some of the affinity between games and computers—and the fact that a several thousand-year-old non-electronic game is easily implementable in a computer program: The drive toward definiteness in the rules makes the game ripe for implementation in a programming language.

The rules of any given game can be compared to a piece of *software* that then needs *hardware* to actually be played. In the case of games, the hardware can be a computer, mechanical devices, the laws of physics, or even the human brain.
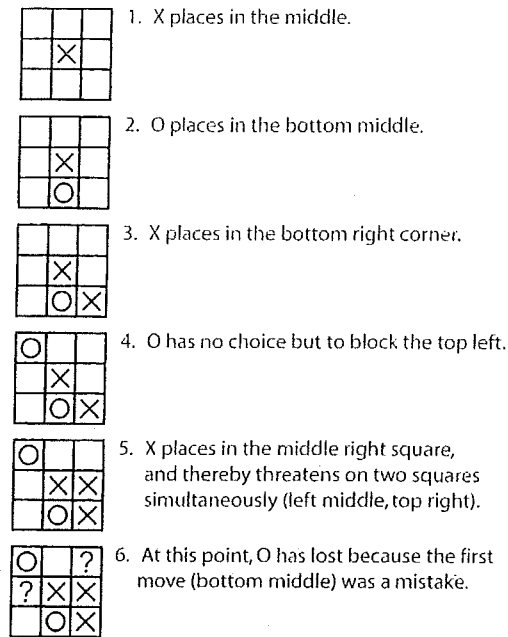
Even if the rules are unambiguous, the game activity still requires that the players *respect* the rules. Bernard Suits has described this as *lusory attitude* (1978, 38–40)—the player accepts the rules because they make the game activity possible. Even a cheater depends on the rules to be able to play.

2. *Variable, Quantifiable Outcome*
For something to work as a game, the rules of the game must provide different possible outcomes. This is straightforward, but for a game to work as a game *activity*, the game must also match the skill of the player(s). Consider the game of tic-tac-toe in figure 2.9.

This is a general property of tic-tac-toe: if your opponent begins by placing a piece in the middle, you must *always* place your first piece in the corner, otherwise you will lose to a reasonably intelligent opponent. This explains why tic-tac-toe is a children's game, and this is where we find that there is a subjective aspect to games. Tic-tac-toe remains interesting as long as it is mentally challenging, but once the players figure out a perfect strategy, they will achieve a draw every time they play. Variable outcome therefore depends on who plays the game. If players always achieve a draw or if a master player continually wins against a beginner, it is still a game, but the players are unable to use it as a game *activity*.

Many games have features for ensuring a variable outcome. Go, golf, or fighting games like *Tekken 3 Tag Tournament* (Namco 2000), allow for handicaps for the players in order to even out skill differences. A few racing games cheat to even out the skill differences between players: In *Gran Turismo 3: A-Spec* (Polyphony Digital 2001), players who are trailing be-

1. X places in the middle.

2. O places in the bottom middle.

3. X places in the bottom right corner.

4. O has no choice but to block the top left.

5. X places in the middle right square, and thereby threatens on two squares simultaneously (left middle, top right).

6. At this point, O has lost because the first move (bottom middle) was a mistake.

| Figure 2.9 |

A game of tic-tac-toe.

hind on the racetrack automatically drive faster than the leading players, allowing them to catch up.

Likewise, players themselves may feign ineptitude in order to bring some uncertainty to the outcome—the *Tekken 3* player may play slightly unfocused; the race game player may simply drive slowly or even reverse the car, the chess player may try especially daring strategies. We may term this *player-organized criticality*—in the same way that players try to uphold the rules, players may also try to ensure suspense about the outcome of the game.

Finally, quantifiable outcome means that the outcome of a game is designed to be beyond discussion, meaning that the goal of *Pac-Man* (Namco 1980) is to get a high score, rather than to "move in a pretty way."[10] Since playing a game where the participants disagree about the outcome is rather problematic, the specification of the outcome develops like the rules of a game, toward becoming unambiguous.

3. Valorization of Outcome

Valorization means that some of the possible outcomes of the game are *better* than others. In a multiplayer game, the individual players are usually assigned conflicting positive outcomes (this is what creates the conflict in a game).

The values of the different outcomes of the game can be assigned in different ways: by a statement on the box ("Defend the Earth"); by instructions of the game; by the fact that some actions give a higher score than others; by virtue of there being only one way of progressing and making something happen; or it can be implicit from the setup—being attacked by hostile monsters usually means that the player has to defend himself or herself against them.

Positive outcomes are usually harder to reach than negative outcomes—this is what makes a game challenging. A game where it is easier to reach the positive outcome than to not reach it would likely not be played much.

4. Player Effort

Player effort is another way of stating that games are challenging, or that games contain a conflict. It is a part of the rules of most games (except in games of pure chance) that the players' actions can influence the state of the game and the game's outcome. The investment of player effort *tends* to lead to an attachment of the player to the outcome, since the investment of energy into the game makes the player (partly) responsible for the outcome. The challenge of games and the player's effort are examined in chapter 3.

5. Player Attached to Outcome

The emotional attachment of the player to the outcome is a psychological feature of the game activity. A player may feel genuinely happy if he or she wins, and unhappy if he or she loses. Curiously, this is not just related to player effort: a player may still feel happy when winning a game of pure chance. As such, attachment of the player to the outcome is a less formal category than the previous ones in that it depends on the player's attitude toward the game. The spoilsport is one who refuses to seek enjoyment in winning, or refuses to become unhappy by losing.

6. Negotiable Consequences

A game is characterized by the fact that it can *optionally* be assigned real-life consequences. The actual assignment can be negotiated on a play-by-play, location-by-location, and person-to-person basis. So while it is possible to bet on the outcome of any normally "for-fun" game, it is impossible to enter a casino in Las Vegas and play without betting money.

If a player loses a game and faces horrible consequences from this, conforming to the negotiated outcome is then a question of honor. In the work *Germania*, the Roman historian Tacitus (ca. AD 56–ca. AD 120) is surprised at how absolutely the Germanic people respect this: "Gambling, one may be surprised to find, they practise in all seriousness in their sober hours, with such recklessness in winning or losing that, when all else has failed, they stake personal liberty on the last and final throw: the loser faces voluntary slavery: though he be the younger and stronger man, he suffers himself to be bound and sold" (Tacitus [AD 98] 1914, 297–299).

There is an important difference between the actual operations of the game and the outcome of the game. The only way for a game to have negotiable consequences is if the operations and moves needed to play the game are mostly harmless. Any game involving actual weapons has strong *non-negotiable* consequences. This is in itself a point of contention, since many sports can lead to injury and even death. Arguably, part of the fascination with some sports such as boxing or motor sports lies in the fact that they are dangerous. Nevertheless, it is a convention of these games that injuries are to be avoided. Public outrage is likely if a motor sports event has poor security precautions.

The consequences of a game have a special status in that they are under continued negotiation, probably both in general societal terms—what is permissible for any game—and on a per-game basis, where the participants may openly or implicitly discuss the range of permissible reactions that the game can elicit.

Even so, all games have some officially sanctioned non-optional consequences, namely in that they may take the time and energy of the players and, more prominently, as described in point 5, that games can make the players happy or unhappy, hurt or boost their pride. But, again, this can happen only within certain negotiable limits, since there are several well known transgressions, such as excessive sulking (being a poor

loser), excessive boasting, or leaving the game prematurely if one is losing. The amount of permissible teasing and provoking of other players is not set in stone; there is a continuous breaking of ideals: Friendships may end over negotiations in *Monopoly* (Parker Brothers 1936), or players may get angry that their loved ones did not protect them in a game of *Counter-Strike* (The Counter-Strike Team 2000). However, *ideally* in game playing, this should not occur. The explicitly negotiated consequences concern what the players can consciously control, such as the exchange of goods or money, but the involuntary and less controllable reactions such as joy or sorrow are less clearly defined.

Since much of human interaction is symbolic rather than physical, this raises a question about the boundaries between games and non-games. For example, for any given country, we could in theory take the complete set of regulations regarding parliamentary elections and perform them as games in which contestants would perform actual rallies and speeches in order to make the public vote for the contestant who might then receive a cash prize rather than public office. This sounds much like a game and, in fact, it would be. Elections are not games since the consequences of the outcome are defined and not subject to negotiation, but the rules governing the execution of the election are potentially usable for game purposes. Many human activities can in principle be performed as games. Examples could include politics, courtship, and academia. Note that these are activities that are occasionally metaphorically described as being "games": the game of politics, the game of love, the game of getting tenure at universities.

Professional sports is a special case. According to Roger Caillois, the professional player or athlete is working rather than playing (1961, 6). This quickly becomes counterintuitive since a contest such as a marathon may include professional athletes as well as amateurs who are running "for the fun of it." This logically means that the marathon is and is not a game at the same time. A better explanation is that even professional players are *playing* a *game*, but that in this specific *game session*, the consequences have been negotiated to be financial and career-determining. Perhaps the reason it can be discussed whether professional sports are games or not is that we associate a game with the context in which it usually appears; that is, we tend to not think of something as a game if we have only seen it performed with serious consequences. So, even though the rules governing the stock market or elections could be used for game purposes, we do

not consider them games, and even though soccer is played professionally, we consider it a game because it is also played in non-professional settings and we are aware that its consequences are negotiable.

On the Borders of Games

In diagram form, we can visualize the game model as two concentric circles, where things considered games have all six previously defined features and therefore belong within the inner circle; borderline cases can be placed between the two circles; and decidedly non-game cases are placed outside the outer circle (figure 2.10).
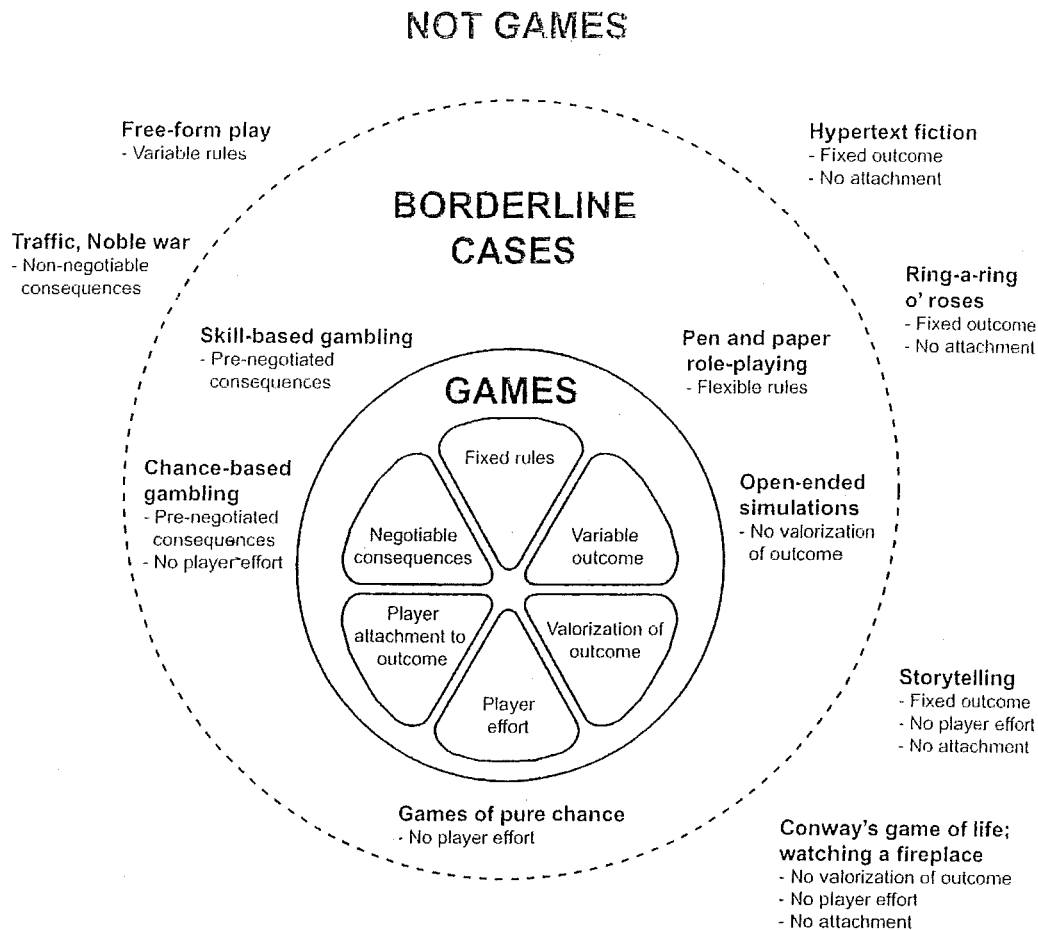
If we begin with the borderline cases: pen and paper role-playing games are not classic games because, having a human game master, their rules are not fixed beyond discussion.[11] Open-ended simulations like *SimCity* are not classic games since they have no explicit *goals*—that is, no explicit values are assigned to the possible outcomes of the game, but what happens in the game is still attached to the player and the player invests effort in playing the game.

Outside the set of games, free-form play has variable rules; structured play like ring-a-ring o' roses has fixed rules but also fixed outcome. Storytelling has fixed outcome, the player does not exert effort in order to influence the outcome, and the player is not personally attached to the outcome. Watching Conway's game of life or watching a fireplace is to experience a system with rules and outcomes, but there are no values assigned to the outcomes, the player is not attached to the outcome, and no player effort is required.

Traffic shares most of the game features, namely rules (traffic laws), variable outcome (you either arrive or you do not arrive safely), value attached to outcome (arriving safely is better), player effort, and players attached to the outcome (you actually arrive or do not), but the consequences of traffic are *not* optional—moving in traffic *always* has real-life consequences. The same applies to the concept of noble war such as war waged respecting the Geneva Convention.

Games as Objects and Games as Activities

Even with this definition, "game" can mean two things: A static object or artifact or an activity or event that players perform. Chess is a game (a static object), but we can also play a game of chess (an activity).

NOT GAMES

Free-form play
- Variable rules

Traffic, Noble war
- Non-negotiable
  consequences

Hypertext fiction
- Fixed outcome
- No attachment

BORDERLINE
CASES

**Ring-a-ring
o' roses**
- Fixed outcome
- No attachment

Skill-based gambling
- Pre-negotiated
  consequences

**Pen and paper
role-playing**
- Flexible rules

GAMES

Fixed rules

**Chance-based
gambling**
- Pre-negotiated
  consequences
- No player effort

Negotiable
consequences

Variable
outcome

**Open-ended
simulations**
- No valorization
  of outcome

Player
attachment to
outcome

Valorization of
outcome

Player
effort

Storytelling
- Fixed outcome
- No player effort
- No attachment

Games of pure chance
- No player effort

**Conway's game of life;
watching a fireplace**
- No valorization of outcome
- No player effort
- No attachment

| Figure 2.10 |
On the borders of the classic game model.

According to this game definition, the game *as an object* is a list of rules with the property that a computer or a group of players can implement unambiguously: the rules must—if implemented—produce variable and quantifiable outcomes and describe how the player(s) can exert effort. The game must provide a description of which outcomes are positive and which are negative. The game must explicitly or by convention signal to players that it is an activity with an outcome to which they *should* feel

emotionally attached. Finally, the activity that the game describes must have consequences that are negotiable.

As an *activity*, a game is a system that changes state according to a set of rules that are implemented by humans, computers, or natural laws. The game is such that its outcome is undetermined, variable, and quantifiable. The players are aware that some outcomes are more desirable than others. The players are able to exert effort in order to influence the outcome. The players feel attached to the eventual outcome. Finally, the consequences of the game *have been* negotiated, ideally before the beginning of the game.

In practice, this distinction is mostly straightforward. Concepts such as rules and state machines statically describe dynamic objects. The more difficult distinctions concern the psychological aspects of games. It is possible to take anything with rules, variable outcomes, player effort, and negotiable consequences and turn it into a game by simply assigning values to the outcomes between players. For example, two people walking down the street can decide to turn it into a race by describing it as *better* to reach the destination first. A single person performing a mundane task such as sweeping the floor can decide to make it into a game by timing him or herself, trying to beat a personal record. Drawing on a piece of paper can be assigned simple rules and turned into a game. This can then become a convention—the two people who originally raced down the street can for a time permanently agree to race when turning a specific corner. The activity of doodling according to rules may feel sufficiently entertaining that the players tell others of their doodling game. Most of the things described as games are sufficiently well defined that they can be played again. This indicates that there is a loose idea that games are repeatable. When we speak of a specific game, we generally speak of it as being a repeatable event. Salen and Zimmerman explicitly write that "rules are repeatable" (2004, 139).

Game Examples

The game model does not mean that all games are the same, but it provides a way of describing what distinguishes different games from each other. The game model is implemented differently in various games:

Checkers

Let us look at an example game, checkers (or draughts):

1. Rules: In short form, the rules state that two players, white and black, each have twelve pieces that can move diagonally across the board, jump over opponent pieces and capture them.
2. Outcome: Defined as one player having lost all his or her pieces.
3. Value: Better to be the one with pieces left.
4. Effort: Consider moves.
5. Attachment: *You* win.
6. Negotiable consequences: Generally, a harmless pastime, but it is possible to play for money. Tournaments exist.

Soccer

1. Rules: Two teams with eleven players each, one of whom is a goal-keeper. Each team has a goal, which are at opposite ends of the playing field. Players can kick the ball but not touch it with their hands (goal-keepers can touch it with their hands). If the ball leaves the boundary of the playing field, the ball is given to the opposite team of the team that last touched it. Putting a ball in the opponent's goal scores a point. The game takes place within two halves of 45 minutes each.
2. Outcome: Defined as the goals scored within the time allotted to a game.
3. Value: The team with most goals wins.
4. Effort: Moving about, strategies, tactics, general skill in handling of the ball, communication.
5. Attachment: *Team* wins; the individual player can be *informally* judged on the basis of his or her achievements in the game.
6. Negotiable consequences: Social consequences in doing well for the team versus doing badly. Injuries non-negotiable; there are many pro-fessional leagues; betting is common.

Battlefield 1942

This refers to the "Conquest" game mode of *Battlefield 1942* (Digital Illu-sions 2002).

1. **Rules**: Two teams play against each other. There are rules regarding the movement of players, weapons, vehicles, level design, counting of points for having taken a base, respawning, etc. Some rules are explicit (counting of points); some rules are likely to be inferred by the player from the environment (guns kill); some rules, such as the way in which vehicles handle, have to be learned by the players.
2. **Outcome**: Defined as the accumulated time important locations on the map were held.
3. **Value**: More points (for time locations were held) win. Potentially one team can kill more players than the other team, but still lose the game.
4. **Effort**: Moving, shooting, strategies, communication.
5. **Attachment**: *Team* wins.
6. **Negotiable consequences**: Harmless, but some tournaments are being played. Social consequences in doing well for the team versus doing badly.

Borderline Case: SimCity

As previously mentioned, *SimCity* is considered a borderline case.

1. **Rules**: Rules regarding economy, buildings, assumptions about how the city works, transport. Some rules are explicit, some are inferred by the player from the setting, some contradict the setting—a power plant can be built in a few months in the game, unlike in real life.
2. **Outcome**: Few specified outcomes.
3. **Value assigned to outcome**: No outcomes are assigned values, though the player may feel that building a city is better than not building one, but the game conversely accommodates players who want to destroy their creations. Players may assign their own personal values to the different outcomes.
4. **Effort**: Building, planning.
5. **Attachment**: Whatever happens is to some extent the players *fault*, but this is loosely defined.
6. **Consequences**: Not a prime candidate for betting since the outcome is not clearly defined.

Transmedial Games

The definition of games proposed here does not tie games to any specific medium[12] or any specific set of tools or objects. Furthermore, we know that many games actually move between media: card games are played on computers, sports continue to be a popular video game genre, and video games occasionally become board games. Since this has not, to my knowledge, been explored in any systematic way, we can take a cue from narratology: stories cannot be examined independently but only through a medium such as oral storytelling, novels, and movies. Seymour Chatman has argued that narratives exist since they can be translated from one medium to another. "This transposability of the story is the strongest reason for arguing that narratives are indeed structures independent of any medium" (1978, 20). While it is clear that stories can be passed between a novel and a movie and back, it is also clear that not everything passes equally well. For example, novels are strong in creating inner voices and thoughts, while movies are better at conveying movement.

We can view games from a similar perspective: While there is no single medium or set of props that is the ideal game medium, games do exist, and do contain recognizable features, whether as card games, board games, video games, sports, or even mind games. There is no set of equipment or *material support* common to all games. What is common, however, is a specific sort of *immaterial support*, namely the upholding of the rules, the determination of what moves and actions are permissible and what they will lead to. Upholding the rules is in actuality provided by human beings (in board games or card games), computers, or physical laws (in sports).

The card game hearts can be transferred to a computer because the computer can uphold and *compute* the rules that would normally be upheld by humans, and because the computer has the *memory* capacity to remember the *game state*. The adaptation of board and card games to computers is possible due to the fact that computers are capable of performing the operations defined in the rules of the games, operations that are normally performed by humans, as well as keeping track of the game state, something normally done by using cards and board pieces. What we have is therefore an ecology of game media that support games, but do so differently. Thus games can move between different media—sometimes with ease, sometimes with great difficulty.

———

Chess qualifies as one of the most broadly implemented games, since chess is available as a board game, on computers, and even played *blind*, where the players keep track of the game state in their head. Sports are somewhat special in that the properties of the individual human body are part of the game state. This means that the rules of sports are less clearly defined than the rules of other games (hence the need for a referee). It is very hard to realistically implement the physics of something like pool, soccer, or bowling in video games. At the time of writing, there are several companies (e.g., Havok and Mathengine) dedicated exclusively to providing simulation of physics in video games.

Game Implementations and Game Adaptations

There are big differences in the ways that games move between media. Card games on computers should be considered *implementations* since it is possible to unambiguously map one-to-one correspondences between all the possible game states in the computer version and in the physical card game. Sports games on computers are better described as *adaptations*, since much detail is lost in the physics model of the computer program because it is a simplification of the real world, and in the interface because the video game player's body is *not* part of the game state. Adapting soccer to computers is therefore a highly selective adaptation. Game media support games in two distinct ways:

1. *Computation:* how the game medium upholds the rules and decides what happens in response to player input.
2. *Game state:* how the game medium keeps track of the current game state.

The distinction between computation and game state is necessary in order to explain the differences between some of the game media mentioned here (table 2.4). In technical terms, it corresponds to the low-level distinction in the computer between CPU (computation) and the RAM (memory).

- Generally speaking, video games are a superset of board games and card games; most card and board games are immediately implementable in computer programs. The physical setting around the game does not translate well.

Table 2.4
Games moving between media

	Rules/computation	Game state
Card games	Human brain	Cards
Board games	Human brain	Game pieces
Blind chess	Human brain	Human brain
Competitive sports	Physics + human brain	Players' bodies/ game objects
Video games	Computer (CPU)	Computer (RAM)
Card/board games on computer	Computer (CPU)	Computer (RAM)
Sports on computer	Computer (CPU)	Computer (RAM)

- Board games implemented on computers include *The Settlers* (Blue Byte 1994), *Axis & Allies* (Hasbro Interactive 1998), *Risk* (BlueSky Software 1997), chess, checkers, and backgammon.
- The feasibility of adaptation from video game to board or card game depends on the game. In the 1980s, many popular arcade games were used for selling poor quality board games: this befell (among others) *Pac-Man* (Milton Bradley 1982), *Berzerk* (Milton Bradley 1983), and *Frogger* (Milton Bradley 1981).
- One of the most popular adaptations is from sports to video games. These adaptations are imperfect due to both lack of fidelity in the physics simulations and the low amount of information that the player can input, but they are also extremely popular, probably because they allow players to imagine that they are doing something they could not normally do.[13]
- Video game to sport adaptations are almost nonexistent. A notable exception is that some players of paintball games have adopted the rules of *Counter-Strike*.
- Card decks are good at keeping track of possessions, and resources and at hiding information.
- Board games provide possessions and spatial gameplay well, but are most immediately suited to games of perfect information (where all players have access to all information in the game). This is easily implemented on computers.

- Dance and rhythm games like *Dance Dance Revolution* (Konami 2001) are special in that the amount of information transferred between the player and the game state is very low, but the body is nevertheless heavily involved since the physical layout of the dance mat requires you to move your body in order to play.
- Sports allow for many things that video games cannot, mostly because of the importance of bodily capabilities in the world and the depth of the "interface." More information is transferred to the game state—in fact, the player's body is part of the game state.

Game Implementations: Mapping between Domains

The distinction between an implementation and an adaptation concerns whether there is an unambiguous correspondence between the possible game states in the two game versions. Nevertheless, two games that appear completely unrelated can turn out to be equivalent on a game state to game state basis. For example, a spatial game may be converted into a non-spatial game.[14] Consider the following game:

Two players take turns picking a number between 1 and 9. Each number can only be picked once. The first player to have 3 numbers that add up to 15 has won. If all numbers are picked without a winner, the game is drawn.[15]

As an example game between player A and player B:

1. A picks 5.
2. B picks 9.
3. A picks 2.
4. B has no choice but to pick 8 (otherwise, A could get 5+2+8=15).
5. A picks 7, and thereby threatens to win by either picking 3 (5+7+3=15) or 6 (2+7+6=15).
6. At this point, B has lost because the first pick (9) was a mistake.

If this sequence seems familiar, it is because it can be completely mapped to the example game of tic-tac-toe earlier in this chapter: If we lay out the numbers 1 to 9 in a 3 × 3 grid, the game is an implementation of tic-tac-toe (figure 2.11).

Picking the numbers 6, 7, and 2 is therefore identical to placing three pieces in the rightmost column; if your opponent has picked 5 and 2, it is a

| Figure 2.11 |

Tic-tac-toe as a mathematical game: Pick three numbers that add up to 15.

good idea to pick 8 in order to prevent him or her from getting a sum of 15. This works because the numbers above are laid out in a *magic square* where the sum of each vertical, horizontal, and diagonal line adds up to 15. (For the history of magic squares, see Danesi 2002, 147–151.) Compare the two games (figure 2.12).

This mathematical game is *equivalent to* tic-tac-toe in the sense that there is an unambiguous mapping between every possible position in tic-tac-toe and every possible position of the mathematical game. The two games are, however, probably not *experienced* identically by players—in tic-tac-toe, players will think of the game as a spatial problem; in the mathematical game, players will think of the game as a game of adding numbers. Anecdotal evidence suggests that most players find tic-tac-toe *much* easier. *This means that games that are formally equivalent can be experienced completely differently.*

The Limits of the Classic Game Model

While some writers have claimed that games are forever indefinable or ungraspable, a review of David Parlett's two books *The Oxford History of Board Games* (1999) and *The Penguin Encyclopedia of Card Games* (2000) indicates that all of the hundreds of games described fall within the *classic game model*. The vast majority of things called "games" are found in the intersection of the six features of the game model. It is an intersection that can be traced historically for at least a few thousand years and through most human cultures.

Why is there an affinity between computers and games? Because games are a transmedial phenomenon, and the material support needed
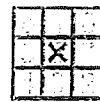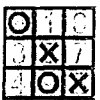
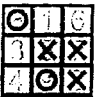1. A picks 5 / X places in the middle.
   A: 5
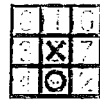
2. B picks 9 / O places in the bottom middle.
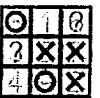   A: 5
   B: 9

3. A picks 2 / X places bottom right.
   A: 5, 2
   B: 9

4. B has no choice but to pick 8 / O has not choice
   but to pick top left.
   A: 5, 2
   B: 9, 8

5. A picks 7 / X picks right middle.
   A: 5, 2, 7
   B: 9, 8

6. B has lost because the first pick (9) was a mistake /
   O has lost because the first move (bottom middle)
   was a mistake.

| Figure 2.12 |
Equivalence between tic-tac-toe and a mathematical game.

to play a game (like the projector and the screen in cinema) is *immaterial*, since games are not tied to a specific set of material devices, but to the processing of rules. This fits computers well because the well defined character of game rules means that they can be implemented on computers.

The classic game model is no longer all there is to games. With the appearance of role-playing games, where a game can have rules interpreted by a game master, and with the appearance of video games, the game model is being modified in many ways.

1. *Rules:* While video games are just as rule-based as other games, they modify the classic game model in that it is now the *computer* that upholds the rules. This gives video games much flexibility, allowing for rules more complex than humans can handle; freeing the player(s) from

having to enforce the rules; and allowing for games where the player does not know the rules from the outset.

2. *Variable outcome:* In many cases, the computer can act as a referee in order to determine the outcome of a game on the basis of events that would not be immediately discernible to a human.

In persistent online games, the player never reaches a final outcome but only a temporary one when logging out of the game.

3. *Valorization of outcome:* Open-ended simulation games such as *The Sims* change the basic game model by removing the goals, or more specifically, by *not* describing some possible outcome as better than others.

4. *Player effort:* The non-physical nature of video games means that player effort can work in new ways. For example, the player can control a large number of automatic units in a real-time strategy game, which would not be possible in a non-electronic game.

5. *Attachment to outcome:* Because an open-ended simulation game does not have a specific win or lose state, it gives the player a less well defined relation to the game outcome.

6. *Negotiable consequences:* It is perhaps implicit in the classic game model that a game is bounded in time and space; the game has a specific duration and a specific location. Pervasive games, location-based games, and some live-action role-playing games break this, as do games such as *Majestic* (Anim-X 2001) where actual phone calls are part of the playing of the game.

Let us consider what the classic game model does: It provides a bare-bones description of the field of games; it explains why computers and games work well together; it explains why games are transmedial; and it points to some recent developments in games. The game model by itself does not provide much explanation of the variations between games, or of why games are enjoyable. It is an abstract platform upon which games are built, a platform that games use in different ways.

Games *do* have something in common; we *can* talk about the borders between games and what is not a game—video games are the latest development in a history of games that spans millennia.