

# The 20 Greatest Slot Innovations

## 1. The 20 monumental ideas in the history of the slot machine which most influence the way we play today

by Frank Legato

We sit in comfort, easily rest our fingers on a spin button, and watch reels spin at lightning speed. We slip a bill into an acceptor, rack up credits, and take a ticket to a kiosk to get cash. We watch cartoons, touch a video screen to reveal a hidden treasure, quickly play hundreds of hands of poker-three hands at a time-and then touch a keypad to reserve a seat at a restaurant for a free meal.

In the midst of having fun, it's easy to take for granted the remarkable apparatus in front of us, this self-contained box of entertainment still known by a name given it more than a century ago-the slot machine.

The name itself was originally a bit more cumbersome-"nickel-in-the-slot machine," a name that described the repetitive pumping of nickel wagers into the metallic gambling devices that spread around San Francisco saloons at the turn of the 20th century. They could also be found in cigar stores, where they were often called "cigar store klondikes," but the name that stuck was nickel-in-the-slot, eventually shortened when other coins besides nickels were introduced.

The name itself hardly applies anymore. The "slot" part, referring to the coin slot, has become an endangered species as players pump bills into acceptors and play credits. Eventually, the coin itself will no longer be required. But we'll still call them slot machines.

The first machine to be widely identified with the name was Charlie Fey's "Liberty Bell" machine, released to the public in 1899. Fey himself would hardly recognize the games on today's slot floors. Slot popularity has bred innovation, and the vast majority of that innovation has occurred during the past 20 years.

There were a few monumental changes that affect the way we play before that as well, and together, with the breathtaking change that has occurred during the past two decades, they form a laundry list of innovation that defines the experience of modern slot play. We've boiled that list down to 20. These are the 20 technological innovations we feel have had the greatest effect on the way we play-the 20 reasons that slot machines are, by far, the most popular form of gambling in the modern world.

They are in a loose chronological order, rather than order of significance. That's because they are all equally significant. Here's how we arrived at what we call a slot machine.

## 1. The Liberty Bell



Slot machines did exist before Charles August Fey, a German immigrant living in San Francisco, rolled out his invention in 1899 and placed it in saloons he owned. But they looked nothing like his. Throughout the 1890s, gaming machines were a popular offering of San Francisco watering holes, but most looked more like fine furniture than gambling devices. Some were huge, ornately-carved cabinets bearing a roulette-like wheel operated by turning a crank. Others were small poker machines, with steel cards that spun on spindles to form five-card hands.

Fey's invention, which he called the "Liberty Bell," had three reels bearing strips of symbols—bells, horseshoes, stars, and card suits. They were spring-loaded. The player would put a nickel into a slot and pull a handle on the side to compress the springs. When released, the springs would expand to send the reels spinning until stopped by a separate mechanism. If the symbols matched, the player won a "jack pot"—a pot of money, or "jack."

The three-reel Liberty Bell would provide the basic design on which all future slot machines would be based. Even today's slot machines, though completely different in the way they work, are still recognizable as descendants of the Liberty Bell.

## 2. The Electro-Mechanical Slot Machine



No one changed the basic design of Charlie Fey's three-reel slot machine for six decades. Outward designs changed, but even in the 1950s, the vast majority of slot machines were basically steel boxes containing three spinning reels based on Fey's original design.

Bally Manufacturing would provide the first major innovation of the modern era of slot machines in 1964 with the release of a game called "Money Honey." This was the first "electro-mechanical" slot machine. The mechanical springs and levers were replaced by servos and other electrical components. But that was just the beginning.

Money Honey was a package of innovations that re-defined the slot machine, and set it on a course to becoming a viable alternative to table games for the typical casino customer. It offered multiple-coin play, with jackpots rising according to each coin wagered. It included a hopper-a compartment with the capacity for hundreds of coins and a large metal tray at the bottom, adding exciting noise to the slot experience. Finally, electricity provided players their first glimpse of bright lights, colorful back-lit artwork, buzzers, clanging bells, and other celebratory noise. It was a harbinger of what was to come. It was the first game to communicate "excitement" to the slot player.

### 3. The Dollar Slot



For the remainder of the 1960s and early 1970s, Bally continued to pile up the innovations with their new slot machines. One of the most significant was the mid-1970s introduction of the dollar slot carousel in Northern Nevada. Bally designed a dollar-sized hopper, with a larger tray into which silver dollars would make a loud "clang" as they dropped. Because of the dollar wagers, casinos were able to offer much larger jackpots. Northern Nevada casinos placed them in carousels with colorful, flashing signs, and players flocked to them. It was the birth of slot marketing.

Slots had always been fringe offerings, placed around the edges of the casino to offer women something to do while their husbands were at the crap tables. Bally's dollar slots caused casino operators, for the first time, to seriously consider slot machines as a possible profit center for the gaming floor-and to allot them prime floor space that had always been reserved for the table games.

#### 4. Video Poker and the Birth of IGT



Bally distributor Si Redd had been one of the main forces behind the spread of the dollar slot in the mid 1970s. By 1980, Redd was promoting a new invention to executives at Bally Manufacturing in Chicago-"video poker." It was a game of draw poker simulated by a computer program-an electronic simulation of a 52-card deck with hands chosen at random and displayed on a video screen.

Bally officials wanted nothing to do with the invention, so Redd convinced them to let him strike out on his own and retain the patent. They even agreed to stay out of video gaming for 10 years. Redd took the ball handed him by Bally and ran with it, joining with a Reno manufacturer called Fortune Coin to form a new company named Sircoma. Sales of the newfangled video poker machines eventually took off, and a new genre of casino game was born. Redd would take his company public in 1982 with the name International Game Technology. A few years later, the nascent IGT would buy the rights to a new invention that would revolutionize the casino industry-an electronic method of choosing the results on reel-spinning slot machines. IGT would use that invention to take the slot market by storm, eclipsing Bally as the king of the slot world with games like "Double Diamond" and "Red, White & Blue," which are still popular today.

## 5. The Virtual Reel and the Stepper Slot



The virtual reel was, without a doubt, the most significant innovation in the history of the slot machine since the Fey Liberty Bell—perhaps more important, because it led directly to the popularity slots enjoy today.

Inge Telnaus was a computer technician working with Bally in the late 1970s on ways to set the odds of slots so larger jackpots could be offered while keeping the games profitable. At the time, the only way to make the odds of winning large jackpots longer was to add more symbols to the reels or add more reels. Once the physical limits had been reached as to the number of symbols that could fit on a given reel, Bally turned to computer technology. Telnaus invented what would become known as the "virtual reel" system. Numbers were entered into a computer program, each corresponding to a certain reel result. More numbers would be entered into the program corresponding to the same results. The most numbers would be assigned to losing results. Only a few would go to top jackpots. A random number generator program would cycle through all the numbers and generate one at random when a signal was sent—first by a drop of the coin, and later, by the initiation of the spin.

The effect was a computer simulation of reels containing as many symbols as the programmer wanted. The odds of landing large jackpots could be manipulated so huge jackpots could be advertised. While the duplication in the program weighted the random selection to the lower jackpots, the big prize could theoretically be selected on any given spin.

This invention, patented in 1984, was the primary impetus for the meteoric rise of popularity in slot machines. It was perfected by Gary Harris and Randy Adams of Universal when a computerized stepper motor was added to the mix, causing the reels to consistently stop where

the computer told them to stop. The "stepper slot" was born, and things would never be the same.

Bally, which had released its first virtual-reel slot, Series E1000, before the stepper motor was added, would use the perfected system for the first widely popular electronic slot machines, Series E2000, and later, to create "Blazing 7s," still its most popular game. But the biggest beneficiary of the invention would be Redd's young IGT, which bought the rights to the patent and used it to create more innovations that added interesting features such as multiplying wild symbols (Double Diamond, Triple Diamond, etc.) and ample paytables (Red, White & Blue) to the larger top jackpots. Slots took off like never before.

## **6. Player Tracking and the Slot Club**



Just as the virtual reel system was beginning to take hold with Bally's E2000 series and IGT's "S-Plus" reel-spinning games in the mid 1980s, a new type of marketing tool appeared that would capitalize on the new popularity of slots-the "slot club."

First appearing in Atlantic City, slot clubs worked like frequent-flyer programs at the airlines, by tracking the business a customer gives a casino and rewarding consistent customer loyalty. It was done by adding a "player tracking" software module to computer systems used to electronically record accounting numbers from the machines. Suddenly, casinos knew who was pumping the most money into their machines, and could treat those players to the kinds of perks formerly reserved for the best table players. Slot players began to get free meals, free rooms, gifts, and other perks simply by having a slot club card inserted while they played.

Today, sophisticated player tracking systems-such as Bally's "e-Series" and ACSC system, which work in conjunction with its Slot Data System (SDS) slot accounting network; IGT's Integrated Gaming System (IGS); the Wizard system by Acres, recently acquired by IGT; and Aristocrat's popular OASIS system-give slot players the ability to download cash awards right at their machines, use keypads to reserve comps at restaurants, and access special promotional awards that were not even dreamed of before the slot club.

## 7. Megabucks



In 1986, IGT unveiled one of history's most important slot innovations—the first multi-site progressive slot machine. With the virtual reel system already making larger jackpots possible, IGT decided to go for the ultimate—the type of life-changing jackpot formerly reserved for only a few very lucky lottery players.

The idea was to link machines at different casinos around Nevada to a common jackpot over telephone lines, borrowing nascent modem technology from the telecommunications industry. Coin-in from each slot on the linked network would increment a life-changing, million-dollar-plus jackpot, and the odds of hitting it would be better than the odds of hitting a lotto jackpot in a state lottery. Borrowing a name from eastern U.S. lotteries, IGT called it "Megabucks."

The Megabucks multi-site progressive system lives on in many forms, from games still bearing that title to a wealth of other progressives, from Wheel of Fortune to "MegaJackpots" games bearing various licensed entertainment brands. Other manufacturers eventually followed with their own multi-site progressive systems, such as Bally's "Thrillions," Atronic's "Arizona Magic," and Aristocrat's "Cool Millions."

## 8. Credit Play



Young players entering the casino market may be surprised to realize that 20 years ago, every wager on a slot machine was made by physically inserting a coin into the slot. Every jackpot, regardless of how small or large, was paid through the hopper with coins clanging into the tray. If you wanted to play on, you scooped coins from the tray and fed more wagers into the slot.

In the mid to late 1980s, machines began appearing which logged "credits" on a meter when a jackpot was hit-in reel-spinning slots, an LED display was used; on video poker machines, the credit log was right on the screen. Using a button on the panel, the player could simply draw from the accumulated credits of former jackpots and forego pumping coins into the slot. A "cash out" button on the other side allowed the collection of those credits in coins through the hopper at the end of the play session. The idea met with mixed reactions at first, so credit play was only offered as an option-players who loved the constant sound of coins falling into the jackpot could still opt for every jackpot through the hopper. That option would eventually disappear, largely because of the next innovation on our list.

## 9. The Bill Acceptor



Any slot player who is a baby boomer or older remembers when a prerequisite for slot play was a stop at the cage to buy rolled coins. Slot floors were strewn with discarded wrappers from coin rolls, and part of the slot experience was cracking that next roll of quarters or dollar tokens. Some older players still like this activity, but most abandoned it when machines appeared

incorporating bill acceptors, beginning in the mid 1990s.

Bill acceptors created unprecedented player convenience: No longer would players have to go to the cage or find an attendant pushing a change cart before sitting down at a slot machine. Just enter the casino, sit down, take out your wallet, and start playing. As with credit play, bill acceptors had their critics, and still do. The main complaint of some is the very same aspect that is the source of praise from others: play is speeded up. Many view money management as much easier when play is exclusively by coin, and still hit the cash-out button immediately after inserting a bill, and "play from the tray," just like the old days. (As we will see later, this option is also gradually disappearing.) But like it or not, none can deny the impact the bill acceptor has had on slot play.

### **10. Game Maker: Birth of the Multi-Game Machine**

Bally, reborn as Bally Gaming after near-extinction at the beginning of the 1990s, began its long rise back to prominence in the slot market with a landmark innovation in 1992. Borrowing a concept from the video lottery market, "Game Maker" was the first widely-popular casino slot machine to place multiple individual video slot games in a single cabinet. Game Maker gave the player something he never had before—a choice of games, even between video poker and video slots, without leaving his seat.

Many more refined versions of the multi-game unit exist today, including the newest multi-denomination units from IGT and others that give a player the choice of nickels, quarters, and dollars in one machine. But all can trace their roots to Bally's bold move of incorporating a video lottery gimmick in major numbers on the slot floors of the early 1990s.

### **11. The Bonus: "Game within a Game"**



Anchor Games operated a slot route in Nevada and two small casinos in Colorado in the mid 1990s, when it merged with Global Game Distributors to form Anchor Gaming. Anchor's president, T.J. Matthews (now chief executive of IGT, which acquired Anchor last year), had been the head of Global Game Distributors, and as head of the new company, he oversaw an effort to design proprietary games for Anchor's casinos. The idea was that people were tired of games that did nothing other than spin reels. Anchor's first proprietary game, called "Silver Strike," had a special "bonus jackpot" of commemorative silver tokens, which were displayed in the top of a slot that had a see-through cabinet.

It was a radical design, but players went bonkers. Anchor would soon begin an incredible partnership with IGT, during which a series of games were released in the late 1990s, each with a "bonus feature." A symbol on the reels would trigger a bonus event in the top box, which bore any number of designs—a pinball machine, a tic-tac-toe game, even two extra sets of reels. Suddenly, players began to anticipate "bonus rounds" as part of the slot experience. And once again, things would never be the same, particularly in light of Anchor's most important bonus innovation—the wheel.

## 12. Wheel... of... Fortune!



Anchor Gaming's signature innovation was the incorporation of a roulette wheel on top of a slot machine, configured like a carnival fortune wheel. A reel symbol would trigger a bonus feature in which the player pressed a button to spin the wheel for a bonus award. It first appeared with a Bally slot called "Wheel of Gold." That game was a hit for Bally, and can still be seen in various forms on slot floors today.

But it would be IGT that would turn the wheel into the most popular slot game in history. IGT had a license to create a slot game based on the popular TV game show Wheel of Fortune. The license had been used for an unsuccessful video slot, but it found its home with Anchor's wheel. Artwork from the TV show was used, and the wheel was dressed up to look exactly like the giant fortune wheel used on the program. When the triggering symbol to spin the wheel landed, the player would hear a sound bite from the show of the familiar audience chant, "Wheel... of... FORTUNE!"

It was the first slot game to capitalize on the American love affair with television. Wheel of Fortune is the grandfather of TV-themed slots, but it had other innovations that changed the slot world: It combined features of the most popular IGT games into a powerhouse slot offering. It had a multisite progressive jackpot, and a base game that was either Double Diamond or another multiplying-wild symbol game. We should say "has," not "had"-it is still arguably the most popular slot game in the world, and has already spawned two major spinoffs in video.

### 13. Multiline Video



They were first called "Australian-style" slots, because the idea originated Down Under with Australian slot-maker Aristocrat Leisure Industries. But when Aristocrat brought the idea of multiline video to the U.S. in the mid 1990s, it would change the slot landscape forever.

Americans were accustomed to reel-spinning slot games with a single payline. The Aristocrat games had five video reels, with five, nine, or more paylines, and wagers of as much as 45 coins or more per spin. The paytables were encyclopedic, with scores of possible winning combinations. They first appeared in quarter denominations, but slot managers soon realized they could place them in a nearly extinct denomination-the nickel-and garner average bets which outstripped the quarter reel spinners.

The newfangled games had one other innovation: a "second-screen" bonus round. A triggering reel combination would switch the video screen from representations of reels to a complete animated scene, and the player would be prompted to select spots on the screen to find hidden

bonus treasures. It was absolutely revolutionary in its effect, and American manufacturers, beginning with WMS Gaming's "Reel 'Em In" and IGT's "iGame" series, soon followed with their own multiline, multicoin video slots. The phenomenon led directly to today's video slot games, with denominations as low as pennies and video second-screen bonus games depicting everything from cartoons to classic TV shows to movies.

#### 14. The Touch-Screen



With the obvious winning formula of multiline video came more innovations to create customer convenience. The styles of the second-screen bonus events more often than not required a selection by the player from several options on the screen. Additionally, the games were much more complicated than the classic three-reel variety, so manufacturers included "help screens" to explain all the possible ways to win. Initially, buttons on the panel had to be used to choose options on the video screen or to access the help screens.

The slot manufacturers would soon make everything easier with "touch-screen" technology. They employed vendors such as MicroTouch and ELO Touch Systems as OEM suppliers, and players were soon touching the screen to select bonus features, or to access help screens. The technology was also applied to video poker; players were able to simply touch the cards they wished to hold and automatically discard the remaining cards. Play speeded up all around. The latest touch-screens have even more advanced features: Sigma's "Smart Touch" screen allows players to touch any symbol in the pay window to see the pay schedule amount related to combinations of the symbol-an instant help screen, with the information the player needs at the moment and nothing more.

## 15. Triple Play Poker: The Multi-Hand Revolution



Much like the early decades of the slot machine, the basic video poker game remained essentially the same for its first two decades. In 1998, however, inventor Ernie Moody and his nascent company Action Gaming teamed up with IGT to release a revolutionary new style of video poker-"Triple Play Poker."

Players wager from one to five coins on each of three video poker hands. The screen displays the initial five cards in three identical hands. The player selects his hold cards, which are held in all three hands. The draw is then made from three separate 52-card decks, each with the initial five cards removed. Payback percentages, optimal strategy, and everything else associated with single-hand video poker remains the same, but the wagers and wins are multiplied by three to create unprecedented volatility.

As with the virtual reel in the slot genre, Triple Play was the biggest innovation in video poker since its original invention. It has already spawned spinoffs including Five-Play, Ten-Play, Fifty-Play and Hundred-Play Poker, each multiplying the numbers of identical hands, the wagers, and the wins accordingly. Many players still love the simplicity and low volatility of single-hand video poker, but for the serious gambler, multi-hand video poker is hard to beat.

## 16. Advanced Video



As video poker players enjoy the adrenaline rush that multi-hand video poker has to offer, straight slot players are being treated to some of the most advanced visual and audio effects ever to be seen or heard on the slot floor. During the past few years, all of the major slot manufacturers have introduced video slots incorporating the most sophisticated platforms the computer industry has to offer. Bally's EVO video platform, Aristocrat's MKVI, Atronic's "Hi(!)bility," and most recently, the WMS CPU-NXT platform and IGT's remarkable AVP (for "Advanced Video Platform") have taken the video slot to a level of entertainment rarely seen even in the home computer industry.

You can see it in games like Aristocrat's "Jeff Foxworthy," or WMS Gaming's "Robin Hood: Sherwood Treasures," or Bally's "SNL" series, or Atronic's "Mystery Mask." You can see it in breathtaking new video slots from IGT such as "Wheel of Fortune AVP" and "Star Wars." You can see it in Konami games, Sigma games, Mikohn games, and others. Fluid, movie-quality animation, breathtaking colors, striking 3-D graphics, and crystal-clear stereo sound bring a collection of multiple game features more intricate than ever to the player.

These features are becoming ever more inventive, incorporating new wagering schemes such as those in Atronic's "two-way" betting system, where an additional wager per line causes jackpots

to register right-to-left as well as left-to-right; Sigma's multi-progressive system, where additional coins wagered qualify for higher levels of progressive jackpot; and Aristocrat's "Reel Power," where the player buys reels instead of paylines, and all jackpots are paid as scatter wins.

Video slots are providing a play experience that will only get better as the technology becomes even more advanced.

## 17. Bonusing



Acres Gaming, now an IGT subsidiary, pioneered the idea of "bonusing." Banks of slots are connected to a jackpot controller, and coin-in triggers cause a bonus prize or "mystery jackpot," funded by a portion of wagers, to be sent to a random machine in the bank. Usually, a winning combination on the reels is not even required to qualify for one of these special bonus prizes-only participation in the play leading up to the award. Acres rolled out this style of bonus several years ago with its "Hurricane Zone" product, and today offers a complete library of bonusing products.

Most recently, Aristocrat has taken the bonusing concept to new levels with two products, "Hyperlink" and "Bonus Bank." In Hyperlink, the mystery prize comes in the form of a common bonus round, resulting in a prize of one of four progressive jackpots-guaranteed. In Bonus Bank, an ante wager is placed to qualify for one of a collection of five random bonus events, which can

occur simultaneously or within seconds of each other.

## **18. Ticket In/Ticket Out: The Cashless Revolution**



This innovation is just beginning to blossom, but most industry experts agree that before it's done, it will completely change the way people play slots. Payouts in tickets have been a staple of video lotteries for years, but the turn of the 21st century has seen it begin to become a staple of the slot floor. Bills go in the acceptor, play is exclusively in credits, and cash-out brings a secure ticket which can either be redeemed for cash at the cage or placed in another slot to continue playing.

Manufacturers are lining up to add their own ticket-in/ticket-out (known as "TITO" in the trade), coin-free slot play systems to their games, and slot directors are lining up to examine them. Removing coins from the equation not only relieves customers of dirty hands and having to wait for hopper fills and hand-pays; it relieves the casinos of millions of dollars in coin-handling costs. Casinos such as Suncoast in Las Vegas and Borgata in Atlantic City offer completely coin-free slot floors.

Many believe the TITO systems, such as IGT's "E-Z Pay" and Bally's "eTicket," are only the first step to a completely cashless slot floor. There are already casinos-such as the Oneida Nation's Turning Stone casino in upstate New York-where cash has been completely removed from the slot floor. Cashless slot floors work with debit-card systems. Players deposit cash at the cage and are given a player's club card with credits loaded onto it. Cash-out reconciles the credit total on the card, and the player redeems any winnings at the cage. This and other cashless systems will surely increase their presence in the industry-probably sooner than you think.

## **19. Self-Redemption and the Kiosk**

As we have seen, new technology almost always breeds new customer-convenience. Along with the TITO systems, we are beginning to see self-redemption kiosks, where cash-out tickets can be redeemed without waiting in line at coin redemption.

The kiosk has also become a mainstay of the slot club, with self-service stations available for everything from redeeming cashback awards to collecting earned complimentaries. For customers, it is the ultimate convenience-not having to wait in line.

Casinos where coins are still in heavy use-in other words, most places-are picking up on this desire for convenience by adding self-service coin redemption machines. This is Nirvana to anyone who has ever cursed the wait in line at coin redemption while lugging heavy buckets of

coins.

Expect to see more kiosks around the casinos in years to come, as the lines get shorter and shorter.

## 20. Ergonomics



During the past year, a new term has entered the slot-industry lexicon: "ergonomics." This term has manifested itself in products designed to maximize player comfort-and to keep the player in his seat longer.

All of the major slot manufacturers are now jumping on the ergonomics bandwagon. IGT's "AVP Royal" cabinet changes the monitor angle to reduce glare, and provides a slant-top style with cushy panels to support the hands and wrists. Bally's "EVO Hybrid" line of games brings the touch-screen monitor within easy reach of the player, who does not have to stand up to reach it.



The most radical of the new ergonomic cabinets are WMS Gaming's "Bluebird" and Atronic's "e-motion." The Bluebird cabinet was designed from the ground up with player comfort in mind. A curved button panel, angled monitor, and back-friendly chair allow the player to sit in comfort and activate all game features without reaching. The e-motion cabinet sports an oblong monitor that is height-adjustable by pushing easily-reached buttons on the side. Slot card readers, bill acceptors, and panel buttons are placed precisely where they will be most easily reached by the player.

Finally, A.C. Coin and Slot teamed up with furniture suppliers Majestic Industries and TC Millwork to create an entire ergonomic cabinet and chair package for A.C. Coin's slot offerings. The chair is adjustable via a gas cylinder, like a barber chair. The cabinet has a recessed base where the player's feet can rest and there is carpeting in the hollowed-out area.

These ergonomic features are the final touch in the evolution of the slot machine into what it is today. By all indications, the evolution is not finished. Stay tuned for another Top 20 Innovations, and more, to come in the next decade or two. (We can't wait!)

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