>> richard garfield

GETTING LUCKY

THE MAGIC: THE GATHERING CREATOR'S STANCE ON CHANCE

I CAN FIND A BOARD OR CARD GAME FOR ANY GROUP OF PLAYERS. Game players or people who never played games, old or young, in large or small numbers, with confrontational or passive personalities—there are games out there for them all. While I weigh many factors in choosing a game, by far the most important is the amount of luck inherent to the gameplay. If the game has a lot of luck, it usually appeals to a diverse group.

Games in the non-electronic world are widely varied in luck, but computer games are a different story, as very few of them allow any real chance for a beginner to win against a skilled opponent. The number of electronic games I can play with my parents, kids, wife, or friends from outside the game industry is extremely limited.

Historically, games usually evolved in such a way as to reduce the amount of luck in them. Even chess at one time had dice. The people who are in a position to modify a game are likely to be very good at it, and the sort of modifications they will be drawn toward are the ones that showcase their talents and their friends' talents—although they, of course, are all top players.

In other words, as games evolve, they tend to become better for the experts, but not necessarily better for new or non-dedicated players. A game that illustrates this conflict is

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GETTING LUCKY

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First person shooters, such as HALF-LIFE 2, could use luck to allow players with greater variation in skill to compete with each other.

Settlers of Catan, one of the best-selling board games of recent years. The only consistent criticism I have heard leveled at it (always from dedicated gamers) is that it has too much luck. But it's rather possible that the abundance of luck is exactly what made the game so wide-reaching.

Enlightened players, skilled or not, will appreciate luck in their games for a number of reasons. First, they can play challenging games with a much broader audience, allowing them to easily assemble a galley of players and lure their friends, who would otherwise play something else, into the game. Second, if skilled players want to experiment and try off-the-wall strategies, the more luck a game has, the more forgiving it is—after all, no one is expected to win every time. The only cost of all these terrific benefits is that skillful players must manage to swallow their pride and settle for winning a majority of the time, rather than all the time.

We gamemakers are at a special time in game history. Fifty years ago, games were made with no credit to the designers or perhaps had no designers at all, with changes being wrought by players over time. But our nascent game design community tends to comprise game experts; it's in our best interest to examine our own instincts openly with regard to how much luck should be in a game.

LUCK VERSUS SKILL IN TRADITIONAL GAMES

GAME	AMOUNT OF LUCK	AMOUNT OF SKILL
Poker	High	High
Basketball	Low	High
Tic-Tac-Toe	Low	Low
Slots	High	Low

WHAT IS LUCK?

I define luck in games as uncertainty in outcome. If better players always win against weaker opponents, then there is no luck in the game. However, if the better player sometimes loses, then luck must be present, and the more a better player loses, the more luck is in the game.

Uncertainty in outcome is most strongly associated with randomizers, such as dice, spinners, shuffled cards, and in the case of video games, randomly generated numbers. But these overt luck generators are not the beginning and end of luck. If the game's outcome isn't certain—whether the game is baseball or rock, paper, scissors—there is luck involved. The variability in baseball may come from muscle fatigue, or weather, or endless numbers of more subtle influences that we have no more chance of determining than the path of a roulette ball. The variability in rock, paper, scissors? Any randomizer in that game lies in the players' brains.

This definition of luck, based solely on uncertainty of outcome, has an interesting consequence in that an otherwise deterministic game can have luck. Let's take for example a game I call pi-eye, in which each player has 30 seconds to guess a particular digit of pi, say the 37 billionth digit. There is no overt luck in pi-eye because it's possible to calculate the answer. Yet, most players would rather simply take a one in ten chance of guessing the correct digit. Players could improve their odds by studying pi or theories about its digit distribution, or even reduce the luck to 0 by discovering a formula to determine the digits of pi—but even though those possibilities exist, most of us would rather opt for luck.

GETTING LUCKY

LUCK VS. SKILL

What is a good amount of luck, relative to skill, for a game? This question sounds benign, but it contains a common fallacy about games. How much luck there is in a game has little to do with how much skill there is. A game can have a lot of luck and a lot of skill.

An example of such a game is poker. If you sat down with the world champion, you could win a hand, regardless of your skill. You might even be able to win a session. But once you start stringing sessions together you have no hope of winning (unless you too are a poker stud). In fact, repeated play will eradicate the luck from almost any game. If players play a game enough and there is any skill difference between them, the most skillful player will win the majority of the games.

If poker doesn't convince you that a game can rely on both luck and skill, I can introduce you to a game I've created called randochess. In randochess we each roll a die, and the high roll wins with ties broken by a game of chess. Randochess clearly has more luck than chess, yet in some sense it has just as much skill as chess. After all, every book of strategy ever written about chess applies equally to randochess.

It is just as challenging to be a good randochess player as it is a good chess player, but you won't win as often leveraging your skill in randochess as you will your skill in chess. This distinction is important because it illuminates the fact that games can't be trivialized merely on the basis of luck—games with a lot of luck can be as rich as any other game, and as hard to master. In fact, one could argue that games high in luck are harder to master since a player can more easily win with bad moves or lose with good moves—which will certainly slow down the learning process.

BENEFITS OF LUCK

There are three benefits to using luck in game design. First, high-luck games broaden the range of competition. Second, luck removes players' ego crutches. And third, luck increases the variety of the gameplay.

Range of competition. The more luck there is in a game, the more easily skilled and unskilled players can play together. In a game without luck, the more skilled player will win every competition giving the skilled player no challenge and the less skilled player no chance of victory. A game with low luck can be a fine game of course, but it demands that players of similar skill always compete against each other only. The less luck in

the game, the tighter that range of skill the players will need to have for a satisfying experience.

Online games, of course, have less need for broadened range of competition due to computer matching (see "Ranking and Matchmaking," October 2006). However, there is something to be said for being able to choose opponents and teammates based on criteria other than their skill.

Ego crutch. Why do skillful players frequently criticize luck in games? It's probably because the luck in the game can marginalize their skill. When skilled players have played the better, more skillful game and still lose, they say, begrudgingly, that only fate is to blame. And when they win in a game that has a lot of luck, the opponents won't credit their brilliant play, only their good fortune. Luck can in this way become a player's enemy, denying them their rightful bragging rights and glory in either case.

This apparently negative aspect of luck is hiding a very useful concept for game designers. Many people take pleasure in blaming their defeats on bad luck, but have no problem taking credit for their victories, regardless of the circumstances. Certainly, these players will often complain about the luck when they lose, but really the element of chance is beneficial to them: it is protecting their egos, just as surely as it can injure the ego of a skillful player.

Variety of gameplay. Luck in games often broadens the type of strategies that people can use, adding variety to the game. With the uncertainty luck brings, the most conservative players will have to take crazy chances if they want to succeed from time to time, and the players who always take the long-shot will find they should sometimes ease back on the throttle and play it safe.

Suppose in an economic military game, players think that building a lot of tanks is the best strategy. Whether it is the best strategy is not too important—what counts is how the player sees it. Players would spend most of their time building tanks. The only ones who would typically stray would be the beginners who didn't know any better or the elite who were secure enough in their stature to experiment. Suppose we introduce a random element into the military units of the game, such as units being priced randomly, occasionally unavailable, or varied in power, based on the random availability of supporting technologies. Players might now regard tanks as being generally the best unit, but no one will believe as a rule they are always the best, which might lead to more players exploring more and different strategies.

short+luck=good combo

FOR A GAME WITH A HIGH AMOUNT OF luck to be really satisfying for a broad audience of players, it should be a game that is also fairly short.

The definition of "short" varies from group to group: for people with a lot of free time and energy, having a high-luck game that is longer won't be

so bad. However, a long game with a lot of luck does threaten to frustrate the more skillful players, who don't want to invest a lot of time and energy on a spurious outcome.

At the same time, a long game with a lot of luck holds little interest for less skillful players because they are

not favored to get a taste of victory in a single play and, being a long game, starting a new game afresh might take a while. The shorter the game, the more likely a less skillful player will have at least some wins.

The variety of play available in a high-luck game really shines through

in shorter games. The longer the game, the fewer games will be played during a particular game session, and the fewer games you play in a session, the less chance for that variety to show itself.

Another way luck can extract variety from a game design is when it is used to rebalance the payoff for player skills. If a game involves two skills, A and B, and A is very important to winning the game, while B is not so important—by making it so that A has more luck involved you can raise B's relative importance. This could lead to a game in which the players have more strategic space to explore. Remember the old computer game ARCHON? ARCHON had a chess-like game, but the battles were resolved with an arcade-like game. My experience with it was that a player's skill at the chess portion of the game was irrelevant relative to the arcade portion. Presumably, with players close to one another in arcade skill, the chess portion of the game would become more important. If the arcade portion of the game had more luck, then the chance of that part of the game being interesting with disparate skills is higher, and the chess portion of the game will become more important.

LUCK AND SINGLE-PLAYER GAMES

Some of the points I've made so far don't apply—or apply differently—to single-player games. For one, there's no benefit to increasing the breadth of player skills that can compete together if the game is a one-player experience.

The role of luck as an ego crutch in a single-player game can still apply, though it is less important. Players are less likely to

and hybrid modes. For player versus player, luck functions as it does in a head-to-head game. Luck will help broaden the range of players that can compete against one another, act as an ego crutch for losses, and, if the system is well designed, generate variety of play.

In the player versus environment mode, luck will act much like it does in a solo game. In this mode, luck is unnecessary for broadening the range of players, useful as a crutch, but not as critical, and can be useful in generating variety of play.

Whether you have teammates in either mode will not really change the role of luck, except perhaps in making its use as an ego crutch a bit more important, since you can avoid losing face to your teammates by blaming bad luck.

The replayability of these games might be improved by the variety that extra luck will provide in the game mechanics. In many MMORPGs there is already a really interesting level of luck in combat. Unfortunately most of these games have reward systems that strongly discourage players from getting involved in the more interesting encounters, pushing them instead toward combat in which they are enough of a favorite to always win fairly quickly.

Replayability may be improved greatly if the reward system encourages players to take on challenges whose outcome is not so predictable. Since it's a staple of the genre to have the

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need the crutch when playing against a computer since it is generally less threatening to lose to a computer than to another flesh-and-blood human, who is much more likely to talk trash. But it still helps to have bad luck be your focus of blame for defeat.

Additionally, if the game is intended to be played only once, as many video games are, then there's little benefit to increasing the variety of the game through luck. Yet, if the game is a one-player game intended for repeat play, luck can be invaluable for changing the game each time. CIVILIZATION's immense replayability stems in part from the large range of strategic situations that can affect the player and that arise naturally from the vast quantity of random elements and how they interact.

Historically, one of the interesting things about games is how they become better over time, disposable games really only being children's games. People can play dominoes or bridge or chess their entire lives and the games just get better and better. Striving to make infinitely replayable games is one way to leverage the power of games.

LUCK AND MASSIVELY MULTIPLAYER GAMES

Massively multiplayer games can be competitive in the sense of player versus player, cooperative, player versus environment,

players play what are essentially the same battles ad nauseum, any potential for increasing the replayability should be of interest to the designers. In most MMORPGs it's the randomness of monster drops that provides an element of chance, and which keeps people coming back—which is a shame, since it's not directly a part of the gameplay.

APPLYING LUCK TO EXISTING GENRES

It's hard to introduce luck to an established game or genre of games. For example, shooters tend to attract players who have fast reflexes and accurate aiming; introducing luck will likely drive away established players, since they want their speed and accuracy tested. What's worse, a "shooter with luck" game will not necessarily find a new audience either, since the reputation of shooters as a genre is already established.

Although adding luck to an existing genre can alienate fans, it is often worth thinking about in terms of game design. It may be possible to add an element of luck that even the elite players will find cool. Also, if a game of this type is able to reach new audiences it could make up for the loss of some established gamers. Game designers would want to take this idea into consideration if they're working on a game that's likely to have

Real-time strategy games, such as STARCRAFT, can introduce luck by including it in their economic systems.

broad audience appeal, such as a game with a popular movie tie-in or one that will debut on a new platform (iPod games anyone?).

Let's look at a few established game genres and consider new ways to introduce luck. These techniques have certainly been used in one game or another, but the luck introduced is often minor or dominated by other factors, rather than really allowing for less skillful players to win from time to time.

Shooters. The expert shooter player has excellent reflexes and aiming. A lot of other gameplay elements may be present in varying degrees, such as tactics, strategy, and teamwork, but these tend to be dominated by reflexes and aiming. The introduction of more luck could be used to bring the value of these skills closer together, in addition to reducing the dominance of the better player.

Inaccuracy is one of the obvious ways to increase the amount of luck in shooters. Games such as COUNTER-STRIKE do this, but the high rate of fire and the ability of skilled players to minimize this effect make it so the aggregate game may actually have less luck rather than more. It's easy to imagine a game in which nearly every shot has a high enough variance that moving without cover into enemy fire zones, while generally a bad idea, does not ensure instant death.

Another natural way to increase luck is highly variable damage. Naturally, if you combine this with a high rate of fire, the luck you have introduced is incrementally removed. Right now, the standard way to inject highly variable damage is via head shots, which does introduce some randomness, since random sprays of bullets will occasionally yield a critical hit—but again, this is a randomness that diminishes rapidly with skill.

Randomly distributed power-ups could be another way to go.

Most games have specific spawn spots for weapons and armor. If these were inconsistent, or the power-ups themselves were very swingy, it would introduce luck to the game.

Real-time strategy games. The expert RTS player has excellent massively parallel management skills and speedy clicking. Also important, of course, are both strategy and tactics; but the best strategy and tactics won't help if you can't implement them fast enough while juggling all the elements these games typically throw at you. More luck could be used to raise the relative importance of these game components, in addition to making the expert player easier to beat.

Reducing the chance of being hit by a unit or increasing the variance on its damage might be a way to increase the amount of luck in an RTS. Units could have special abilities that are completely out of the player's control and which are used inconsistently. The units could have morale that is to some extent randomly implemented so that your units might start to panic in a battle you might otherwise have won. Similarly, units might make all sorts of AI checks which are guided by the outcome, ignoring players' commands, gaining bloodlust and the inability to stop attacking, or maybe focusing entirely on their sworn enemies.

Economics is a natural place to introduce luck as well, in particular since this facet of many RTS games is often highly important and yet mostly rote in play value. Mines could give more variable payouts, and technologies could cost varying amounts or be randomly available. The expert player may even enjoy the freedom of exploring parts of the tech tree that are generally less effective rather than feeling obligated to use the same proven approach every time.

In thinking about research, players could be kept from learning

what their research might yield, or when it was going to yield it. Perhaps the research could be guided a bit, without the players knowing whether the exploration of metals, for example, would yield good troop armor, good tank armor, a good conductor, or perhaps a vital ingredient for teleporters. Designers might get ideas from looking at games such as ALPHA CENTAURI.

Racing games. Racing games reward players who have knowledge of their vehicles' capabilities, knowledge of the racetrack, and reflexes. If your opponent has you beat in these areas, you will lose every time. Increasing the luck in the game will allow the less skilled player to take higher risk strategies and thus occasionally challenge the opponent.

One way to introduce luck into this genre is to create danger zones, or areas or situations that sometimes get you into trouble, but not always. An example of a danger zone is a maximum safe speed, beyond which there is a chance of mishap or random cornering checks. Good players would know not to drive faster than the maximum for fear of a mishap—unless they're desperate. Alternatively, the further ahead you are, the more conservatively you should drive.

Including random, wacky power-ups is another way to add luck to racing games and some titles, like MARIO KART, already use this feature very effectively. Missile launchers, booster jets, smoke screens—bring them all!

Shortcuts that are dangerous but are also navigable by all players could be implemented to increase luck. Many games have shortcuts, but they typically only favor expert players; less advanced player can't navigate the shortcuts or don't know they exist. To increase the luck, you need something more like a chasm that saves you some time but destroys the car 20 percent of the time regardless of expertise.

FUTURE GAMES

If you're working on a project that for some reason is difficult to categorize, or may appeal to a different audience than an existing game, you might consider erring on the side of including too much luck. You'll gain the benefit of broadening your player base's competitive range while increasing your game's variety. Over time, games have a tendency to go down in luck rather than up, so you can correct your gameplay more easily in that direction in subsequent expansions and versions.

Video games are journeying into game design territory that paper games could never go. But the large body of information that exists outside electronic games can guide all game developers and help in that exploration. I am hopeful that one day I will have a collection of computer games that will handle any group of players in collective play in a manner that rivals my paper game collection. ⁘