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## Slot machines: a lose lose situation

*Once seen as a harmless diversion, hi-tech slot machines now bring in more money than casinos – and their players become addicted three times faster than other gamblers. We investigate how the industry keeps us hooked*

- [Tom Vanderbilt](#)
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*Don't let the name fool you – penny slots generate upwards of 50% of all casino profits, and no one plays a penny. Photograph: Alamy. Image manipulation: Philip Partridge/GNM Imaging*

The first thing you notice on entering the vast hall of the casino is the sound: an ambient wash of well-modulated tones, a 4,000-strong machine symphony; set not to any discernible pattern, but not without harmony; syncopated by deeper subwoofer exhalations, an occasional chirp and the simulated clang of coins. It all percolates and pulsates in a gently propulsive fashion, as if to convey a sense of progress even as it relaxes.

It's as if Brian Eno had recorded Music For Casinos. Which is not so far off the mark. In her book *Addiction By Design: Machine Gambling* In Las Vegas, Natasha Dow Schüll, an anthropologist at the Massachusetts Institute of Technology, writes that in the late 1990s the "prescient audio director" at Silicon Gaming decided that every one of the sounds made by its slot machines – a number that now exceeds some 400 discrete noises – would be issued in what she terms "the universally pleasant tone of C". To generate the sounds, the director sampled existing casino soundscapes, fusing the whole to, as he put it, "add a new and better track to the traditional sound, but not to clash with it".

The sonic strategy is at one with an overall ethos that Schüll terms "smoothing the ride", a holistic mantra running through the casino experience. "From architecture to ambience to machine hardware and ergonomics, to the colours and buttons and then down into the game and the actual maths," she says, "all of it is in the service of maintaining the flow."

Schüll, a native New Yorker whose first encounter with Las Vegas was an accidental airport layover, spent several years in the city, haunting the offices of casino executives, the meeting rooms of Gamblers Anonymous (not surprisingly, Las Vegas has the most per capita attendees of any city in the US – some, Schüll says, wearing casino uniforms) and the gambling industry exhibitions where panel participants would say, offhand, things such as, "Gambling, as I see it, is an irrational behaviour that is impulsive." She freely admits that youth and looks helped her gain access to the inner sanctum of casino bosses, a world she says was not yet dominated by slick, corporate PR teams. Analytically minded MBAs said they were glad to help with her dissertation – what they dubbed her "school paper".

She arrived during one of the city's periodic building booms, including a particular surge in what are known as "locals' casinos" – not the flashy, themed spectacles of the Strip, but more low-key, less mazy centres for "convenience gambling", as the industry calls it, where residents comprise up to 90% of the haul and machine games such as video poker dominate. She didn't need academic research to gauge this latter trend. "I was staying with my boyfriend's grandmother, who lived right across the street from the Gold Coast, a locals' casino. We noticed that she got up every night at 2am, and she would be gone until about 10am. We figured out that she was going and playing video poker at the Gold Coast."

While Schüll's research began with casino architecture, it is the rise of these machine games – and their carefully calibrated machine-user interfaces that, she says, enable, if not exactly seek, addictive behaviour – that became her ultimate focus. "I'm not playing to win," one Vegas resident told her. She was playing, Schüll says, "to keep playing – to stay in that machine zone where nothing else matters".

I have intercepted Schüll, on her way to teach a doctoral seminar at Columbia University, to walk me through Resorts World casino in Queens, New York. Driving down Rockaway Boulevard, past pawn shops, I enter the casino driveway, ascend the multistorey car park and a few short steps later am on the floor.

This is where "flow" begins. In the words of Bill Friedman, a legendary Las Vegas casino designer interviewed by Schüll, "Driving from the street into the property should be effortless." Casino punters, he notes, "resist perpendicular turning". (Schüll reports that when Friedman slightly tweaked the entrance of one property, curving the right angle, he was struck by how many more pedestrians entered.)

As we enter the floor, Schüll scans the place, from expansive ceiling to the polychromatic carpeting that sits uninterrupted, like a vast sea, under the banks of flashing machines. Like most casinos in Vegas, it is large, its geography blurred (paramedics told Schüll it took them longer to reach victims inside casinos than it took them to get to the casino itself). The space is rather like a city, with gridded blocks of machines occasionally opening into wide, circular "plazas", in the centre of which are slot machines ringed around columns.

In these spaces, the ceilings are slightly recessed, mirroring a circular pattern in the rug. "Your mind sort of drops imaginary lines down," Schüll says, "and you have a sense that you're being protected. It helps differentiate the space, rather than having it feel like one giant warehouse."

Resorts World is, in essence, a locals' casino. Its slot machines average more than \$370 a day in revenue each, more than twice the take of Vegas machines. While there are some vague gestures towards New York City theming (odd, as the casino is already in the city), this is not a haunt for high-rolling "action" gamblers, as the industry calls them – live games are still illegal in New York. This, rather, is a sanctuary for "escape" gamblers, the kind who are more interested, Schüll says, in spending time on a machine than in getting big wins. "Some people want to be bled slowly," an executive of the so-called "Costco model" of

gambling says. And while there's a Sex And The City slot machine, there are more rolling walkers than Manolos in view among the crowd, which tilts older – and, this being Queens, Asian.

As we pause before a video poker machine, I see how deeply this "smoothing the ride" idea goes. Slipping in a \$20 bill, I press the large "deal" button. But it's not one hand of poker I'm playing – it's 10. Some machines go up to 100. "You'll see screens with these tiny decks," Schüll says. "It's parsing what was formerly a volatile risk – you either won or you lost." And, indeed, in those 10 hands, a winning hand of two pairs shows up. "It's insurance," she says of the multiple decks. "Disappointment insurance." Your overall stake may be slowly sliding away, but there's always the hint of the win, somewhere. "Positive reinforcement hides loss," a game designer told Schüll. "As the market is saturated with casinos, you don't want to burn your market out," Schüll says. "You want to keep them coming back. And to get most of their money, you need to let them have most of it back for a longer time."



The days of the old-fashioned fruit machine in amusement arcades and pubs are over. These days punters are encouraged to lose rather more than just a few pounds. Photograph: Paul Brown/Rex Features

The slot machine, the historical antecedent for which came from nearby Brooklyn in the 19th century, is a curious device. As a Nevada regulator notes in *Addiction By Design*, it is the only "game in Nevada where the player doesn't know what his odds are". For most of its life, they were small beer; low-stakes blandishments for little old ladies, something you plugged a quarter into while you waited for your flight home from Vegas. "They were really seen more as things to keep you distracted while you were waiting for other things," Schüll says. "You'd find them in passageways, places of transition."

Sociologists didn't think much of them, either. Erving Goffman, the legendary social psychologist who once worked as a blackjack dealer in Vegas, dismissed them as not being a proper "sociological entity" – after all, there wasn't much social interaction at work. Anthropologist Clifford Geertz called slots "stupid mechanical cranks", of interest only to "women, children, adolescents... the extremely poor, the socially despised, and the personally idiosyncratic".

But by the late 1990s, Schüll notes, machine games were generating twice as much revenue as all "live games" combined; by 2003, an estimated 85% of the industry's revenue came from machines (in the UK,

revenues from so-called fixed-odds betting machines now exceed casino revenues). Schüll says that the machines, whose "old lady" image left them untouched by associations with vice, were the perfect vehicle for gambling's expansion from a Vegas novelty to part of the fabric of everyday life everywhere (decades of experience with video games, and screens in general, didn't hurt either, she adds).

The games themselves were undergoing an evolutionary change. Once upon a time, you stood at a slot machine, putting whatever change you had into it, cranking the lever and watching the wheels spin. If you won, you'd wait for the clanging of the change in the hopper. If you won big, you'd have to wait for a casino attendant to come by and record it. There was a discrete rhythm, with any number of chances for a natural pause – like walking away from the machine when you ran out of coins.



The goal is to entice people to play close to 'extinction', the unfortunate industry term for a player who's gone broke. Photograph: Courtesy of Resorts World

But, as Schüll documents, any number of refinements were added to the machine, most of them targeted around breaking down those moments of inertia – just as decades of Taylorist efficiency had done on the assembly-line floor. The lever was dispensed with (though it still exists on some machines as a "legacy lever"). Stools were added, then increasingly ergonomic chairs. Reels could be spun by pressing a button (thus doubling, Schüll says, the average number of games that could be played per hour, from 300 to 600). "Embedded bill acceptors" eliminated the need to fumble for coins, speeding up play another 15% and increasing the amount played by 30%. "Ticket in/ticket out" systems got rid of the need to dispense coins as winnings; as one slot floor manager told Schüll, "People didn't want to wait to be paid off, because even if it took just three minutes, to them it felt like 20 minutes." There was a curious paradox at work here: as the games got faster, players stayed on longer.

Most intriguingly, the reels began a slow march away from mechanical reality and into mathematical abstraction. Reels went from mechanical control to electromechanical control in the 1960s to digital control in the 1970s to, eventually, reels that were no longer physical objects at all, but algorithmically driven video projections. The "reels" that the player sees whir past on the machine are themselves avatars, of a sort, to a much larger set of virtual reels, existing as code within the machine. Schüll writes: "Although each symbol that players see seems to have an equal chance of hitting, in fact each does not; the actual reel



merely communicates the mapping decisions of its virtual counterpart." Why? As the inventor of the technology noted in his US patent application: "It is important to make a machine that is perceived to present greater chances of payoff than it actually has."

The whole point, Schüll says, is "smoothing the ride", allowing the casino more effectively to manage its risk (by holding out an infinitesimal mathematical hope to the player that they might "strike it big"), while keeping the player engaged by dangling "near misses" that will not, statistically, actually occur as much as our eyes might believe they would. The goal is to entice them to play close to "extinction", the rather unfortunate industry term for a player who's gone broke. To further the actuarial vibe, frequent players are assigned a "predicted lifetime value" by the casino modellers, a phrase that reminds us that in the gaming industry, the "product" is the person sitting at the machine.



Resorts World is a sanctuary for 'escape' gamblers more interested in spending time on a machine than in getting big wins. Photograph: Courtesy of Resorts World

We pause in front of a Cleopatra slot machine, a popular "five-reel" multi-line machine designed by industry giant IGT, replete with a panoply of ankhs, asps and other orientalist symbology. There are five reels, which of course are not really reels, and no "legacy lever". Winning is not merely a matter of lining up a few sets of cherries; rather, as laid out by a tangled diagram resembling the London tube map, there seem to be an infinite array of ways to win – the so-called "Australian model" of machine gambling. It is, strictly, a "penny slot", meaning the \$20 bill I slide into the machine translates into 2,000 credits. Don't let the name fool you – penny slots generate upwards of 50% of all profits, and no one plays a penny; instead, you bet in chunks of 50 or 100 credits, or "bet max". This is one of the many subtle behaviour manipulations that are going on here; what's the harm when you're betting a penny? (In fact, Schüll says, players end up spending more on the small-denomination machines.) As my money is accepted, a husky female voice intones: "May my luck be upon you." I press a button, the reels spin. As they come to a stop, a rising crescendo of sound alerts me that I have won – though it takes me a minute to realise where, amid all the permutations. Even before the LED counter has finished ticking off my winnings, I can press "bet max" again to interrupt the process. As a representative of Bally, the gaming company, observed: "A gaming machine is a very fast, money-eating device. The play should take no longer than three and a half seconds per game."

Schüll compares it to psychologist Mihaly Csikszentmihalyi's famous concept of "flow", that engrossed state in which time seems to vanish. Flow, the theory goes, requires a number of preconditions: a clearly defined goal; quick feedback on whether or not the goal has been attained; and a sense of operational control over the activity. All of this is present here, and what it adds up to, Schüll says, is a greater propensity for gambling addiction. She quotes studies noting that machine gamblers – even those who had previously played other games without problems – became addicted three to four times more quickly than others (one psychologist compares it to crack cocaine).

Warren Buffett has called gambling in general a "tax on stupidity", a charge that weighs particularly heavy in an endeavour so algorithmically stacked against its participants. But the addicts Schüll spent time with in Las Vegas seem to harbour few illusions about their chosen temptations. As one describes it, with a kind of Sartrean resignation, "With the machines, there really is no chance. Because you know you're going to lose. That made it even safer – I felt like I almost controlled that fact."

The US gaming industry, in a pamphlet called *Demystifying Slot Machines* (created, Schüll says, directly in response to her work), argues that "slot manufacturers need to build devices for a society with a decreasing attention span and an increasing demand for exciting, fast-paced entertainment, all in a marketplace overflowing with competing entertainment options". They do not mention the part they have played in actively hastening that process through changes in game technology and dynamics. But there is something to the argument that the machines are reflective of larger societal trends. In their dematerialisation of money, their ever faster "event frequencies", their increasingly baroque instruments of play, with easy access to capital and "diversification" of risk, the gambling machines are at one with the logic of Wall Street, with its high-frequency algorithmic trading, the deregulation of old barriers and safeguards, and black box financial instruments. As one game designer told Schüll, of the late 2000s financial crisis, "The guys who might have become game mathematicians working with Reno slot makers instead became stockbrokers in New York and Chicago, and invented all these exotic financial instruments."

Back in Queens, I glance at a potbellied man, half sprawled in a cushioned swivel chair, absently pawing at a slot machine, and am reminded of historian Sigfried Giedion's observation that "posture reflects the inner nature of a period". And as Schüll and I drift toward the exit, I see the strangest sight of all: a group of people, mostly Asian men, hunched over screens, glancing up at an avatar image of a dealer. In the middle of the cluster of tables sits an actual roulette wheel, under a glass bubble. A machine hand drops and retrieves the ball. Originating in the new gambling hub of Macau, the electronic table games were seen not only as a way to save money on costly physical dealers, but as a way to, as one observer put it, gradually "transfer people from tables to video slots".

In New York State, where live games are prohibited, the automated roulette and card games provide a way around the law. "There's still some weird old vice and stigma thing – the Rat Pack, the days of the mob – all these things associated with the high-roller games," Schüll says. "The real irony is that these games," she adds, gesturing toward the banks of flashing machines, singing their song in the key of C, "are the riskiest".