

HIGH-TECH CASINO ADVANTAGE PLAY: LEGISLATIVE APPROACHES TO THE THREAT OF PREDICTIVE DEVICES

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INTRODUCTION

On May 11, 1977, casino operators in Lake Tahoe uncovered a problem unlike anything they had ever encountered before.¹ Five big players had arrived in town and were repeatedly winning blackjack games in casinos across the

¹ See generally Ray Kennedy, *The Odds Couple*, SPORTS ILLUSTRATED, Apr. 16, 1979, at 66, 79-80, available at <http://sportsillustrated.cnn.com/vault/article/magazine/MAG1094845/index.html> (click "view this issue" hyperlink to view paginated version); KEN USTON, MILLION DOLLAR BLACKJACK 93-96 (1981); Richard W. Munchkin, *Blackjack Wizards: Interview with Keith and Marty Taft: Blackjack Computer Pioneers*, BLACKJACK FORUM, Winter 2003/04, at 18, 26-27, available at <http://www.blackjackforumonline.com/content/taftint.html>.

city.² The players did not play like card counters and did not visibly signal each other. However, they kept consistently winning.³

Unlike Las Vegas, where casinos competed fiercely and rarely shared information, the smaller Lake Tahoe casinos regularly warned each other about suspected cheaters and card counters. As a result, word of these players spread quickly.⁴ Eventually Harrah's detained one of the players and searched him.⁵ The player had an electronic device strapped to his thigh the size of a pack of cigarettes. The device was sealed in epoxy and connected to a small keypad he operated through a hole in his pocket.⁶ Unfortunately, no one could tell exactly what the device did.⁷

An hour later, across the street, Harvey's detained another pair of players, a boy named Marty and a young woman named Roxi, who screamed when they took her into the back room.⁸ Marty had an identical device strapped to his thigh.⁹ At first, Roxi did not appear to have anything, but she finally confessed that she had a radio receiver hidden in the heel of her left shoe.¹⁰ The casinos then turned the players and the devices over to the police.¹¹ The radio receiver explained why the players did not have to signal to each other,¹² but the other devices were still a mystery.¹³

The players were charged with bunco steering¹⁴ but quickly made bail and left town.¹⁵ The police knew that in order to convict the players, they would first have to figure out the purpose of the confiscated devices. Unfortunately, the police had no idea, so they gave the devices to the Nevada Gaming Commission. However, the epoxy made the devices nearly impossible to disassemble without destroying them.¹⁶ After a month with no luck, the Commission gave the devices to the FBI.¹⁷ Five months later the FBI finally responded,¹⁸ but they had bad news. The FBI informed the Commission that the devices were simply computers¹⁹ programmed to predict blackjack strategies.²⁰ Because the computers did not interfere with the game, they were not cheating devices.²¹ They were legal.²²

² Kennedy, *supra* note 1, at 80.

³ *Id.* at 94.

⁴ USTON, *supra* note 1, at 95.

⁵ *Id.*

⁶ Munchkin, *supra* note 1, at 23.

⁷ See USTON, *supra* note 1, at 96.

⁸ Kennedy, *supra* note 1, at 80.

⁹ *Id.*

¹⁰ *Id.*

¹¹ Kennedy, *supra* note 1, at 80.

¹² Munchkin, *supra* note 1, at 23.

¹³ See USTON, *supra* note 1, at 96.

¹⁴ For a definition of "bunco steering" see NEV. REV. STAT. § 6464.199 (1912).

¹⁵ USTON, *supra* note 1, at 95.

¹⁶ Munchkin, *supra* note 1, at 23.

¹⁷ USTON, *supra* note 1, at 96.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ Munchkin, *supra* note 1, at 23; see also *infra* Part II.B for detailed history and description of this device.

²¹ *Id.*

²² Kennedy, *supra* note 1, at 80; USTON, *supra* note 1, at 96.

Today, advances in technology have created possibilities that even a decade ago would have seemed like science fiction. Computers that can predict the outcome of gambling games have become more powerful and more common. For example, in 2004, the Ritz casino in London lost 1.3 million pounds (two million dollars) to a man with a computer disguised as a cell phone that used a laser to predict roulette.²³ In 2009, the Nevada Gaming Control Board issued a notice warning casinos of an iPhone app available to predict blackjack that included a “stealth mode,” enabling it to be used inside a player’s pocket entirely by touch.²⁴

These computers and programs are examples of “predictive devices” – devices that can predict the outcome of gambling games. Until recently, these devices were legal.²⁵ Moreover, predictive devices have generally been found legal under common law²⁶ because, when those laws were written, no one anticipated that such devices would ever exist.²⁷ Sometimes these devices have been described as illegal according to common law cheating or fraud,²⁸ but in practice courts have held that those doctrines do not apply.²⁹ Consequently, jurisdictions have had to write new laws to specifically outlaw these devices.³⁰ These new laws are often referred to as simply “device laws.”³¹

Device laws are important to jurisdictions with legal gambling, but the evolution of device laws also provides an interesting example of how laws respond to unanticipated technological advancements. The basic concept of a device law is simple, but implementing one correctly is more complex than it first appears.³² Thus, device laws demonstrate many hazards common to law-making as our use of technology continues to evolve.

This paper examines how device laws in the United States have dealt with predictive devices over the years and how device laws can be improved. Part I of this paper looks at how different laws address predictive devices. In addition, Part I examines three device laws in depth and compares their effectiveness. Part II discusses the history and evolution of several types of predictive devices, and how the laws in Part I have been applied. Part III proposes a model device law designed to address the shortcomings of current laws.

²³ See generally RICHARD MARCUS, *WORLD’S GREATEST GAMBLING SCAMS* 238–59 (2007); RICHARD A. EPSTEIN, *THE THEORY OF GAMBLING AND STATISTICAL LOGIC* 152 (2d ed. 2009).

²⁴ Letter from Randall E. Sayre, Bd. Member, Nev. Gaming Control Bd., to All Nonrestricted Licensees and Interested Parties, Card Counting Program (Feb. 5, 2009) available at http://www.gaming.nv.gov/documents/pdf/industry_ltr_201.pdf.

²⁵ See, e.g., Kennedy, *supra* note 1, at 80 (in 1979, Oscar Goodman said in relation to Keith Tague and Ken Uston, “there’s nothing illegal about using computers”).

²⁶ See, e.g., *infra* Part II.A.3; *infra* Part II.B.1.

²⁷ See *infra* Part I.A.

²⁸ See Sheriff, Clark Cnty, Nev. v. Anderson, 746 P.2d 643, 644 (1987) (where a player using a blackjack computer was charged with “possession of a cheating device”).

²⁹ See *infra* Part I.A.1 & Part I.A.2.

³⁰ See I. Nelson Rose, *Gambling & the Law: Card Counting Devices made Criminal*, GAMBLING TIMES, Oct. 1985, at 22.

³¹ They are also sometimes referred to as “antidevice statutes.” See Adam J. Kolber, *Criminalizing Cognitive Enhancement at the Blackjack Table*, MEMORY & L., Aug. 29, 2012, at 307, available at <http://ssrn.com/abstract=2138358>.

³² See *infra* Part I, Part III.

Finally, Part IV looks at the future of device laws, both in terms of potential technological advances and how device laws might be applied to Internet gambling.

I. LAWS REGULATING PREDICTIVE DEVICES

A. *Historic Laws and Regulations*

A player who has an edge over the casino engages in “advantage play” defined as “a situation in which a player through some method of play can acquire an advantage over the casino in the context of a gambling contract.”³³ Advantage play is frequently referred to as “cheating,”³⁴ but this is not correct. Cheating is only one of many types of advantage play. Several forms of advantage play are completely legal, such as card counting. Using a predictive device falls in the grey area between clearly illegal cheating and clearly legal skilled play, such as card-counting. Unfortunately, using a predictive device is often referred to as “cheating,” even by courts.³⁵ However, this is only correct when “cheat” is used informally to refer to “any illegal type of advantage play.” To avoid confusion, this paper will use “cheat” only in its formal sense, to refer to the actual crime of cheating.

1. *Common Law Cheating*

The general crime of cheating originated in common law, and has since been narrowed and codified to apply to gambling games.³⁶ Cheating at gambling is defined as manipulating the play of a game in a way not allowed by the game’s rules.³⁷ The three primary categories of cheating include: altering the selection of outcome; acquiring knowledge, not available to all players, of the outcome of the game or any event that affects the outcome of the game; and, increasing or decreasing the amount of one’s wager after learning the result of the random event.³⁸ Most jurisdictions with legal gambling now statutorily define cheating using variations of these criteria, including Nevada³⁹ and New Jersey.⁴⁰

³³ Anthony Cabot & Robert Hannum, *Advantage Play and Commercial Casinos*, 74 Miss. L.J. 681, 681 (2004-2005) (citing DUSTIN D. MARKS, CHEATING AT BLACKJACK AND ADVANTAGE PLAY 101 (1994)).

³⁴ BOB NERSESIAN, BEAT THE PLAYERS 14, 24, 76 (2006).

³⁵ See *Sheriff, Clark Cnty. Nev. v. Anderson*, 746 P.2d 643, 644 (Nev. 1987) (in the leading Nevada Case about predictive devices the court says “Anderson was charged with possession of a cheating device and entering a building with the intent to use a cheating device (burglary),” even though the device Anderson had was a blackjack computer, which is not a cheating device).

³⁶ See Cabot & Hunnum, *supra* note 33, at 688–89.

³⁷ See Rose, *supra* note 30, at 22, 86.

³⁸ Cabot & Hannum, *supra* note 33, at 688–89.

³⁹ NEV. REV. STAT. § 465.015(1) (2011) defines “cheat” as “to alter the elements of chance, method of selection or criteria which determine: (a) The result of a game; (b) The amount or frequency of payment in a game; (c) The value of a wagering instrument; or (d) The value of a wagering credit.” Cheating is then made illegal by NEV. REV. STAT. § 465.083 (2011).

⁴⁰ N.J. STAT. ANN. § 5:12-113 (West 2012).

When card counting became popular in the late 1960s, casinos worried that it would damage their business and tried unsuccessfully to prevent players from counting.⁴¹ Courts, however, have consistently ruled that players are allowed to count cards as long as they make calculations based on information available to all players.⁴² The Nevada Supreme Court has confirmed card counting is legal because “a card counter . . . does not alter any of the basic features of the game. He merely uses his mental skills to take advantage of the same information that is available to all players.”⁴³ Thus, under both common law and statutory law, predicting the outcome of a game using information available to all players is not cheating.

2. *Common Law Fraud*

Fraud is another common law doctrine often used against players who obtain unfair advantages while gambling. Common law fraud involves knowingly misrepresenting something which another person reasonably relies on to that person’s detriment.⁴⁴ For example, if someone offered a game where the odds appeared to be about even but instead greatly favored the person offering the game, this would be illegal under the doctrine of fraud.

The Nevada statute governing gaming fraud⁴⁵ greatly expands the traditional definition of fraud to include elements of cheating, and some other specific acts.⁴⁶ New Jersey does not have a statute specifically for gaming fraud, but does allow actions based on common law fraud. An argument can be made that using a predictive device is fraud, but this argument is not strong, and in practice, users of devices have not been charged with fraud.⁴⁷

3. *The Introduction of Predictive Devices*

No common law doctrine prohibits players from betting on games in which they can accurately predict the outcome, as long as they make that prediction using only information available to all other players of the game.⁴⁸ Additionally, the common law does not differentiate between making predic-

⁴¹ See generally WILLIAM POUNDSTONE, FORTUNE’S FORMULA 110-12 (2005).

⁴² See *Sheriff of Washoe Cnty. v. Martin*, 662 P.2d 634, 638 (Nev. 1983).

⁴³ *Id.*

⁴⁴ The five elements of common fraud are: (1) false representation; (2) knowingly made by the perpetrator; (3) intended to induce reliance by the victim; (4) the victim did rely on the representation; and (5) the victim suffered damage as a result. *Lubbe v. Barba*, 540 P.2d 115, 117 (Nev. 1975).

⁴⁵ NEV. REV. STAT. § 465.070 (2011).

⁴⁶ *Id.* The Nevada fraud statute includes changing or misrepresenting the amount of a wager or manipulating a gaming device. *Id.*

⁴⁷ See Thomas B. Duffy, *Blackjack Computers Part II*, BLACKJACK FORUM, Jun. 1994, at 27, available at <http://www.blackjackforumonline.com/content/duffyii.htm> (describing how a prima facie case of common law fraud could be made against someone using a hidden computer, but concluding that “I do not believe [the state] has a prayer of convicting a device user under this statute.”).

⁴⁸ Actually, though the phrases “publicly available” and “available to all other players” are often used, they are not strictly true; a more accurate phrase would be “made available as part of the game.” For example, players in a poker game know the value of their hole cards and make bets on those values. That information is not “publicly” available or “available to all other players,” in fact, the game depends on the other players *not* knowing the values of

tions with or without the aid of a device. It follows that predictions made with the help of a device are legal, as long as the device uses only information available to all other players to make its calculations.⁴⁹

When inventors started making wearable computers to predict roulette and blackjack, those computers were legal and remained so for over two decades.⁵⁰ Computers were so rare during most of that period that the casinos either did not care, or more likely, did not know about them. By the late 1970s, at least one organized team of players was systematically using blackjack computers to win money in Nevada casinos.⁵¹ After the incident in Lake Tahoe,⁵² when the FBI reported to Nevada authorities that the blackjack computer “was not a cheating device, but just a computer,”⁵³ all charges against the players had to be dropped.⁵⁴ Thus, as casinos became aware of the threat posed by these devices, they started lobbying for new laws to make certain devices illegal.⁵⁵

4. *New Jersey Regulation 19:47-8.1*

In 1983, New Jersey became the first jurisdiction in the U.S. to create a rule prohibiting predictive devices.⁵⁶ The New Jersey Casino Control Commission (NJCCC) issued regulation 19:47-8.1, which read:

Except as specifically permitted by the Commission, no person shall possess with the intent to use, or actually use, at any table game, either by himself or in concert with others, any calculator, computer, or other electronic, electrical or mechanical device to assist in projecting an outcome at any table game or in keeping track of or analyzing the cards having been dealt, the changing probabilities of any table game, or the playing strategies to be utilized.⁵⁷

This was a regulation issued by a regulatory agency, as opposed to a law passed by a state legislature, so it carried no criminal penalties. Any player caught using a device that violated the regulation could be prohibited from using that device, removed from the casino, and required to return any money won, but could not be fined or jailed. The harshest penalty the NJCCC could impose was permanent exclusion from New Jersey casinos.⁵⁸

Nonetheless, this regulation included many features that would become important in later laws, such as prohibiting confederates from helping someone use a device,⁵⁹ describing the devices covered,⁶⁰ and specifying their prohib-

each others' hole cards. So using that information is permissible because it is “made available as part of the game.”

⁴⁹ Cf. Duffy, *supra* note 47 (describing how a prima facie case of common law fraud could be made against someone using a hidden computer, but arguing that it is likely such a case would ultimately fail).

⁵⁰ Rose, *supra* note 30, at 22 (“I was able to find no legal authority in Nevada backing up what everyone takes for granted: that the use of hidden computers in a casino is illegal.”).

⁵¹ USTON, *supra* note 1, at 92.

⁵² *Id.* at 93-95.

⁵³ *Id.* at 96.

⁵⁴ Munchkin, *supra* note 1, at 18; *see also infra* Part II.B.I.

⁵⁵ *S.B. 467 Before the S. Comm. Judiciary*, 63rd Sess. at 3 (Nev. May 10, 1985) (statement of Sam McMullen, Spokesperson, Harrah’s).

⁵⁶ *See* Rose, *supra* note 30, at 22.

⁵⁷ N.J. ADMIN. CODE § 19:47-8.1 (1983) (repealed 2012).

⁵⁸ N.J. ADMIN. CODE § 19:47-8.1 (1983) (repealed 2012).

⁵⁹ *Id.*

ited uses.⁶¹ In addition, this regulation overlaps with existing prohibitions against cheating and fraud. For example, this regulation prohibits someone from using a hidden video camera to surreptitiously view a blackjack dealer's hole card,⁶² even though laws against cheating already prohibit such behavior.⁶³

B. Nev. Rev. Stat. § 465.075 (original)—1985

In 1985, the Nevada legislature rushed to pass the state's first device law,⁶⁴ apparently in response to the growing use of blackjack computers by players in Nevada casinos.⁶⁵ Senate Bill 467 was introduced on May 9th, pushed through the legislature with unanimous approval in both houses, signed into law by the Governor a mere three weeks later, and became effective as NRS 465.075 on July 1st—less than two months after its introduction.⁶⁶ This law prohibited using devices to analyze or predict casino games, though the exact implications of its simple phrasing would be debated for the next 25 years:

NRS 465.075—Use of device for calculating probabilities.

It is unlawful for any person at a licensed gaming establishment to use, or possess with the intent to use, any device to assist:

1. In projecting the outcome of the game;
2. In keeping track of the cards played;
3. In analyzing the probability of the occurrence of an event relating to the game; or
4. In analyzing the strategy for playing or betting to be used in the game, except as permitted by the Commission.⁶⁷

In 1987 the Nevada Gaming Commission supplemented NRS 465.075 by passing regulation 5.150, which described the devices permitted by the Commission.⁶⁸

⁶⁰ *Id.* (“any calculator, computer, or other electronic, electrical or mechanical device”).

⁶¹ *Id.* (“to assist in projecting an outcome at any table game or in keeping track of or analyzing the cards having been dealt, the changing probabilities of any table game, or the playing strategies to be utilized”).

⁶² This example is based on a real incident that happened in Las Vegas in the early 1980s. See Munchkin, *supra* note 1, at 21.

⁶³ See NEV. REV. STAT. § 465.015 (2011). This overlap with laws criminalizing cheating and fraud is useful, because in some cases, where the elements of those crimes are unclear, if there is a device involved the act is clearly illegal anyway. However, this paper focuses primarily on the application of device laws to predictive devices, because those are the only devices that would otherwise be legal, and are the reason device laws exist.

⁶⁴ Rose, *supra* note 30, at 8 (“The casinos pushed through a bill outlawing everything they could think of . . . The history of the bill is informative because it was enacted as law within only one month of its introduction, and was put into effect immediately as an emergency measure. Someone was worried about something.”).

⁶⁵ The legislative history refers to a “problem that is surfacing very graphically” of “a computerized device strapped onto the body” operated by toe switches that counted cards and calculated betting and playing strategies, which could be purchased in California for about \$3,000; *S. Comm. Judiciary*, *supra* note 55; see also *infra* note 169 for a description of how the bill as introduced did not initially address devices other than those used in card games.

⁶⁶ *S.B. 467*, *supra* note 55.

⁶⁷ *Id.*

⁶⁸ The regulation reads as follows:

NRS 465.075 has been criticized for being vague⁶⁹ and overbroad,⁷⁰ primarily because the term “any device” is unspecific.⁷¹ Regulation 5.150 does not clarify the term, and arguably makes things worse. By specifically allowing certain handwritten records, Regulation 5.150 implicitly prohibits other handwritten records, even though players of other games also record results by hand.⁷² No player appears to have ever been prosecuted for making handwritten records, which makes sense because it seems intuitively wrong for a person to be charged with a felony for simply writing on a piece of paper in a public place.⁷³

1. *Vagueness Challenge of Sheriff, Clark County v. Anderson—1987*

Shortly after NRS 465.075 was enacted, Nevada’s Eighth Judicial District considered the case of Phillip Anderson, a blackjack player arrested in the Westward Ho for using “computer shoes.”⁷⁴ The district court ruled that NRS 465.075 “was unconstitutionally vague on its face and in its application; was overbroad; and it denied Anderson his First, Fifth and Fourteenth Amendment rights.”⁷⁵ However, on appeal the Nevada Supreme Court reversed that decision and held:

NRS 465.075 is not vague, at least as applied to Anderson. Use of a hidden computer is precisely the type of conduct envisioned by the statute. While there may be circumstances when the term “device” is vague, we are not confronted with such a case. Whatever else it may include, the term certainly includes computers. No person of ordinary intelligence could believe otherwise.⁷⁶

Nev. Gaming Reg. 5.150—Devices prohibited under NRS 465.075; exceptions.

1. It shall not be a violation of NRS 465.075 for a person to:
 - (a) Make and refer to handwritten records of the cards played at baccarat;
 - (b) Make and refer to handwritten records of roulette results; or
 - (c) Refer to records of the cards played at faro, where the records are made by the licensee in the manner traditional to that game.
2. The chairman, in his sole and absolute discretion, may approve the use of devices not described in subsection 1 upon the written request of a licensee, subject to such conditions as the chairman may impose. No approval shall be effective unless it is in writing. It shall not be a violation of NRS 465.075 for a person to possess or use, in accordance with the terms of the approval, a device approved pursuant to this subsection. As used in this subsection, chairman means the chairman of the state gaming control board or his designee.

⁶⁹ Rose, *supra* note 30, at 86 (“It is very possible that this statute is unconstitutional on the grounds of vagueness.”).

⁷⁰ Thomas B. Duffy, *Blackjack Computers: Your Ticket to the “Big House?” (Part I)*, BLACKJACK FORUM, Mar. 1994, at 22, available at <http://www.blackjackforumonline.com/content/bighouse.htm>.

⁷¹ See Rose, *supra* note 30, at 83.

⁷² One obvious example is Keno, for which casinos often supply pencils and betting slips to players to enable them to play the game.

⁷³ Also, because writing is considered a form of speech, this might be unconstitutional under the First Amendment. U.S. CONST. amend. I.

⁷⁴ Sheriff, Clark Cnty., Nev. v. Anderson, 746 P.2d 643, 643 (Nev. 1987), *abrogated by* City of Las Vegas v. Eighth Jud. Dist. Ct. *ex rel.* Cnty. of Clark, 59 P.3d 477, 480 (Nev. 2002).

⁷⁵ *Id.*

⁷⁶ *Id.* at 644.

The court held that the law was clear enough to achieve its primary purpose—to outlaw wearable computers by players of casino games. However, the court also implied that the law might apply more broadly.⁷⁷ By conceding “there may be circumstances when the term ‘device’ is vague,”⁷⁸ the court all but admitted that there were other situations where the law would be so vague as to be unconstitutional.

Shortly thereafter, the Nevada Supreme Court ruled that two similar laws, the Nevada cheating and fraud statutes, were unconstitutionally vague.⁷⁹ The Court first ruled that the cheating statute, NRS 465.015, was vague in relation to “handle-popping,” a technique that players used on older mechanical slot machines to stop the reels at a particular position.⁸⁰ The Court then twice ruled that the fraud statute, NRS 465.070, was also vague,⁸¹ despite that the Nevada legislature specifically amended NRS 465.070 in an attempt to make “handle-popping” illegal.⁸² The Court pointed out that “statutes providing criminal sanctions must reflect a higher standard of certainty than civil statutes”⁸³ and these statutes must describe prohibited conduct “in terms that would alert persons of ordinary intelligence that they were committing a crime.”⁸⁴ Since this decision, the Nevada Supreme Court has further clarified its standards for vagueness and now has two separate tests under which a law can be declared unconstitutionally vague.⁸⁵

2. *MindPlay Lawsuit—2004*

Despite arguments that NRS 465.075 was vague, the law was effective enough to remain unchanged for 25 years. However, Nevada casinos eventually became disenchanted with the law when they started using technology themselves and discovered that the law might prohibit devices they wanted to use.⁸⁶

Casinos experimented with card and wager tracking devices as early as the 1990s, but these devices were not widely used at first. However, the devices soon became faster, cheaper, and easier to use. Casinos began to recognize the potential they offered for automating casino functions such as play analysis and comp tracking.⁸⁷ Casinos liked the idea of improved efficiency and the pros-

⁷⁷ *Id.*

⁷⁸ *Id.*

⁷⁹ *Lyons v. State*, 775 P.2d 219, 221 (Nev. 1989).

⁸⁰ *Id.* at 221; *Childs v. State*, 816 P.2d 1079, 1080 (Nev. 1991); *Childs v. State*, 864 P.2d 277, 278 (Nev. 1993).

⁸¹ *Childs*, 819 P.2d at 1080; *Childs*, 864 P.2d at 278.

⁸² *See* NEV. REV. STAT. § 465.070(7) (2011).

⁸³ *Lyons*, 775 P.2d at 221.

⁸⁴ *Id.*

⁸⁵ The Nevada Supreme Court revised their standards for vagueness in 2010 by ruling that “[v]agueness may invalidate a criminal law for either of two independent reasons . . . (1) if it fails to provide a person of ordinary intelligence fair notice of what is prohibited; or (2) if it is so standardless that it authorizes or encourages seriously discriminatory enforcement” (internal quotation marks omitted). *State v. Casteneda*, 245 P.3d 550, 553 (Nev. 2010).

⁸⁶ *See infra* Part II.F.3 & Part II.F.4.

⁸⁷ *See, e.g.,* Connie Olsen, *Developer Sees SafeJack as a Tool Against Cheats and Skilled Players, Too*, BLACKJACK CONFIDENTIAL, Feb. 1997, at 6; Daniel Terdiman, *Who’s Holding the Aces Now?*, WIRED, Aug. 2003), <http://www.wired.com/gaming/gamingreviews/news/2003/08/60049>; Thomas Hoffman, *Casino Gambles on Customer Retention Technology*,

pect of replacing costly personnel,⁸⁸ so they started investing in more expensive devices. Slot machine manufacturers competed for this new casino business by creating increasingly complex devices.⁸⁹ Unfortunately, these devices were not regulated like table games or slot machines,⁹⁰ and some players started to believe casinos were not using them responsibly.⁹¹

In 2004, John Allen sued the Eldorado casino, claiming the casino had used a device called MindPlay to alter the odds of a blackjack game against him, in violation of NRS 465.075.⁹² Allen also sued Bally Gaming for manufacturing MindPlay and the Nevada Gaming Control Board for not enforcing the law.⁹³ However, a district judge dismissed the Nevada Gaming Control Board members⁹⁴ because they were not proper parties in the suit. The judge then dismissed the entire suit,⁹⁵ saying it lacked merit. The Gaming Control Board later approved MindPlay for use, with a couple of restrictions.⁹⁶ How-

COMPUTERWORLD, Aug. 8, 2003, http://www.computerworld.com/s/article/print/83855/Casino_gambles_on_customer_retention_technology; Joshua Tompkins, *For the Pit Boss, Some Extra Electronic Eyes*, N.Y. TIMES, Mar. 25, 2004, <http://www.nytimes.com/2004/03/25/technology/for-the-pit-boss-some-extra-electronic-eyes.html>; Jefferson Graham, *Mind-Play Technology Tracks Cards, Bets*, USA TODAY, Nov. 2, 2004, http://www.usatoday.com/tech/news/techinnovations/2004-11-02-managing-tech2_x.htm.

⁸⁸ Arnold Snyder, *Bye Bye Boss: The MindPlay Table Games Management System and Casino Surveillance*, BLACKJACK FORUM, <http://www.blackjackforumonline.com/content/Mindplay.htm>.

⁸⁹ See, e.g., Arnold Snyder, *Killing the Golden Goose*, BLACKJACK FORUM, Summer 2000, at 6.

⁹⁰ These devices are classified as Associated Equipment and are approved under Nev. Gaming Comm'n Reg. 14.260 (2010). Games and Gaming Devices, on the other hand, go through a much more rigorous approval process, and are approved under Nev. Gaming Comm'n Reg. 14.230 (2010) and Nev. Gaming Comm'n Reg. 14.030 (2010), respectively.

⁹¹ See, e.g., Al Rogers, Letter to the Editor: *Wrist Slap*, LAS VEGAS REV.-J., Mar. 1, 2004, http://www.reviewjournal.com/lvrj_home/2004/Mar-01-Mon-2004/opinion/23310357.html; Editorial: *Are Gamblers Being Fleeced? Lawsuit Says Casinos Abusing Technology*, LAS VEGAS REV.-J., Oct. 23, 2004, http://www.reviewjournal.com/lvrj_home/2004/Oct-23-Sat-2004/opinion/25062234.html.

⁹² See *infra* Part II.F.3 for more details on this lawsuit; see also Rod Smith, *Attorney Sues Casinos for Using Card Counting System*, LAS VEGAS REV.-J., Oct. 19, 2004, http://www.reviewjournal.com/lvrj_home/2004/Oct-19-Tue-2004/news/25027617.html; *Gambler Files Lawsuit Over Card-Counting System*, LAS VEGAS SUN, Oct. 19, 2004, <http://www.lasvegassun.com/news/2004/oct/19/gambler-files-lawsuit-over-card-counting-system/>.

⁹³ See Rod Smith, *Attorney Sues Casinos for Using Card Counting System*, LAS VEGAS REV.-J., Oct. 19, 2004, http://www.reviewjournal.com/lvrj_home/2004/Oct-19-Tue-2004/news/25027617.html; *Gambler Files Lawsuit Over Card-Counting System*, LAS VEGAS SUN, Oct. 19, 2004, <http://www.lasvegassun.com/news/2004/oct/19/gambler-files-lawsuit-over-card-counting-system/>.

⁹⁴ Howard Stutz, *Regulators Excused From Gaming Software Dispute*, LAS VEGAS REV.-J., Jan. 28, 2005, http://www.reviewjournal.com/lvrj_home/2005/Jan-28-Fri-2005/business/25752072.html; *Suit Against Gaming Control Board Is Dismissed*, LAS VEGAS SUN, Jan. 28, 2005, <http://www.lasvegassun.com/news/2005/jan/28/suit-against-gaming-control-board-is-dismissed/>.

⁹⁵ Motion to Dismiss Minutes at *2 John Allen v. Nev. State Gaming Control Bd., No. 04A493817 (Oct. 18, 2004), available at <https://www.clarkcountycourts.us/Anonymous/CaseDetail.aspx?CaseID=6603125&HearingID=90766967&SingleViewMode=Minutes>.

⁹⁶ ChipLeeder, BJ - *Tables with Sensors . . . Does This Make it Easier for the Pit to Track your Bets?*, TWO PLUS TWO POKER FORUMS (Jul. 28, 2008, 04:04 PM), <http://forumserver>.

ever, even after the case ended, accusations lingered in the press that the law allowed casinos to use the device unfairly.⁹⁷

The incident demonstrated the growing need to regulate devices and to clarify exactly how casinos could use them. For a time it appeared unclear whether NRS 465.075 applied to casinos or only to players. Even when it became clear the law applied to both casinos and players, people disagreed about exactly what casinos could or could not do under the law. Casinos argued the law was too restrictive, while players argued it was not restrictive enough. The one thing they might have been able to agree on was that the law was unclear.

3. Dealer Bluff Six Card Poker Approval—2010

The MindPlay incident made some players unhappy with NRS 465.075 because they believed it allowed casinos to use unfair devices. However, casinos also became unhappy with the law when it threatened to prohibit them from using some fair devices as well.⁹⁸

When Shuffle Master submitted the game Dealer Bluff Six Card Poker for approval, the Gaming Control Board warned the manufacturer that the game might violate the text of NRS 465.075.⁹⁹ The problem was that Dealer Bluff included a small element of artificial intelligence, designed to make it more interesting for players.¹⁰⁰ The Gaming Control Board and Nevada Gaming Commission described the game as fair,¹⁰¹ and maybe fairer because of the artificial intelligence element.¹⁰² However, the Board and the Commission hesitated to approve the game because it appeared to violate the text of NRS 465.075,¹⁰³ even though they recognized that the game did not violate the spirit of the law. Part II.F examines the MindPlay and Dealer Bluff Six Card Poker incidents in detail.

Ultimately, both the Board and Commission conditionally approved Dealer Bluff Six Card Poker, but required Shuffle Master to modify and resub-

twoplustwo.com/31/other-gambling-games/bj-tables-sensors-does-make-easier-pit-track-your-bets-256271/.

⁹⁷ See, e.g., Editorial: *Are Gamblers Being Fleeced?*, *supra* note 91; Kim Clark, *Against the Odds*, U.S. NEWS AND WORLD REPORT, Mar. 15, 2012, http://www.usnews.com/usnews/biztech/articles/050523/23casino_4.htm; Marc Cooper, *Blackjack's Death Count*, L.A. WEEKLY, Dec. 8, 2005, <http://www.laweekly.com/2005-12-08/news/blackjack-s-death-count/>.

⁹⁸ See *infra* Part II.F.4 for a more detailed description of the game involved in this incident.

⁹⁹ See *New Game Final Approval: Dealer Bluff Six Card Poker, Before the Nev. State Gaming Control Bd.*, at 16 (Mar. 4, 2010) (hereinafter "Mar. 4 Board Transcript") (on file with author).

¹⁰⁰ *Id.* at 11.

¹⁰¹ See *New Game Final Approval: Dealer Bluff Six Card Poker, Before the Nev. State Gaming Control Bd.* (May 6, 2010) (hereinafter "May 6 Board Transcript") (on file with author); *New Game Final Approval: Dealer Bluff Six Card Poker, Before the Nev. Gaming Comm'n* (May 20, 2010) (hereinafter "May 20 Commission Transcript") (on file with author).

¹⁰² See Mar. 4 Board Transcript, *supra* note 99, at 16.

¹⁰³ See May 20 Commission Transcript, *supra* note 101, at 39.

mit it for additional approvals.¹⁰⁴ Not long after that, the casino industry started lobbying the legislature to update the law.¹⁰⁵

C. *N.J. Stat. § 5:12-113.1—1991*

In 1991, New Jersey enacted its own device law.¹⁰⁶ The New Jersey legislature decided to write a new law, N.J.S. 5:12-113.1, rather than turn their existing regulation into law or copy Nevada's law.¹⁰⁷ The legislature also made some minor modifications to the law in 1993,¹⁰⁸ 2002,¹⁰⁹ and 2011.¹¹⁰ The pertinent language of this law reads:

N.J.S. 5:12-113.1 Use of device to obtain advantage at casino game a third degree offense; forfeiture; notice

(a) A person commits a third degree offense if, in playing a game in a licensed casino or simulcasting facility, the person uses, or assists another in the use of, a computerized, electronic, electrical or mechanical device which is designed, constructed, or programmed specifically for use in obtaining an advantage at playing any game in a licensed casino or simulcasting facility, unless the advantage obtained can be assessed a monetary value or loss of \$75,000 or greater in which case the offense is a crime of the second degree.¹¹¹

N.J.S. 5:12-113.1 addresses the weaknesses of the earlier regulation and the Nevada law, indicating that New Jersey paid attention to the criticisms of NRS 465.075. First, the law effectively defines "device" as something that is both "computerized, electronic, electrical or mechanical," and is "designed, constructed, or programmed specifically for use in obtaining an advantage at playing any game."¹¹² This statute expands the term "uses" by rephrasing the language of regulation 19:47-8.1¹¹³ to include "assists another in the use of,"¹¹⁴ though it omits "possess with the intent to use," which was in the earlier regulation¹¹⁵ and the Nevada law.¹¹⁶

¹⁰⁴ *Id.* at 52–53.

¹⁰⁵ See *infra* Part I.D for a description of the updates the legislature finally enacted in 2011.

¹⁰⁶ 1991 N.J. Laws 182.

¹⁰⁷ N.J. STAT. ANN. § 5:12-113.1 (West 2011).

¹⁰⁸ 1993 N.J. Laws 292 (Changed "casino" to "casino or simulcasting facility."); N.J. STAT. ANN. § 5:12-35 (West 1993).

¹⁰⁹ 2002 N.J. Laws 65 (increased penalty by changing "disorderly persons offense" to "third degree offense," or "second degree offense" for "a monetary value or loss of \$75,000 or greater," and clarified the forfeiture of prohibited devices); N.J. STAT. ANN. § 5:12-113.1 (West 2002).

¹¹⁰ 2011 N.J. Laws 19 (changed "commission" to "division"); N.J. STAT. ANN. § 5:12 (West 2011).

¹¹¹ N.J. STAT. ANN. § 5:12-113.1 (West 2011). The rest of the statute reads:

(b) Any computerized, electronic, electrical or mechanical device used in violation of subsection a. of this section shall be considered prima facie contraband and shall be subject to the provisions of N.J.S. 2C:64-2. A device used by any person in violation of this section shall be subject to forfeiture pursuant to the provisions of N.J.S.2C:64-1 et seq.

(c) Each casino licensee shall post notice of this prohibition and the penalties of this section in a manner determined by the division. *Id.*

¹¹² N.J. STAT. ANN. § 5:12-113.1(a) (West 2011).

¹¹³ N.J. Casino Control Comm'n Reg. § 19:47-8.1 (1983).

¹¹⁴ N.J. STAT. ANN. § 5:12-113.1(a) (West 2011).

¹¹⁵ N.J. Casino Control Comm'n Reg. § 19:47-8.1 (1983).

The New Jersey law appears to be working because it has not been challenged or caused criticism, and the New Jersey legislature has not amended it in any substantial way. One problem with the original version was that the low “disorderly persons offense” penalty allowed violators to escape with relatively light punishment, unlike Nevada’s law.¹¹⁷ However, in 2002, the New Jersey legislature corrected that by increasing the penalties to a third degree offense for losses less than \$75,000 and a second degree offense for losses of that amount or greater.¹¹⁸

D. Nev. Rev. Stat. § 465.075 (revised)—2011

In 2011, the Nevada legislature overhauled NRS 465.075 to add new language allowing casinos to use certain devices. The overhaul came in response to lobbying from casinos that wanted to use devices that the 1985 law appeared to disallow.¹¹⁹ At the same time, the legislature also tried to improve the language to make the entire statute less vague. This statute now reads:

NRS 465.075—Use of device for calculating probabilities.

1. It is unlawful for any person to use, possess with the intent to use or assist another person in using or possessing with the intent to use any computerized, electronic, electrical or mechanical device which is designed, constructed, altered or programmed to obtain an advantage at playing any game in a licensed gaming establishment, including, without limitation, a device that:

- (a) Projects the outcome of the game;
- (b) Keeps track of cards played or cards prepared for play;
- (c) Analyzes the probability of the occurrence of an event relating to a game; or
- (d) Analyzes the strategy for playing or betting to be used in the game, except as may be made available as part of an approved game or otherwise permitted by the Commission.

2. As used in this section, “advantage” means a benefit obtained by one or more participants in a game through information or knowledge that is not made available as part of the game as approved by the Board or Commission.¹²⁰

NRS 465.075 adds many features of New Jersey’s device law, such as restrictions on types of devices. It also retains the examples of prohibited devices from the 1985 Nevada law. Amended NRS 465.075 includes many improvements from the previous version, but unfortunately, it also introduces some new problems.

1. Clarified Terms

The first part of NRS 465.075 adopts New Jersey’s definition of “device” nearly verbatim, which resolves the biggest criticism of the earlier Nevada law.

¹¹⁶ NEV. REV. STAT. § 465.075 (1985). Though technically, since regulation 19:47-8.1 is still in use, a player caught with “the intent to use” a device could still be removed from the casino, though they would not be jailed or fined. N.J. Casino Control Comm’n Reg. § 19:47-8.1 (1983).

¹¹⁷ See *infra* Part III.D for an example.

¹¹⁸ N.J. STAT. ANN. § 5:12-113.1(b) (West 2011).

¹¹⁹ See *infra* Part III.E.

¹²⁰ NEV. REV. STAT. § 465.075 (2011).

This new definition also appears to render Nevada Gaming Regulation 5.150(1) moot, because the law no longer appears to cover handwritten records.¹²¹

The new version also expands the people covered to those who “assist another person in using,” or “assist another person in . . . possessing with the intent to use.” As such, the law now covers more than just a player who enters a casino with a device he uses, or intends to use, as the original Nevada law did. The updated version also covers associates that help the player use the device, even if he has no devices of his own, as the New Jersey law does. Furthermore, the law covers the potential device user’s associates even before the device is used, which was not included in either previous law. In addition, the language “assist another person in . . . possessing with the intent to use” could arguably be read to include people who supply devices, though it is not clear if the Nevada legislature intended this interpretation.

2. Unclear Applications

Unfortunately, several changes lead to ambiguous interpretations, including the change to the location of the offence. The phrase “[at/in] a licensed gaming establishment” was moved from the beginning,¹²² where it clearly covered both the person and the device, to the end¹²³ where it now appears to cover the person and the game being played, but not the device. It is unclear whether the legislature intended this change or not. A positive effect of this change is that NRS 465.075 now covers devices that work from outside the casino to assist players inside.¹²⁴

On the other hand, NRS 465.075 covers devices used by players before they even enter a casino or play a game. Why would the legislature want to prohibit devices used by players before they enter a casino? One possibility is that the legislature wanted to outlaw the practice of some gamblers who use computers to run sophisticated statistical analyses of new games.¹²⁵ If one of these gamblers finds a weakness, he uses his computer to calculate the optimal strategy, but leaves the computer behind when he enters the casinos to use that strategy.¹²⁶ It is conceivable that the legislature intended to outlaw this practice.

If that was the legislature’s intent, the language is too broad because it also covers many other commonly used devices the legislature almost certainly did not intend to outlaw. According to the literal text of the law, if a person uses a

¹²¹ *But see infra* Part III.C.5 (describing an argument that handwritten records might still be covered by language similar to this).

¹²² NEV. REV. STAT. § 465.075 (1985) (revised 2011) (“it is unlawful any person at a licensed gaming establishment to use . . . any device to assist. . .”).

¹²³ NEV. REV. STAT. § 465.075 (2011) (“[i]t is unlawful for any person to use . . . any . . . device . . . to obtain an advantage at playing any game in a licensed gaming establishment. . .”).

¹²⁴ *See infra* Parts II.C, II.D for examples of devices that operate remotely.

¹²⁵ Interview with Robert Nersesian, attorney, in Las Vegas, Nev. (Mar. 20, 2012) (recording on file with author).

¹²⁶ *Id.* For an example of strategy cards created using this method, which are available commercially see *Video Poker Strategy Cards Set of Nine by Bob Dancer and Liam W. Daily*, BOB DANCER: THE BEST IN VIDEO POKER PRODUCTS, <http://www.bobdancer.com/showbook.cfm?itemnumber=1400BD> (last visited Sep. 21, 2012).

device to practice playing a game at home (or anywhere else outside the casino) but leaves that device behind when they go to the casino to play, that person can still violate the statute. This is because when that person practiced a particular game to improve their own skill, they used the device to gain an advantage at a future casino game they intended to play. The examples of the gambler analyzing games and the one practicing are nearly identical. The only difference is the way in which the gamblers gained their advantage. In light of this reading,¹²⁷ it seems likely the legislature did not intend this interpretation.

In practice, it is unlikely a court would enforce NRS 465.075 against a user of practice software because the law would “fail[] to provide a person of ordinary intelligence fair notice of what is prohibited.”¹²⁸ Statistical game analysis software would likely also be protected, but it is a closer call. Either way, this part of the statute could be explained more clearly.

3. *Problematic Definition of “Advantage”*

Unfortunately, the ineffective second section of NRS 465.075¹²⁹ undoes many of the improvements to the first section. At first, this section may seem superfluous. After all, why do we need a new definition of “advantage” when we can get a perfectly adequate definition from any good dictionary?¹³⁰ However, this section’s intentions are quite beneficial—though regrettably, its effects are quite the opposite.

NRS 465.075(2) appears to have been intended to correct the problem with the previous version of the law that made certain innovations more difficult. Under the old version of NRS 465.075, any device with artificial intelligence that affected the outcome of a game was suspect, as demonstrated by the Dealer Bluff Six Card Poker incident. Under Nevada’s previous device law, this issue was never addressed, possibly because some people thought the law should apply only to players. Now it is clear the law applies equally to players and casinos, as it should, yet the law must also be clear that it does not prevent casinos from making innovative games that are fair to players.

However, this should not be a problem because there is already a system in place to examine games in detail and only approve them after they are shown to be fair. After a game has proven its fairness through a rigorous process, it

¹²⁷ If the law were interpreted this way, it would effectively criminalize the large number of software programs available to practice blackjack, video poker, poker, and a myriad of other games. Many of these programs are specifically designed to analyze a player’s games and playing strategies in great detail easily and meet all four of the specific criteria listed in the statute. James McManus described in his book *Positively Fifth Street* how he used one of these programs to learn to play No Limit Hold ‘em, which eventually enabled him to enter the World Series of Poker. According to a literal reading of the law, McManus’ actions would now be considered illegal. See JAMES McMANUS, *POSITIVELY FIFTH STREET: MURDERERS, CHEETAHS, AND BINION’S WORLD SERIES OF POKER* (2003).

¹²⁸ *State v. Castaneda*, 245 P.3d 550, 553 (Nev. 2010) (quoting *Chicago v. Morales*, 527 U.S. 41, 56 (1999)).

¹²⁹ NEV. REV. STAT. § 465.075(2) (1985) (revised 2011) (“2. As used in this section, “advantage” means a benefit obtained by one or more participants in a game through information or knowledge that is not made available as part of the game as approved by the Board or Commission.”)

¹³⁰ See, e.g., *Advantage Definition*, MERRIAM-WEBSTER, <http://www.merriam-webster.com/dictionary/advantage> (last visited Aug. 11, 2012).

should be unnecessary to test that fairness again, especially using the comparatively simplistic test of a device law.¹³¹ To this end, the language in NRS 465.075(2), “part of game . . . approved by the Board or Commission,” appears to indicate that if a device is part of a game approved by the Board or Commission it should be allowed. Such a device should also not be subjected to the extra layer of Commission approval that would otherwise be required by NRS 465.075(1)(d).¹³² If this were the only effect of this section, it would make a great deal of sense. Unfortunately, this section does much more.

By attaching the approval requirement to the definition of advantage, the language of the statute makes it unclear exactly what the Board or Commission needs to approve. Who gets the advantage from the device is undefined (other than that it must be “one or more participants” in the game) and most importantly, who possesses or uses the device is not specified. So, if this section is read literally, blackjack computers are legal again. A blackjack computer uses only the values of the cards played as inputs, which is a classic example of information made available as part of the game.¹³³ This is one reason courts have consistently declared card counting to be legal, because card counters use the same information available to other players of the game.¹³⁴ The case for roulette computers is slightly less obvious, but a strong argument could be made that the information they use, the speed and location of the ball, is also available to all players within the game.

Conversely, the results of a blackjack or roulette computer’s calculations may qualify as knowledge that is not publicly available because they are too complex for an ordinary person to make in such a short time. However, similar arguments have already failed in card counting cases, where a card counter’s mental calculations were ruled legal, even if no other player had access to them, because those calculations were derived from publically available information. Therefore, under a plain reading, predictive devices for blackjack and roulette are legal again in Nevada.

¹³¹ It is unavoidable that games with artificial intelligence will violate the language of a device law. However, as long as those games are examined and approved, the mere fact that they conflict with the language of a device law should never prevent them from being used. If we did otherwise, a device law would outlaw many existing games, such as video poker machines, which obviously keep track of cards played.

¹³² Doing otherwise would effectively punish device manufacturers for being innovative by requiring an additional unnecessary level of approval at the end of an already long process.

¹³³ Cabot & Hannum, *supra* note 33, at 690. *But compare id.* (describing how regular card counting only uses factors within the game that are available to all players) *with id.*, at 699 (describing how shuffle-tracking instead uses factors *outside* the game available to all players). This means a blackjack computer without a shuffle-tracking feature would be legal under this interpretation, while a blackjack computer *with a* shuffle-tracking feature would not be legal. *See infra* Part II.B for examples of both these types of blackjack computers.

¹³⁴ A blackjack computer uses exactly the same information as a counter, it just uses it much more effectively. Multiple past cases have examined card counting and found it to be legal because it uses only information made available to all players as part of the game. So if “advantage,” as defined in this law, no longer includes using this publicly available information, blackjack computers must be legal. By the similar logic, the law appears to also legalize roulette computers because they use as input the location of the ball, which is clearly visible to all players.

Obviously, re-legalizing blackjack and roulette computers runs counter to the legislature's intent, and it is unlikely that a court would interpret the statute this way. However, once a literal interpretation is ruled out, NRS 465.075(2) does not lend itself to any obvious alternative interpretations. This leaves open the very real possibility that if faced with a questionable case, a court might declare this version of the law void for vagueness, which would arguably be an even worse outcome and would be especially ironic after the legislature made so many changes to improve Section 1.

E. Other State Laws

Including Nevada and New Jersey, thirteen U.S. states and territories have device laws. Other U.S. jurisdictions have adopted either the 1985 Nevada or 1991 New Jersey laws, mostly with only minor variations. The following table shows the device laws currently enacted or proposed in U.S. states or territories.

1. State Adopting Nevada and New Jersey Laws

State	Casino & Game Types**	Device Law	Enacted
Alabama	Tribal		
Alaska	Tribal		
Arizona	Tribal		
California	Tribal	CAL. PENAL CODE § 337v (2003)	2003
Colorado	Land-based, Tribal	COLO. REV. STAT. § 12-47.1-824 (2002)	1991
Connecticut	Tribal		
Delaware	Racetrack	DEL. CODE ANN. Tit. 11, § 1471(l) (2010)	2002
Florida	Racetrack, Tribal		
Idaho	Tribal		
Illinois	Riverboat	230 IL ST 10/18(d)(3) (1990)	1990
Indiana	Land-based, Riverboat	4 IND. ADMIN. CODE 33-10-2	1995
	Racetrack	4 IND. ADMIN. CODE 35-9-5(3)	2007
Iowa	Land-based, Riverboat, Racetrack, Tribal	IOWA CODE ANN. § 99F.15(4)(c) (2007)	1989
Kansas	Land-based, Tribal		
Kentucky		H. B. 46, 2012 Leg., 12th Reg. Sess. (Ky 2012) Regular Session, 154A K.R.S. § 27(2)(a)	proposed
Louisiana	Land-based, Riverboat, Racetrack, Tribal, Electronic		
Maine	Racetrack		
Maryland	Land-based, Racetrack, Electronic		
Michigan	Land-based, Riverboat, Tribal	MICH. COMP. LAWS § 432.218(2)(e) (1997)	1997
Minnesota	Tribal	MINN. STAT. § 609.76(4)	proposed
Mississippi	Land-based, Tribal	MISS. CODE ANN. § 75-76-303 (2011)	1993
Missouri	Riverboat, Tribal	MO. ANN. STAT. § 313.830(4)(3)	proposed
Montana	Tribal, Electronic		
Nebraska	Tribal		
Nevada	Land-based, Tribal, Electronic	NEV. REV. STAT. § 465.075 (2011)	1985
New Jersey	Land-based	N.J. STAT. ANN. 5:12-113.1 (West 2011)*	1991
New Mexico	Racetrack, Tribal		
New York	Racetrack, Tribal		
North Carolina	Tribal		
North Dakota	Tribal		
Ohio		OHIO REV. CODE ANN. § 3772.99(E)(3)	2012
Oklahoma	Racetrack, Tribal		

Oregon	Tribal, Electronic		
Pennsylvania	Land-based, Racetrack		
Puerto Rico	Land-based	P.R. LAWS ANN. tit. § 78a(21) (2004)	2004
Rhode Island	Racetrack	R.I. GEN. LAWS ANN. § 41-9.1-30*	proposed
South Dakota	Land-based, Tribal, Electronic		
Texas	Tribal		
Virgin Islands	Land-based	V.I. CODE ANN. tit. 32 § 473A (1997)*	1997
Washington	Tribal		
West Virginia	Land-based, Racetrack	W. VA. CODE § 29-25-25(c)(3) (2009)	1991
	Electronic	W. VA. CODE § 29-22B-1712 (2001)*	2001
Wisconsin	Tribal		
Wyoming	Tribal		

* These device laws are based on Jew Jersey's 1991 law. All others are based on Nevada's 1985 law.

** See AM. GAMING ASS'N, 2012 STATE OF THE STATES (2012) available at http://www.americangaming.org/files/aga/uploads/docs/sos/aga_sos_2012_web.pdf.

2. Proposed Legislation and Regulations Prohibiting Casinos From Using Devices

Kentucky has proposed legislation that includes a provision prohibiting *casinos* from using certain devices to gain an advantage.¹³⁵ This proposed legislation reads:

(7) An application by a racetrack licensed under KRS Chapter 230 may be denied, rescinded, suspended, revoked, or not renewed, if:

. . . .

(d) The applicant track or licensee . . . [uses] an electronic, electrical, or mechanical device which is designed, constructed, or programmed specifically for use in obtaining an advantage in playing any slot machine or other casino game;¹³⁶

Pennsylvania has an even more explicit regulation prohibiting casinos from using predictive devices.¹³⁷ This regulation reads:

An automated card shuffling device may not provide any information that can be used to aid in the projecting of the outcome of a game, tracking of the cards played and cards remaining to be played, analyzing the probability of the occurrence of an event relating to a game, or analyzing the strategy for playing or betting to be used in a game.¹³⁸

This language indicates that at least some states want to prevent *casinos* from using predictive devices to gain an advantage in their games, presumably to ensure that the games are as fair as possible to players.

Thirty-nine states currently have no device laws. Of these, twenty-six states have commercial gaming or slot machines,¹³⁹ though three of these do have proposed laws currently pending.¹⁴⁰ For now, however, in these twenty-six states, it still appears to be legal for advantage players to use predictive devices to beat gambling games.

¹³⁵ H.B. 468, 2012 Leg., 12th Reg. Sess. (Ky. 2012).

¹³⁶ *Id.*

¹³⁷ 58 PA. CODE § 603a.17(f)(2012).

¹³⁸ *Id.*

¹³⁹ See *supra* Table 1 (Alabama, Alaska, Arizona, Connecticut, Florida, Idaho, Kansas, Louisiana, Maine, Maryland, Minnesota, Missouri, Montana, Nebraska, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, Rhode Island, South Dakota, Texas, Washington, Wisconsin, and Wyoming have legal gambling but no device laws).

¹⁴⁰ *Id.* Minnesota, Missouri, and Rhode Island have legal gambling and pending device laws. Kentucky also has a pending device law, but has not yet legalized gambling.

F. Summary

Device laws have improved over the years as we have learned more about how they work in the real world. New Jersey's law is simple but effective. The new version of NRS 465.075 is much improved from its previous version, despite its problematic second section. To fully understand how these laws work though, it is necessary to also understand the devices these laws made illegal.

II. TYPES OF PREDICTIVE DEVICES

A. Roulette Devices

1. Edward Thorp—1961

Unknown to casinos, players used hidden computers in Nevada casinos for at least a decade and a half before the Lake Tahoe blackjack incident. In fact, the first documented wearable computer was created by MIT mathematicians Claude Shannon and Edward Thorp specifically to beat roulette in Nevada casinos.¹⁴¹ Shannon and Thorp purchased a roulette wheel and used stop-motion cameras to analyze and model the trajectory of the ball as it traveled around the wheel.¹⁴² Then they programmed the resulting formulas into a computer the size of a pack of cigarettes, which they controlled with toe switches.¹⁴³ The computer communicated information back to a hidden earpiece that played musical tones to indicate in which octant of the roulette wheel the ball was most likely to land.¹⁴⁴

In 1961, Thorp, Shannon, and their wives, Vivian and Betty, traveled to Las Vegas to test the device.¹⁴⁵ In Las Vegas, Claude timed the wheel, while Ed or Betty wore the earpiece and placed bets based on the tones they heard.¹⁴⁶ The team did not win a lot of money on that trip, but they proved the device worked.¹⁴⁷ After that, however, Thorp lost interest in roulette and instead changed his focus to blackjack and proceeded to invent card counting.¹⁴⁸

Thorp kept secret the existence of his roulette computer for a few years, but he finally revealed it in the second edition of his famous book *Beat The Dealer*,¹⁴⁹ in which he also mentioned another computer designed to beat blackjack.¹⁵⁰ In 1969, Thorp published a paper analyzing the mathematics of

¹⁴¹ Edward O. Thorp, *The Invention of the First Wearable Computer*, ISWC '98 PROCEEDINGS OF THE 2ND IEEE INT'L SYMPOSIUM ON WEARABLE COMPUTERS 4 (Oct. 19 1998).

¹⁴² *Id.*

¹⁴³ *Id.*

¹⁴⁴ *Id.*

¹⁴⁵ WILLIAM POUNDSTONE, *FORTUNE'S FORMULA* 104 (2005).

¹⁴⁶ *Id.*

¹⁴⁷ Thorp, *supra* note 141.

¹⁴⁸ Edward O. Thorp, *A Favorable Strategy for Twenty-One*, 47 *PROC. OF THE NAT'L ACAD. OF SCI.* 110 (1961); Paul O'Neil, *The Professor Who Breaks the Bank*, *LIFE*, Mar. 27, 1964, at 80, available at <http://books.google.com/books?id=AFQEAAAAMBAJ&pg=PA80&pg=PA80>.

¹⁴⁹ EDWARD O. THORP, *BEAT THE DEALER* 181 (2d ed. 1966).

¹⁵⁰ *Id.* at 178-79.

roulette¹⁵¹ and included more technical details about his roulette computer¹⁵² which enabled future inventors to use his research to build their own devices.

By the 1970s, mathematical information about casino games was becoming more common,¹⁵³ giving other mathematically minded people similar ideas. For example, Internet pioneers, Larry Roberts and Leonard Kleinrock, briefly investigated building a roulette computer until they were caught using a hidden microphone to record the revolutions of a roulette ball in a casino and were scared off by a pit boss.¹⁵⁴

2. *Eudaemonics—1978–1983*

The best-documented roulette computer was created in the late 1970s by a group of Silicon Valley college students who whimsically called themselves Eudaemonic Enterprises.¹⁵⁵ Partly inspired by the description of Thorp's earlier computer, this group used breakthroughs in the miniaturization of microprocessors to build smaller and cheaper roulette computers, including some that fit entirely into the hollowed-out soles of leather Oxford shoes.¹⁵⁶

The Eudaemons successfully tested their first computers in Las Vegas in 1978,¹⁵⁷ but were eventually prevented from using their computers extensively due to recurring technical problems.¹⁵⁸ Ultimately, the group's most important contribution to the development of predictive devices was not the computer itself, but the book that one of the members published about its exploits.

In 1985, Thomas Bass published *The Eudaemonic Pie*.¹⁵⁹ The book detailed exploits of the Eudaemons and described in detail how they created their roulette computer for surprisingly little money.¹⁶⁰ Additionally, *The Eudaemonic Pie* gave hints about how common gambling computers were at the time. In addition to discussing Thorp's computer,¹⁶¹ the book briefly described two other projects to create roulette computers that took place around the same time. The first project resulted in the "first digital computer played in a casino against roulette" in 1972.¹⁶² The second used a unique method to

¹⁵¹ See Edward O. Thorp, *Optimal Gambling Systems for Favorable Games*, 37 REV. OF THE INT'L STAT. INST. 273, 276-78 (1969).

¹⁵² See generally *id.* at 277-78; see also EDWARD O. THORP, *THE MATHEMATICS OF GAMBLING* (1985); see Thorp, *supra* note 141, in which Thorp discusses his computer in more detail.

¹⁵³ See e.g., RICHARD A. EPSTEIN, *THE THEORY OF GAMBLING AND STATISTICAL LOGIC* 135-36 (1967). The latest edition of this book also covers the roulette devices discussed in this paper. RICHARD A. EPSTEIN, *THE THEORY OF GAMBLING AND STATISTICAL LOGIC* 151 (2009).

¹⁵⁴ KATIE HAFNER & MATTHEW LYON, *WHERE WIZARDS STAY UP LATE: THE ORIGINS OF THE INTERNET* 70 (1996) (unlike Thorp, Roberts and Kleinrock did not get their own roulette wheel).

¹⁵⁵ THOMAS A. BASS, *THE EUDAEMONIC PIE* 49-50 (1985).

¹⁵⁶ *Id.* at 3.

¹⁵⁷ *Id.* at 166-68.

¹⁵⁸ *Id.* at 308.

¹⁵⁹ See BASS, *supra* note 155.

¹⁶⁰ *Id.* at 68.

¹⁶¹ *Id.* at 99-101.

¹⁶² *Id.* at 153-54. Thorp's device, the first ever, was an analog computer, not a digital one. Thorp, *supra* note 141.

estimate the trajectory of the roulette ball, based on the Doppler effect and the sound of the ball.¹⁶³

Summing up the interest in gambling computers at the time, Bass said “[e]very technician over in the Silicon Valley thinks of himself as a gambler. On weekends he drives to Tahoe to count cards or putters around in his garage wiring semiconductors into a gambling system.”¹⁶⁴ Despite this enthusiasm, roulette computers never became as popular as blackjack computers would later become.¹⁶⁵ However, as technology improved, so did roulette computers. By the early 1980s, at least one organized team of players was using roulette computers in Las Vegas to systematically win money from the casinos.¹⁶⁶

The same year *The Eudaemonic Pie* was published, the Nevada legislature passed the very first law to make the use of predictive devices illegal.¹⁶⁷ Some sources have incorrectly cited the publication of *The Eudaemonic Pie* as the reason the law was created.¹⁶⁸ This is likely incorrect because it appears that the law’s initial drafters were unaware of the book.¹⁶⁹ Nonetheless, *The Eudaemonic Pie* popularized the idea that predictive devices were indeed feasible, even on a modest budget.

3. London Ritz Club—2004

By far the most successful documented predictive device, at least in terms of money won, was a roulette computer used in March 2004 at the Ritz Club in London.¹⁷⁰ Vlad Markov and two companions used a combination computer and laser tracker built into a cellular phone to predict in which octant the rou-

¹⁶³ *Id.* at 86–88.

¹⁶⁴ *Id.* at 93.

¹⁶⁵ *See infra* Part III.B.

¹⁶⁶ IAN ANDERSEN, *BURNING THE TABLES IN LAS VEGAS* 145–47 (2d ed. 2003).

¹⁶⁷ *See infra* Part II.B. It should also be noted that even though predictive devices had been outlawed in Nevada, they could still be used legally in almost the rest of the world.

¹⁶⁸ The connection between the publication of *The Eudaemonic Pie* and the passage of NEV. REV. STAT. § 465.075 (1985) (amended 2011) appears to have been first noted by I. Nelson Rose, who said shortly after the law was passed, “I do not think that it was coincidence that the decision to outlaw casino “star wars” devices came at a time of renewed interest in the rights of card counters and the publication of *The Eudaemonic Pie*,” Rose, *supra* note 30, at 86. Another source sometimes cited for this misinformation is professional gambler Ian Anderson, who observed fifteen years later that the Nevada law was passed “shortly after Thomas Bass wrote a book on using computers to beat roulette, called *The Eudaemonic Pie*,” Andersen, *supra* note 166, at 145, referring to BASS, *supra* note 155.

¹⁶⁹ The legislative history of NEV. REV. STAT. § 465.075 shows the bill as originally introduced covered only devices used “in a game played with cards,” *AN ACT relating to gaming; prohibiting the use of a device for counting cards or calculating probabilities in a game played with cards; providing a penalty; and providing other matters properly relating thereto: Hearing on S.B. 467 Before S. Comm. On Judiciary*, 1985 Leg., 63rd Sess., 3 (Nev. 1985). If the original version of the bill had been passed, it would have allowed roulette devices like those described in *The Eudaemonic Pie* to remain legal. The day after the bill was introduced though, the senate amended it to removed “in a game played with cards,” *id.* at 9, which enabled the final law to apply to devices used in all types of casino games, including roulette.

¹⁷⁰ MARCUS, *supra* note 23, at 258; EPSTEIN, *supra* note 23, at 152.

lette ball would fall.¹⁷¹ Markov's first choice was apparently to play in Las Vegas, but he selected London instead, because the United Kingdom, unlike Nevada, still did not have any laws making predictive devices illegal.¹⁷² In two days of heavy betting, the trio won 1.2 million pounds (2 million U.S. dollars).¹⁷³ When the computer was discovered, all three were arrested and both the money and the computer were confiscated.¹⁷⁴ However, when Scotland Yard figured out what Vlad's computer did, they realized it was not a cheating device and released the trio, giving back the computer and all the cash they had won.¹⁷⁵

B. *Blackjack Devices*

In the 1960s, around the time Edward Thorp created his roulette computer, other scientists created computers that could play blackjack.¹⁷⁶ Thorp considered creating his own blackjack computer, but he preferred counting without the aid of a device, so he never pursued it.¹⁷⁷ However, largely due to Thorp's mathematical analysis of blackjack, other inventors eventually started programming Thorp's strategies into devices of their own.¹⁷⁸

1. *Keith Taft—1972–1985*

Keith Taft created the best-known blackjack computers, including the ones that were eventually used at Lake Tahoe. Taft gave his computers playful names such as George, David, and Thor.¹⁷⁹ Taft was one of the Silicon Valley technicians alluded to in *The Eudaemonic Pie* who became interested in blackjack and decided to build a computer to count cards for himself.¹⁸⁰ In 1972, Taft went to Las Vegas to test George, the first version of his wearable blackjack computer.¹⁸¹ The tests went so well that he contacted professional card counter Ken Uston to form a partnership to deploy teams of players using Georges to simultaneously beat multiple casinos.¹⁸² Uston was initially skeptical, but when he saw George in action, he agreed to the partnership.¹⁸³ George played so flawlessly that Uston later described it as "the perfect blackjack

¹⁷¹ MARCUS, *supra* note 23, at 238, 244 (it is interesting to note that despite the high-tech design of this device, it still used some of the same basic principles, such as predicting by octant, that Ed Thorp's roulette computer had pioneered over 40 years earlier).

¹⁷² *Id.* at 245.

¹⁷³ *Id.* at 258.

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ THORP, *supra* note 149 at 178.

¹⁷⁷ Thorp, *supra* note 141 ("Shannon and I discussed building a simple wearable blackjack computer but I found mental card counting easier so we passed").

¹⁷⁸ *Id.*

¹⁷⁹ Kennedy, *supra* note 1, at 77.

¹⁸⁰ See BASS *supra* note 155, at 93 ("[e]very technician over in the Silicon Valley thinks of himself as a gambler. On weekends he drives to Tahoe to count cards or putters around in his garage wiring semiconductors into a gambling system.").

¹⁸¹ Kennedy, *supra* note 1, at 77.

¹⁸² USTON, *supra* note 1, at 89.

¹⁸³ *Id.*

player.”¹⁸⁴ In 1977, teams of players organized by Uston successfully used Georges in Las Vegas¹⁸⁵ and, somewhat less successfully, in Lake Tahoe.¹⁸⁶

Not long after the Lake Tahoe incident, word about blackjack computers quickly spread into the mainstream media. In April 1979, Sports Illustrated ran a detailed article about Taft, Uston and George.¹⁸⁷ In June of the same year, Taft was featured on an episode of the PBS show *Secrets*.¹⁸⁸ The episode showed Taft using a George without detection in another Lake Tahoe casino, even in front of a pit boss who said on camera that using a hidden computer would be “[i]mpossible. Our security is too good.”¹⁸⁹ This publicity led to wider recognition, and eventually resulted in Taft arranging licensing deals to sell blackjack computers to any blackjack player who wanted one.¹⁹⁰ Taft then focused on developing and selling blackjack computers rather than using them.¹⁹¹ Taft also developed two more generations of computers. David was “designed for perfect-strategy card counting,”¹⁹² and Thor added shuffle tracking to calculate the optimal playing strategy even more precisely.¹⁹³

2. *Blackjack Computer Teams—1977–1985*

The early 1980s were a busy time for players using blackjack computers. Many users of Taft’s computers preferred to remain anonymous. One of the few professional gamblers willing to openly discuss his experiences was Bob Jenkins. Jenkins said he was “involved with several blackjack computer teams in Las Vegas” during a three-year period and described his experiences dealing with occasional technical problems while using Thor computers in casinos.¹⁹⁴

For a while, these teams caused a lot of trouble for Nevada casinos.¹⁹⁵ In the early 1980s, two casinos in rural Nevada reported losing \$160,000 and \$85,000 respectively.¹⁹⁶ Thus, the computers were highly effective, very difficult to detect, and even if a casino caught a player they could not successfully

¹⁸⁴ *Id.*

¹⁸⁵ *Id.* at 91–93.

¹⁸⁶ *Id.* at 93–96.

¹⁸⁷ Kennedy, *supra* note 1.

¹⁸⁸ Letter from Herbert Danska, Producer, *Secrets*, to Sports Illustrated *reprinted in 19th Hole: The Readers Take Over*, SPORTS ILLUSTRATED, May 7, 1979, available at <http://sports.illustrated.cnn.com/vault/article/magazine/MAG1094912/index/index.htm>.

¹⁸⁹ Munchkin, *supra* note 1. It is possible that Taft was able to do this because the computers previously confiscated in Lake Tahoe had required players to use a keypad, which might have caused casino personnel to look out for players with one hand in their pocket. The Pit Boss most likely did not know that those keypads had been custom made for Uston—most of Taft’s computers used toe switched instead, which left both hands free.

¹⁹⁰ *Id.*

¹⁹¹ *Id.*

¹⁹² Bob Jenkins, *Professional Gamblers at Work: Blackjack Computers and the Electronic Gambler’s Fuzz-Out Syndrome*, BLACKJACK FORUM, Dec. 1985, at 5, available at <http://www.blackjackforumonline.com/content/The%20Electronic%20Gambler.htm>.

¹⁹³ *Id.*

¹⁹⁴ *Id.*

¹⁹⁵ *S. Comm. on Judiciary*, 63rd Sess. at 3 (May 10, 1985) (testimony of Sam McMullen, Harrah’s).

¹⁹⁶ *S. Comm. on Judiciary*, 63rd Sess. at 4 (May 23, 1985) (testimony of Mike Rambolz, Nev. Gaming Control Bd.).

prosecute them.¹⁹⁷ Casinos confiscated computers when they could, knowing that players would not go to the trouble of going to court to get them back. Instead, players just bought new computers and kept playing.

Finally, worried regulators and casino owners went to the legislature for help. The era of blackjack computers ended abruptly on July 1, 1985 when NRS 465.075 came into effect. Ken Uston reported that he played “right up until midnight on the last night” the devices were legal.¹⁹⁸ Today, a descendant of Keith Taft’s computers, called Casey, is still available for sale on the Internet.¹⁹⁹ The proprietor of the site that sells Caseys says they are used “mostly in foreign countries”²⁰⁰ and are not used in Nevada.

C. Video Poker Devices

1. Leo Weeks—1993

Despite laws in Nevada and other states, technological advances continued and players still created and used devices, both legally and illegally. In 1993, computer engineer Leo Weeks was caught in the Horizon casino in Lake Tahoe²⁰¹ using a wearable computer he designed to predict royal flushes on IGT Fortune I video poker machines.²⁰² Weeks obtained a Fortune I machine and reverse engineered how the random number generator worked to create his device.²⁰³ It is not known how Weeks obtained the Fortune I, but it is possible he just purchased one because the Fortune I was an extremely common type of machine at the time.

The Fortune I used a system which many modern video poker and slot machines still use. The internal random number generator in the machine cycles constantly, so the player’s results depend on exactly when the player presses the button on the machine.²⁰⁴ To use his device, Weeks would play a Fortune I machine and enter the values of the cards dealt to him into the device.²⁰⁵ This enabled the device to synchronize with the cycles of the random number generator in the Fortune I machine.²⁰⁶ Weeks’ device would then beep through a

¹⁹⁷ *Id.* at 3-4.

¹⁹⁸ Munchkin, *supra* note 1, at 29.

¹⁹⁹ CASEY, THE BLACKJACK COMPUTER, <http://www.casey-computer.com> (last visited Aug. 9, 2012). At least one source alleges that Casey is bootlegged version of Taft’s David chip. Arnold Snyder, *Snyder Responds*, BLACKJACK FORUM, Dec. 1994, *commenting on* Dr. Data Fehnworp, *Blackjack Computer Betting Efficiency*, BLACKJACK FORUM, Dec. 1994, *available at* http://www.blackjackforumonline.com/content/blackjack_computer_betting_efficiency.htm; *see also* Munchkin, *supra* note 1.

²⁰⁰ Email from Michael, michael@casey-computer.com, to author (Feb. 27, 2012, 12:34 PST) (on file with author).

²⁰¹ Dave Berns, *Column: Gaming Chips*, LAS VEGAS REV.-J., Jan. 12, 1998, http://www.reviewjournal.com/lvrj_home/1998/Jan-12-Mon-1998/business/6742888.html.

²⁰² Dave Berns, *Fall From Grace: Confessions of a Slot Cheat*, LAS VEGAS REV.-J., Jan. 11, 1998, *available at* http://www.reviewjournal.com/lvrj_home/1998/Jan-11-Sun-1998/news/6748663.html.

²⁰³ Interview with Ron Harris, in Las Vegas, Nev. (Mar. 10, 2012) (recording on file with author).

²⁰⁴ *Id.*

²⁰⁵ *Id.*

²⁰⁶ *Id.*

hidden earphone to tell him exactly when to push the button on the machine to get a royal flush.²⁰⁷

When Weeks was caught, an electronics engineer for the Gaming Control Board, Ron Harris, was able to reverse engineer Weeks' device and show how it worked.²⁰⁸ Based partially on Harris' demonstration, Weeks pled guilty.²⁰⁹ Weeks received no jail time and only had to serve 200 hours of community service in addition to paying back the money he won.²¹⁰

2. Video Poker Computer Team—early 1990's

Another team of unnamed players used similar devices and purportedly won around \$1 million from various Las Vegas casinos in the early 1990s.²¹¹ This team, also inspired by the book *The Eudaemonic Pie*,²¹² started their reverse engineering efforts by copying object code (compiled computer code) from patents for various slot machines.²¹³ However, the team eventually found it was easier to just buy a used machine to reverse engineer instead.²¹⁴

The team independently created devices using essentially the same principles Weeks used for his device.²¹⁵ Their first "device" was a computer program that ran on a PC. To use it in the field, one player would phone in the initial data and synchronize a precise Casio timer which would later alert him when to press the button on the machine.²¹⁶ This method of communicating information by telephone was a little clumsy,²¹⁷ but it provided the team with a degree of protection they were probably not even aware of.

Under the version of NRS 465.075 in force at the time,²¹⁸ they might not have been breaking the law, and even if they were, it would have been nearly impossible to prove. The law at the time prohibited "any person at a licensed gaming establishment to use, or possess with the intent to use, any device . . ."²¹⁹ However, the player in the casino did not possess a device that would have violated NRS 465.075 because the Casio timer did not do any tracking or calculating. Arguably, the player was not using an illegal device at all because he was only communicating information on the phone. The person at the other end of the phone was using the device. Even if the player had been caught, it would have been next to impossible to convict him because he did not have an illegal device in his possession.²²⁰

²⁰⁷ *Id.*

²⁰⁸ *Id.*

²⁰⁹ Berns, *supra* note 201.

²¹⁰ *Id.*; JEFF BURBANK, LICENSE TO STEAL 199 (2000); Berns, *supra* note 202.

²¹¹ KEVIN D. MITNICK & WILLIAM L. SIMON, THE ART OF INTRUSION 1 (2005).

²¹² *Id.* at 3.

²¹³ *Id.*

²¹⁴ *Id.* at 3-4.

²¹⁵ *Id.* at 8.

²¹⁶ *Id.* at 9-10.

²¹⁷ *Id.*

²¹⁸ NEV. REV. STAT. § 465.075 (1985).

²¹⁹ *Id.*

²²⁰ This is one of the reasons it is so important for a device law to make it illegal to assist someone else in using a device. In this case, based on the law in force at the time, the player in the casino was not using a device and did not even possess one. The player in the casino was being assisted by a confederate, who was using the device outside the casino. But assist-

Though the first system worked, the team found it cumbersome and decided to improve it. Once again copying from *The Eudaemonic Pie*,²²¹ they decided to create a wearable version of their computer.²²² Their new computer communicated with them using vibrators they pulled out of old pagers²²³ but otherwise functioned very much like Weeks' device. To avoid detection, the team adjusted the device to avoid the biggest jackpots and instead win "a series of smaller, less suspicious amounts."²²⁴ The new devices worked well, and the team reported that they used them successfully for three years before they decided they had won enough money, and it was time to stop pushing their luck.²²⁵ As a result, this team was never arrested.²²⁶

D. Keno Devices

There are only two recorded devices for predicting keno. Ron Harris, the Gaming Control Board engineer who helped catch Leo Weeks, created both devices.²²⁷ After seeing Weeks' light sentence, Harris was frustrated and eventually decided to create his own devices.²²⁸ Harris did not create wearable computers, instead he wrote computer programs²²⁹ similar to the first generation devices used by the unnamed video poker team in the previous section. Harris focused on keno rather than video poker. This proved to be a mistake because the attention resulting from the large keno jackpots eventually led to his getting caught.²³⁰

Harris used his first program in December 1994 to enable accomplice Reid McNeal to win \$10,000 on an IGT Winner's Choice machine in Caesar's Palace Las Vegas.²³¹ To do this, Harris ran his program on a PC while McNeal was in the casino talking with him on the phone.²³² The Winner's Choice machine played multiple types of games. Harris made use of this feature by first having McNeal play a video poker game and read Ron the cards dealt.²³³ This enabled Harris to synchronize his computer.²³⁴ Then Harris had McNeal

ing someone else in the use of a device was not illegal under the law at that time. Even the confederate who was using the device might not have been breaking the law, because he was not outside the casino and therefore not "at a licensed gaming establishment" as required by NRS 465.075 (1985).

²²¹ MITNICK & SIMON, *supra* note 211, at 13.

²²² *Id.*

²²³ *Id.* at 14.

²²⁴ *Id.* at 13.

²²⁵ *Id.* at 19.

²²⁶ *Id.* at 16-20.

²²⁷ See generally BURBANK, *supra* note 210, at 187-206.

²²⁸ Berns, *supra* note 202; MARCUS, *supra* note 23, at 262.

²²⁹ Interview with Ron Harris, *supra* note 203.

²³⁰ BURBANK, *supra* note 210, at 187-88.

²³¹ *Id.* at 192-93.

²³² Interview with Ron Harris, *supra* note 203.

²³³ *Id.*

²³⁴ *Id.* (Harris said it was easier to use the video poker cards for synchronization because they appeared in sequential order on the screen, while the keno numbers appeared in random locations on the screen, which made it difficult to determine the sequence in which they appeared).

switch to the keno game and press the button at the precise time to trigger the jackpot.²³⁵

In January 1995, Harris used a different program to enable McNeal to win \$100,000 on an Imagineering Systems electronic keno game in Atlantic City.²³⁶ This was a traditional keno game with paper slips but used a computer to select the numbers.²³⁷ So again, McNeal went into the casino to play the game, while Harris stayed upstairs in a hotel room where he could read the keno numbers on the TV and enter them into his computer.²³⁸ Once Harris had entered around 10 numbers, he ran his program to predict the next likely set of numbers the keno computer would pick.²³⁹ However, Harris could only predict the outcome with 3% accuracy.²⁴⁰ Harris relayed these numbers to McNeal, who used an algorithm they had worked out to put possible permutations of the numbers on 10 different keno slips, raising chances of selecting the correct number to 30%.²⁴¹ Unfortunately for Harris and McNeal, McNeal hit the top jackpot the very first time he played, which had never been done before.²⁴² The resulting attention caused the authorities to become suspicious, and eventually they arrested Harris and McNeal.²⁴³

When Harris' activities were discovered, he was promptly fired from the Gaming Control Board.²⁴⁴ This was the harshest penalty that resulted directly from the two keno jackpots. When McNeal hit the Caesar's jackpot in Las Vegas, he did not actually have the predictive device with him, and "state officials decided they did not have enough evidence to bring a case, and no charges were ever filed."²⁴⁵ Charges were filed against both Harris and McNeal in Atlantic City, but because of the statute in force at the time, their activities qualified only as a "disorderly persons offense," and the penalty was similar to that of a traffic ticket.²⁴⁶

These incidents point out problems with the Nevada statute at the time, which did not clearly criminalize Harris' activities, and highlight both positive and negative aspects of the New Jersey statute, which criminalized his activities, but provided for only a very weak penalty. Eventually, Harris was convicted in 1997 for other cheating activities in Las Vegas²⁴⁷ and served two years in prison.²⁴⁸ If he had stuck with only predicting keno jackpots, he might also have avoided prison completely, just like Leo Weeks.

²³⁵ *Id.*

²³⁶ BURBANK, *supra* note 210, at 187-88.

²³⁷ Interview with Ron Harris, *supra* note 203.

²³⁸ *Id.*

²³⁹ *Id.*

²⁴⁰ *Id.*

²⁴¹ *Id.*

²⁴² BURBANK, *supra* note 210, at 188.

²⁴³ Interview with Ron Harris, *supra* note 203.

²⁴⁴ BURBANK, *supra* note 210, at 192.

²⁴⁵ *Id.* at 193.

²⁴⁶ N.J. STAT. ANN. § 5:12-113.1 (West 1993).

²⁴⁷ BURBANK, *supra* note 210, at 205.

²⁴⁸ MARCUS, *supra* note 23, at 282.

E. Smartphone Apps

In 2009, the Gaming Control Board discovered a new type of predictive device that was far simpler and cheaper than any they had ever seen before—an iPhone app.²⁴⁹ The Board was specifically concerned about an app called *A Blackjack Card Counter*,²⁵⁰ which it said “can make counting cards easy.”²⁵¹ The app also included a “stealth mode” feature, whereby the program could operate entirely by touch in a user’s pocket.²⁵² After the Board learned of the app, it sent a letter to casinos warning them about it, and reminding them that using the device or “possession of a device with this type of program on it (with the intent to use it)”²⁵³ violated NRS 465.075.

A Blackjack Card Counter is still available in the iTunes App Store for \$19.99,²⁵⁴ and there are many other less expensive programs available. For example, a free app called *iCountCards*²⁵⁵ includes a silent “pocket mode” feature very similar to the “stealth mode” of *A Blackjack Card Counter*. In the future, these apps may disappear, but other (and possibly better) apps will undoubtedly take their place. It would be unrealistic to expect these programs to go away because it is easy to write apps for smartphones.²⁵⁶

These apps do not currently present a serious problem because anyone playing blackjack with one hand in his pocket the whole time is easy for casino employees to identify. The real concern is what these apps could evolve into. A sophisticated app, possibly communicating with toe switches²⁵⁷ and hidden earpieces,²⁵⁸ could undoubtedly outperform any of the wearable computers described above and could be created for significantly less money. However, such an app would probably have to be custom built or sold discretely and would not be available in the iTunes App Store.

The problem presented by available apps is that they make it very easy for someone who does not know the law to commit a felony in a casino. First, people unaware of the local device law may try using the app in their pocket because it looks like fun, only to get caught and find themselves in jail, charged with a felony. On one hand, it is important to promptly put a stop to these experimental device users before they grow into a bigger problem. At the same time, a felony conviction seems like a disproportionately large penalty for the

²⁴⁹ Letter from Sayre, *supra* note 24.

²⁵⁰ Rik Myslewski, *US Gambling Capital Bans iPhone Card Counter*, REGISTER, (Feb. 17, 2009 11:45 PM), http://www.theregister.co.uk/2009/02/17/iphone_card_counter/print.html.

²⁵¹ Industry Letter, *supra* note 249, at 1.

²⁵² *Id.*

²⁵³ *Id.* at 2.

²⁵⁴ *iTunes Preview: A Blackjack Card Counter—Professional*, APPLE COMPUTER, <http://itunes.apple.com/us/app/blackjack-card-counter-professional/id294151538> (last visited Aug. 23, 2012).

²⁵⁵ *iTunes Preview: iCountCards*, APPLE COMPUTER, <http://itunes.apple.com/us/app/icount-cards/id443349179> (last visited Aug. 23, 2012).

²⁵⁶ See, e.g., Kim Komando, *Make Your Own Smartphone Apps*, USA TODAY, Sept. 8, 2011, <http://www.usatoday.com/tech/columnist/kimkomando/story/2011-09-09/Make-your-own-smartphone-apps/50322124/1>.

²⁵⁷ *Sean Bogunia’s Ultimate Toe Switch*, SEAN BOGUNIA’S ULTIMATE MAGIC PRODUCTIONS, <http://www.seanbogunia.com/toeswitch1.html> (last visited Aug. 23, 2012).

²⁵⁸ *MWE Bluetooth set*, GSM-EARPIECE.COM, <http://www.gsm-earpiece.com/mwe-bluetooth.html> (last visited Aug. 23, 2012).

crime. One simple solution to this problem has already been adopted by some states—make a first time offense a misdemeanor.

A related problem is that these apps test the boundaries of what should be legal in a casino. Consider a customer who uses a blackjack counting app to practice while having breakfast in the coffee shop, then turns his phone off before he goes to the tables to play. Has that customer violated the device law? In New Jersey, he probably did not because N.J.S. 5:12-113.1²⁵⁹ specifies that the offense is committed “in playing a game.”²⁶⁰ If we understand “in” to mean “during,” the customer has not violated the law because he turned his phone off before he played any games. In Nevada, however, the customer might violate the law because NRS 465.075²⁶¹ says the device must be used “to obtain an advantage at playing any game.”²⁶² This seems to say the advantage must be used during the game, but not necessarily the device. The customer has therefore violated the law because he presumably gained an advantage in the form of improved skill from his earlier practice and used that advantage when he played the game. In order to avoid the second result, a device law should make it clear that the law applies to devices used *while* playing a game, not before or after.²⁶³

Commonly available smartphone apps do not appear to currently pose a serious threat to casinos. However, the fact that they *are* common will likely give casinos more opportunities to apply their local device laws against players using these apps. This makes it especially important for those laws to describe precisely which uses of these devices are legal and illegal, and impose penalties appropriate for the offenses.

F. Devices Used by Casinos

At the time the first Nevada device law was passed,²⁶⁴ the legislature was likely not thinking about the devices casinos might someday want to use. So, unsurprisingly, casinos’ use of devices eventually led to problems with the law.²⁶⁵ In New Jersey, the fact that the law only prohibited devices created “specifically for use in obtaining an advantage”²⁶⁶ meant that most devices used by casinos in that state easily complied with the law. In Nevada, where the law used the term “device” much more broadly,²⁶⁷ many ordinary devices used by casinos technically violated the language of the law, including security cameras, which are required by another regulation.²⁶⁸ In practice, the Nevada Gaming Commission interpreted the Nevada law as implying that it only applied to

²⁵⁹ N.J. STAT. ANN. § 5:12-113.1 (West 2011).

²⁶⁰ *Id.* § 5:12-113.1(a) (West 2011).

²⁶¹ NEV. REV. STAT. § 465.075 (2011).

²⁶² *Id.* § 465.075(1) (2011).

²⁶³ *But see infra* Part III.C.4 (describing an exception to this rule).

²⁶⁴ NEV. REV. STAT. § 465.075 (1985) (amended 2011).

²⁶⁵ *See supra* Part I.B.2.

²⁶⁶ N.J. STAT. ANN. § 5:12-113.1(1) (West 2011).

²⁶⁷ NEV. REV. STAT. § 465.075 (1985) (amended 2011).

²⁶⁸ Nev. Gaming Comm’n Reg. 5.160 (2011).

devices designed to obtain an unfair advantage,²⁶⁹ similar to the New Jersey law,²⁷⁰ even though that language was not in the statute.²⁷¹ However, because the law was not clear, it remained open to a range of interpretations.²⁷²

1. *Development of Casino Devices*

Casinos used the first game analysis devices for the purpose of identifying and stopping card counters.²⁷³ Programs like BJ Tracker²⁷⁴ and Blackjack Survey Voice²⁷⁵ were introduced in the early 1990s, and allowed casino surveillance agents to enter the cards played in a blackjack game.²⁷⁶ The programs would analyze each player's strategy and identify likely card counters.²⁷⁷ These programs clearly keep track of cards played and analyzed the strategy for betting, but everyone assumed they were legal because there was no practical way to use them to change the progress of a game in play, and therefore, no way to gain an advantage.²⁷⁸ These programs were crude compared to the more sophisticated devices to come, but casinos liked them, and Blackjack Survey Voice is still in use today.²⁷⁹

The next generation of casino devices were "smart shoes," which soon became "smart tables," such as SafeJack,²⁸⁰ TCS Protec 21,²⁸¹ Smart-

²⁶⁹ See Mar. 4 Board Transcript, *supra* note 99; May 6 Board Transcript, *supra* note 101; Interview with Mark Lipparelli, Chairman, Nev. Gaming Control Bd., in Las Vegas, Nev. (Jul. 24, 2012) (recording on file with author).

²⁷⁰ N.J. STAT. ANN. § 5:12-113.1(1)(a) (West 2011).

²⁷¹ Interview with Mark Lipparelli, Nev. Gaming Control Bd. Chairman, in Las Vegas, Nev. (Mar. 21, 2012) (recording on file with author).

²⁷² See, e.g., May 6 Board Transcript, *supra* note 101, at 16 (Nevada Attorney General's Office advised that because the language of NRS 465.075 is unambiguous, "you don't look to the legislative intent at all. You are bound by the four corners of the statute."); but see Mar. 4 Board Transcript, *supra* note 99, at 30 (Nevada Gaming Control Bd. members agree that NRS 465.075 only applies when a person gains an unfair advantage, saying "[t]hat is the intent of the statute, but it is not written that way."); May 6 Board Transcript, *supra* note 101, at 24-25 (Gaming Control Board Member Randall Sayre effectively summed up the disagreement as "one could craft an argument on either side of this position which is strongly supportable. So it boils down to probably a more esoteric policy issue for me than it does trying to figure out how many lawyers we can get to dance on the head of this [pin].")

²⁷³ Arnold Snyder, *Surveillance Goes High-Tech*, BLACKJACK FORUM, Spring 1997, at 7.

²⁷⁴ Arnold Snyder, *Blackjack Update: Here Comes the High-Tech Future*, CARD PLAYER, May 21, 1993, at 50.

²⁷⁵ Snyder, *supra* note 273, at 20.

²⁷⁶ *Id.* at 23; Snyder, *supra* note 274, at 50.

²⁷⁷ Snyder, *supra* note 273, at 23, 26.

²⁷⁸ In theory, these programs could be used in real-time to analyze play in progress, but even with the help of voice recognition most users could not enter the data fast enough, so in practice, these systems were primarily used after the fact to analyze play from prerecorded tapes. Arnold Snyder, *Surveillance Talks*, BLACKJACK FORUM, Winter 2001; see also Snyder, *supra* note 273, at 21.

²⁷⁹ David G. Schwartz, *Protecting the Game*, VEGAS SEVEN, Mar. 8-14, 2012, at 22; Blackjack Survey Voice was purchased by Shufflemaster and renamed Bloodhound, but is still substantially the same program. Ken Ward, *Shuffle Master: This Slot's for You!*, GAMING TODAY, Sep. 17-23, 2002.

²⁸⁰ Connie Olsen, *Developer Sees SafeJack as a Tool against Cheats and Skilled Players, Too*, BLACKJACK CONFIDENTIAL MAG., Feb. 1997, at 6; Arnold Snyder, *Surveillance Goes High Tech, Part II*, BLACKJACK FORUM, Summer 1997, at 15, 16.

²⁸¹ Arnold Snyder, *Killing the Golden Goose*, BLACKJACK FORUM, Summer 2000, at 18.

Shoe21,²⁸² Angel Eye,²⁸³ Digital 21,²⁸⁴ MindPlay,²⁸⁵ and TableEye21.²⁸⁶ These devices track the cards dealt in the game²⁸⁷ and often the chips on the table.²⁸⁸ After a game, casinos could see statistics ranging from the size of player's bets, to the skill of the dealer, to an estimation of which players were card counters.²⁸⁹ However, unlike the earlier analysis packages, these devices tracked the cards in real time and could be used while a game was in progress.²⁹⁰

Sometimes the real-time analysis was helpful. For instance, using smart shoes completely eliminated a problem one casino was having with "hand muckers," players who inserted extra cards during a baccarat game.²⁹¹ By installing smart shoes, the shoe would read the cards dealt and the discard tray would read the cards that came back.²⁹² If the cards did not match, the shoe would immediately say so, and the cheater could be caught.²⁹³ However, the immediate feedback from these devices could also be abused by casinos, primarily by using a technique called preferential shuffling.²⁹⁴

2. Preferential Shuffling

Preferential shuffling occurs when someone counts cards for the casino, and if the remaining cards start to favor the players too much, the card counter signals to the dealer to shuffle the deck.²⁹⁵ Preferential shuffling can substan-

²⁸² *Id.* at 19.

²⁸³ Michael Kaplan, *How Vegas Security Drives Surveillance Tech Everywhere*, POPULAR MECHANICS, Jan. 1, 2010.

²⁸⁴ Snyder, *supra* note 281, at 21.

²⁸⁵ Joshua Tompkins, *For the Pit Boss, Some Extra Electronic Eyes*, N. Y. TIMES, Mar. 25, 2004; Arnold Snyder, *Bye Bye Boss: The MindPlay Table Games Management System and Casino Surveillance*, BLACKJACK FORUM, Spring 2003, at 2, available at <http://www.blackjackforumonline.com/content/Mindplay.htm>.

²⁸⁶ Max Rubin, *TGG's Technology Proves its Worth at Barona*, GLOBAL GAMING BUS. MAG., Feb. 2009; John Grochowski, *Elevating the Pit*, CASINO J., Aug. 19, 2009; Kaplan, *supra* note 283.

²⁸⁷ See, e.g., Olsen, *supra* note 280; Tompkins, *supra* note 285.

²⁸⁸ See, e.g., Olsen, *supra* note 280; Tompkins, *supra* note 285.

²⁸⁹ See, e.g., Rubin, *supra* note 286.

²⁹⁰ See, e.g., I. NELSON ROSE & ROBERT A. LOEB, BLACKJACK AND THE LAW 87–88 (1998).

²⁹¹ Kaplan, *supra* note 283.

²⁹² *Id.*

²⁹³ *Id.*

²⁹⁴ See generally PETER A. GRIFFIN, THE THEORY OF BLACKJACK 135–38 (6th ed. 1999); BILL ZENDER, HOW TO DETECT CASINO CHEATING AT BLACKJACK 131–44 (1999).

²⁹⁵ Preferential shuffling works on exactly the same principle as player card counting. A card counter doesn't keep track of individual cards, but instead keeps track what types of cards remain in the undealt portion of the deck or shoe. If the remaining cards contain more 10's and Aces, that favors the player, and if the remaining cards contain more smaller cards, that favors the casino. (This is true in all blackjack games, regardless of whether someone is counting cards or not.) Players who count cards win money by betting more when the remaining cards favor them, and less when they don't. "[P]layer card-counting is just the obverse of preferential shuffling." GRIFFIN, *supra* note 294, at 136.

tially increase the house advantage,²⁹⁶ which is why some people consider it cheating.²⁹⁷

Computer-aided preferential shuffling offers obvious advantages for casinos. Counting cards manually requires skill and effort, and not everyone can do it. Counting cards with a computer is easier and more precise. A computer can even signal the dealer to shuffle whenever the house edge falls below a certain point. In fact, many early smart shoes and smart tables appear to have included features designed for this very purpose.²⁹⁸ The only problem is that this is illegal. Preferential shuffling with the aid of a computer violates both the letter and the spirit of every device law.²⁹⁹

The Nevada Gaming Control Board's position on preferential shuffling appears to have reversed over the years. In the late 1980s, the Gaming Control Board said casinos could shuffle whenever they wanted,³⁰⁰ and preferential shuffling was clearly allowed.³⁰¹ By the early 1990s, some players were complaining that preferential shuffling was unfair and should not be allowed. Nonetheless, for a time, manufacturers openly advertised their products' preferential shuffling features.

This issue remained largely unnoticed for years, other than by card counters who worried the new systems might put them out of business.³⁰² One of the most damning criticisms was that devices that facilitated preferential shuffling hurt all players, not just the counters.³⁰³ There are credible reports that at least some casinos did preferentially shuffle,³⁰⁴ and even shuffling with the aid of devices appears to have been tolerated, though it is difficult to know how widespread the problem actually was.

In 1993, the New Jersey Superior Court explicitly allowed preferential shuffling in one case.³⁰⁵ However, that case involved a single incident of a casino using preferential shuffling to back off a known card counter.³⁰⁶ Unlike Nevada, New Jersey casinos cannot simply bar card counters. No court has

²⁹⁶ ZENDER, *supra* note 294, at 135.

²⁹⁷ See Arnold Snyder, *Gaming Control's Big Blunder*, CARD PLAYER, Oct. 20, 1995, at 50; Arnold Snyder, *Letter to Gaming Control*, CARD PLAYER, Dec. 15, 1995, at 84; *but see* GRIFFIN, *supra* note 294, at 138; ZENDER, *supra* note 294, at 140.

²⁹⁸ See Snyder, *supra* note 281, at 19–20 (describing a feature of SmartShoe 21 that showed an "Alarm List" of tables with counts favoring players); *id.* at 22 (describing features of TableLink GT and Digital 21 that display statistics to the pit and security).

²⁹⁹ In defense, device manufacturers and casinos might argue that a particular game analysis system was not designed for the purpose of gaining an advantage. However, this is a thin argument, and it completely disappears if a system includes a feature specifically for the purpose of signaling the dealer or pit boss when the house advantage is negative.

³⁰⁰ Snyder, *supra* note 297, at 50; ZENDER, *supra* note 294, at 140; ROSE & LOEB, *supra* note 290, at 48–50, 52–53.

³⁰¹ Snyder, *supra* note 297; ZENDER, *supra* note 294, at 140.

³⁰² See, e.g., Snyder, *supra* note 274, at 50–51; Snyder, *supra* note 297, at 50; Snyder, *supra* note 275, at 20; Snyder, *supra* note 281; Snyder, *supra* note 285.

³⁰³ See Snyder, *supra* note 297, at 50; ROSE AND LOEB, *supra* note 290, at 53.

³⁰⁴ See ROSE & LOEB, *supra* note 290, at 49.

³⁰⁵ *Campione v. Adamar of N.J., Inc.*, 274 N.J. Super. 63, 78 (Ch. Div. 1993) ("As to Campione's claim that TropWorld used its discretion to shuffle at will, thus limiting his success in card counting, the relevant regulation suggests that this is permissible exercise of casino discretion.").

³⁰⁶ ROSE & LOEB, *supra* note 290, at 53.

addressed the larger issue of whether preferential shuffling would be allowed as a general policy to improve the house advantage. A few people have suggested the sensible compromise that preferential shuffling might be allowed, but only if casinos post signs alerting players to the policy.³⁰⁷

Today, the Nevada Gaming Control Board still does not have any written policy on preferential shuffling, but the Chairman has said preferential shuffling, with or without a device, is likely disallowed under Regulation 5.³⁰⁸ Nonetheless, the lack of explicit guidelines specifying exactly what is and is not allowed has encouraged continued accusations and continued lawsuits.

3. *Smart Tables*

In October 2004, the MindPlay lawsuit brought the controversy over preferential shuffling into Nevada courts.³⁰⁹ When John Allen sued the Eldorado Hotel and Bally Gaming over MindPlay,³¹⁰ he alleged that the MindPlay had been used to count cards while he was playing and to signal the dealer when to preferentially shuffle.³¹¹ However, unlike some other smart shoes and tables being marketed around the same time,³¹² MindPlay was not designed to facilitate preferential shuffling.³¹³ Representatives of Bally's responded by claiming that it would have been impossible for the Eldorado to use the MindPlay system in the way described in the complaint. The judge apparently agreed and dismissed the suit in May 2005.³¹⁴ Allen chose not to appeal.³¹⁵

Also in May 2005, the Gaming Control Board officially approved MindPlay for use in casinos, subject to one restriction. Information about the count of the cards could only be available to users after an eight hand delay, which would guarantee that MindPlay could not be used for preferential shuffling.³¹⁶ Despite the favorable ruling, accusations of preferential shuffling still appeared in the press.³¹⁷ Casinos also had trouble maintaining the MindPlay system, which was very large and complex.³¹⁸ Bally's discounted MindPlay's price,³¹⁹

³⁰⁷ See, e.g., ZENDER, *supra* note 294, at 140.

³⁰⁸ Interview with Mark Lipparelli, *supra* note 271.

³⁰⁹ See *supra* Part I.B.2.

³¹⁰ Complaint at 3, Allen v. Nev. State Gaming Control Bd. (D. Nev. Oct. 18, 2004) (No. A493817), available at http://bj21.com/allen_vs_nevada/complaint.html; see also MindPlay Brochure, available at http://web.archive.org/web/20041119032916/http://www.mindplay.biz/pdf/mp21_product.pdf.

³¹¹ Complaint at 3-4, Allen (No. A493817).

³¹² See Snyder, *supra* note 281, at 19-20 (describing a feature of SmartShoe21 that showed an "alarm list" of tables with counts favoring players); *id.* at 22 (describing features of TableLinkGT and Digital 21 that display statistics to the pit and security).

³¹³ Interview with Mark Lipparelli, *supra* note 271.

³¹⁴ Interview with Robert Nersesian, *supra* note 125 (according to Nersesian, Allen's attorney, the judge's assessment of the case's merits just before she threw it out was "that's insane!").

³¹⁵ *Id.*

³¹⁶ ChipLeeder, *supra* note 96.

³¹⁷ Editorial, *Are Gamblers Being Fleeced?*, *supra* note 91; Kim Clark, *Against the Odds*, U.S. NEWS AND WORLD REPORT, May 15, 2005, http://www.usnews.com/usnews/biztech/articles/050523/23casino_print.htm; Marc Cooper, *Blackjack's Death Count*, L.A. WEEKLY, Dec. 8, 2005, <http://www.laweekly.com/2005-12-08/news/blackjack-s-death-count/>.

³¹⁸ Interview with Mark Lipparelli, *supra* note 271.

then eventually discontinued it and removed it from the casinos it was installed in.³²⁰

Someday, smart tables will likely become common - at least, many companies appear to be betting on that premise. Newer card and bet tracking with system features similar to MindPlay are still available,³²¹ and developers still appear to be actively working on new smart devices.³²² Therefore, it is important for future device laws to consider casinos' use of devices. The law must allow casinos to use devices productively, such as to catch cheaters or distribute player comps more efficiently. At the same time, the law must clearly prohibit casinos from using devices to take advantage of players, such as by preferentially shuffling. As devices become more complex, people will find more creative ways to use them. At the same time, lax enforcement against preferential shuffling and against advertisements for preferential shuffling features in new devices may lead to a general perception that preferential shuffling is allowed—regardless of whether that is actually true or not. The entire gaming industry relies on the public perception that games are fair, so it is important for the legislature and Gaming Control Board not only to prohibit practices like preferential shuffling, but to be *seen* prohibiting those practices in order to promote public confidence in the games.

4. *Smart Games*

In addition to creating devices such as MindPlay to analyze existing games, manufacturers wanted to use new technologies to create entirely new and innovative games. Regrettably, Nevada's old device law also ended up discouraging companies from innovating by requiring some games to get additional approval, as in the Dealer Bluff Six Card Poker incident.³²³ Even more unfortunate is that, on closer inspection, it appears the entire conflict could have been avoided, had NRS 465.075 been interpreted differently.

Dealer Bluff was primarily a table game, where a dealer and players each try to make the best five-card poker hand from six cards.³²⁴ However, Dealer Bluff had two features that made it unique. First, the dealer would initiate the action, unlike most poker style games where the player initiates the action.³²⁵ Second, the game used an automatic card reader to read the dealer's hand then

³¹⁹ See MindPlay Flyer, available at <http://web.archive.org/web/20060218014617/http://www.ballysystems.com/tms/TMSpromo.pdf>.

³²⁰ John Grochowski, *Elevating the Pit*, CASINO JOURNAL (Aug. 19, 2009), available at http://www.casinojournal.com/Articles/Article_Rotation/2009/08/19/ELEVATING-THE-PIT; *The Machines . . . Are Watching*, POPULAR MECHANICS (Jan. 1, 2010), available at <http://www.popularmechanics.co.za/print-version/the-machines-are-watching-2010-02-01>.

³²¹ See Grochowski, *supra* note 320; Kaplan, *supra* note 283.

³²² See, e.g., U.S. Patent No. 4,531,187 (filed Jul. 23, 1985); U.S. Patent No. 5,586,936 (filed Dec. 24, 1996); U.S. Patent No. 6,117,012 (filed Sep. 12, 2000); U.S. Patent No. 6,460,848 B1 (filed Oct 8, 2002); U.S. Patent No. 6,676,517 B2 (filed Jan. 13, 2004); U.S. Patent No. 6,857,961 B2 (filed Feb. 22, 2005); U.S. Patent No. 7,316,615 B2 (filed Jan. 8, 2008); U.S. Patent No. 7,736,236 B2 (filed Jun. 15, 2010); U.S. Patent No. 7,762,889 B2 (filed Jul. 27, 2010); U.S. Patent No. 7,901,285 B2 (filed Mar. 8, 2011).

³²³ See *supra* Part I.B.3.

³²⁴ May 20 Commission Transcript, *supra* note 101, at 4.

³²⁵ See Mar. 4 Board Transcript, *supra* note 99, at 5.

signal the dealer how much to bet.³²⁶ Usually these bets would be based on the strength of the dealer's hand, but as the game's name implies, the dealer would occasionally bluff.³²⁷

In an earlier version of the game, the dealer looked at his cards and made the decision of how much to bet and when to bluff without the aid of a device.³²⁸ However, this could lead to problems with dealers not bluffing randomly enough, players being able to read the dealer's bluff, or even dealer-player collusion.³²⁹ Thus, Shuffle Master added the automatic card reader, which enabled the human dealer to follow the reader's instructions of how much to bet.³³⁰ This meant that when the dealer bluffed, even the dealer would not know, eliminating all the previous problems with dealers making the betting decisions.

Ironically, by adding the device to make the game fairer, Shuffle Master caused the game to receive *more* scrutiny than it would have if the game had not included the device. When the game went before the Gaming Control Board for approval, it had to be examined to determine if it violated NRS 465.075.³³¹ The Board agreed the game was fair, because the rules were clearly posted and players knew exactly what was going on.³³² Nonetheless, the game appeared to violate the language of NRS 465.075,³³³ even though it clearly did not violate the intent of the statute.³³⁴

The Board received an opinion on NRS 465.075 from the Attorney General,³³⁵ but that did not help. The Attorney General said the language of NRS 465.075 was unambiguous and should be followed literally, with no reference to legislative intent.³³⁶ So the Board sent the game to the Commission, where the Commissioner could have exercised his power to approve it anyway. However, the Commissioner was reluctant to make an exception, and said he did not want to do something contrary to the will of the legislature.³³⁷

Overall, the old version of NRS 465.075 made the approval process slower, more difficult, and did not appear to add any beneficial checks that were not already included in the regular approval process. The new version of NRS 465.075 avoids this problem by automatically exempting all devices approved by the Board or Commission. Unfortunately, the exemption is too

³²⁶ *Id.*

³²⁷ *Id.* at 5-7.

³²⁸ *Id.* at 15.

³²⁹ *Id.* at 16.

³³⁰ *Id.*

³³¹ *Id.* at 25.

³³² *Id.* at 15.

³³³ There was some dispute on this point. See May 6 Board Transcript, *supra* note 101, at 23-24.

³³⁴ See Mar. 4 Board Transcript, *supra* note 99, at 30.

³³⁵ See May 6 Board Transcript, *supra* note 101, at 11.

³³⁶ *Id.* at 16 ("the Attorney General's Office . . . advised that the language in the statute is unambiguous, and therefore, you don't look to the legislative intent at all. You are bound by the four corners of the statute.").

³³⁷ See May 20 Commission Transcript, *supra* note 101, at 26 ("I think the idea is that that language *except as permitted by the Commission* should be used very, very, very sparingly because the legislature has said that it is unlawful to use devices like this.") (emphasis added).

broad, because it simultaneously exempts other devices that it should not. New games like Dealer Bluff should be allowed, and even encouraged, but they should not be allowed at the expense of also allowing harmful devices. Therefore, Nevada still needs a new solution, another amended NRS 465.075 that is less restrictive than the old version but more restrictive than the current one.

G. Summary

The range of prohibited predictive devices has expanded tremendously, beyond the old-fashioned wearable computers for table games to devices for beating electronic games, devices for casual users, and even devices for casinos. At the same time, the range of similar devices that should be allowed has grown nearly as much, from practice and analysis software for players to player tracking and game analysis systems for casinos, and even some experimental new games that dynamically change during play. A modern device law must address all these devices, carefully establishing clear standards for exactly which devices are allowed and which are not.

III. MODEL DEVICE LAW

A. Objectives

The purpose of the model device law is to address the issues covered in previous sections in such a way as to outlaw devices that provide unreasonable advantages, to ensure the games are as fair as possible, and to balance the legitimate desires of both players and casinos to use devices that do not provide unreasonable advantages.

B. Model Law

1. Use.

It is unlawful during the play of any casino game or slot machine in a licensed gaming establishment for any person to knowingly use, assist another person in using, or benefit from the use of a device for the purpose of obtaining an advantage in that game.

2. Possession with the intent to use.

It is unlawful at any time for any person to possess with the intent to use or to knowingly assist another person who possesses with the intent to use a device for the purpose of illegally obtaining an advantage in playing any casino game or slot machine in a licensed gaming establishment.

3. Definition of "device."

As used in this section, "device" means any computerized, electronic, electrical, mechanical or optical device which is designed, constructed, altered or programmed for use in obtaining an advantage in playing a casino game or slot machine, not including the devices listed in part 5 of this section.

4. Definition of "game."

As used in this section, "game" means a single game or a series of related games in which the events of earlier games directly affect the outcome of later games. This

includes, but is not limited to, a series of card games played from the same deck or shoe where that deck or shoe is not reshuffled between games.

5. Exceptions.

It shall not be a violation of this section to use the following devices:

- (a) Handwritten notes;
- (b) Pre-printed books or documents;
- (c) Any device that is part of a game or gaming device approved by the Board or Commission, when used in the approved manner.

6. Penalties.

- (a) A first-time violator of this section who has not previously been convicted of another gambling-related offense and who wagered less than \$[add appropriate dollar amount] while violating this section shall be guilty of a misdemeanor.
- (b) All other violators of this section shall be guilty of a felony.

C. *Analysis*

1. *Use: intent, confederates, purpose, timing, location, types of games*

When someone uses a device, this model law applies the lower “knowingly” scienter standard to avoid arguments over whether a violator “intended” to gain an advantage.

This law also covers a device user’s confederates. Someone who knowingly assists in using a device violates the law, as does someone who knowingly benefits from the use of a device. Also, by including people who knowingly benefit from the use of a device, this law covers passive confederates who are benefitting, but not actually assisting in the use of the device. It also covers cases where an autonomous device is installed and then runs on its own, such that no one really “uses” it, even though people who are aware of the device are able to gain an advantage from whatever the device does.

An illegal device must be used “for the purpose of obtaining an advantage” in playing a game. This was changed from the simpler “to gain an advantage” to cover cases where someone uses a device in an attempt to gain an advantage, but does not actually gain that advantage. For example, the device could malfunction or the natural fluctuations of the game could run against the player using the device despite that user’s statistical edge. It should not be a defense for a device user to argue that they did not violate the statute because they did not actually get the advantage they were attempting to gain.

This law includes two references to the game being played which clarifies that, to violate the statute, the device must be used and the advantage must be gained within the same game. If a jurisdiction feels this construction is not clear enough, it can make the law even clearer by adding the sentence: “It is not a violation of this section to use a device before or after a game, including, but not limited to, using a device to practice before a game has started or to analyze performance after a game is over.” This language avoids questions about whether practicing with training software is legal or whether a casino analyzing game data is legal. As long as the player does not practice and the casino does

not analyze its data while the game is going on, these actions will not violate the statute.³³⁸

When a device is used, this law does not restrict the location of the players, their confederates, or even the device. Device users should not be able to escape prosecution just by moving themselves, their confederates, or their device to a different location. Instead, this law says only that the advantage must be in a game in a licensed gaming establishment.³³⁹

This law applies to “any casino game or slot machine in a licensed gaming establishment.” This is narrower than the current Nevada law, which says “any game in a licensed gaming establishment.” The restriction has been deliberately added to avoid being potentially overbroad³⁴⁰ and to remove any ambiguity about race and sports games. Device laws should not apply to race and sports games because the bettors are not personally involved in the game, and even if they use a computer in an attempt to predict the outcome of a game (as many race and sports bettors do), that will not affect the outcome of the game. Also, many race and sports bettors play from home, where it is not possible to prevent them from using predictive software in their computers. Thus, preventing similar devices, such as laptops, will not discourage players from using the software, it will only discourage them from coming to the casino.

Under the “any game” standard, it could be argued that race and sports games are still excluded because a bettor is not “playing” the game. However, it could be argued that that betting itself is a form of “playing” a game.³⁴¹ Rather than try to resolve this argument, this law simply includes only casino games and slot machines. Depending on the definition of the terms “casino game” and “slot machine” in a particular jurisdiction, these terms may need to be adjusted to cover the appropriate games.

2. *Possession with the intent to use: intent, confederates, timing*

This law applies the higher “intentionally” scienter standard when someone possesses a device but has not yet used it. This standard covers anyone who intends to use that device illegally, and also protects anyone who possesses a

³³⁸ Actually, a casino could legally analyze data during a game, as long as that doing so could not give the casino an advantage in that game—because those actions would not be “for the purpose of obtaining an advantage in that game.” Alternately, a casino could analyze data in so as to gain an advantage in future games, as long as they analyzed that data entirely before the game in which they gained the advantage—because those actions would not be “during the play” of the game. The only time a casino would violate the statute would be if they analyzed data during the play of a particular game in such a way as to gain an advantage in that game.

³³⁹ It is outside the scope of this paper to address the issue of how to prosecute users or confederates who are physically located outside the jurisdiction covered by the device law. As long as an individual knowingly acts to gain an advantage in a game at a licensed casino within the jurisdiction, that is sufficient to criminally prosecute that person.

³⁴⁰ Would “any game a licensed gaming establishment” include children playing marbles in the lobby? That language doesn’t say “any licensed game” or even “any gambling game,” so according to the plain language, it appears it would cover marbles. Then, if one child uses her marble (arguably a “mechanical device”) to win the game, under a literal reading of the current Nevada law she may have committed a felony.

³⁴¹ When someone “plays the horses” we do not assume they are a jockey or an owner, but just a bettor.

device they know *could* be used illegally, but who has no intention of using it that way.³⁴² However, confederates of the device user must only “knowingly” assist in using the device. Also, by requiring that confederates must “assist another person who possesses with the intent to use,” this law clarifies that it only covers current confederates of someone who already possesses the device, and not device suppliers.³⁴³ A jurisdiction may certainly want to prohibit the supply of devices, but it should do so with a different statute. A separate statute is necessary to properly cover issues related to supplying, such as where the supplier is located and whether or not the supplier must know if the device is being purchased with the intent to use it illegally.

Possessing a device is illegal anytime, as long as that person intends to use the device illegally. It is important that the intended use be illegal, so as to avoid criminalizing the mere possession of devices that would otherwise be legal to use. If there is any question about whether the timing of the intended use is illegal, that use should be analyzed as in Section 1, above.

3. *Definition of “device”: type of device, purpose of device*

Although defining “device” broadly, so as to cover currently unknown or potential future devices,³⁴⁴ may seem tempting, listing only the types of currently known or suspected devices that the jurisdiction wants to prohibit is wiser. This avoids making the definition unclear or overbroad. If a new type of device becomes relevant in the future, the statute can be amended to include it. The types of devices described by both the current New Jersey and Nevada laws provide a good example—a “computerized, electronic, electrical or mechanical device.” This statute only slightly changes that list by adding “optical.” This change is not in anticipation of fiber optic computers, but in recognition that mirrors and lenses have long been used to gain advantages in gambling games.³⁴⁵ Many uses of these optical devices are already made illegal by cheating or fraud statutes,³⁴⁶ however, including optical devices in this law should cause no problems and will provide additional security against advantage players using optical devices.

³⁴² This would include, among other situations, a law enforcement agent who possesses a device in order to give a demonstration on how it is used, or a scientist who possesses a device so as to study it and better understand how it works. A tourist with a blackjack computer in his suitcase would be a tougher call, but at a certain point, perhaps when that tourist conceals the computer under his clothes and heads toward the casino floor, intent can be inferred.

³⁴³ The current Nevada statute instead says “assist another person in . . . possession with the intent to use,” which is less clear and implies that it might cover suppliers.

³⁴⁴ Forward looking categories of devices which are impractical right now might include “biological,” “molecular,” or “robotic.”

³⁴⁵ Optical devices have been used by both players and casinos. Players have used mirrors to view a dealer’s hole card. ROSE AND LOEB, *supra* note 290, at 86. Casinos have used prisms to peek at the top card in a shoe so they can deal seconds. ZENDER, *supra* note 294, at 46-47.

³⁴⁶ See *Lyons v. State*, 775 P.2d 219, 221 (Nev. 1989) (noting illegal devices under the Nevada cheating statute, NEV. REV. STAT. § 465.015 (2011), include “[m]irrors, . . . electronic equipment, magnets, tools or other devices [that] alter the play of the game.”).

In order to avoid criminalizing ordinary devices,³⁴⁷ both Nevada and New Jersey further narrow their descriptions by specifying that the device must be “designed, constructed, altered or programmed to obtain an advantage”³⁴⁸ or “designed, constructed, or programmed specifically for use in obtaining an advantage.”³⁴⁹ As discussed, the first construction is better because it avoids arguments about whether the device actually obtained an advantage. At the same time, Nevada was wise to add “altered,” which enables the law to cover some situations where ordinary devices are used in unusual ways.³⁵⁰ This law combines the best language from each of these statutes. Finally, separating the definition of “device” into a separate section avoids repetition and makes the first two sections more readable.³⁵¹

4. *Definition of “game”: predicting sequential games, preferential shuffling*

As described above,³⁵² this law requires that a player must use the device in the same game in which that player gains an advantage, so as to avoid unintentionally criminalizing devices appropriately used before or after a game. However, that narrow definition also introduces a potential loophole a device user could exploit to inappropriately predict the outcome of a game.

Recall the Atlantic City keno game predicted by Ron Harris in 1995.³⁵³ In that case, Harris used the results of previous games to predict the outcome of a future game. Under the law in force in New Jersey, Harris could have completely turned off his computer before McNeal filled out the keno slips, and then accurately argued that he did not use his device during the game in which he gained an advantage.³⁵⁴ Obviously, the law should not allow this. To close this loophole, this section expands the definition of “game” to include a series

³⁴⁷ An example of ordinary devices at risk of being criminalized would be assistive devices like wheelchairs or eyeglasses—both of which certainly give the player an advantage they would not have without the devices.

³⁴⁸ NEV. REV. STAT. § 465.075 (2011).

³⁴⁹ N.J. STAT. ANN. § 5:12-113.1 (West 2011).

³⁵⁰ Using ordinary devices in ordinary ways will still be legal, such as clocking a roulette wheel with a sensitive listening device or a very precise stopwatch, but this should not pose a serious threat, and criminalizing the ordinary use of devices would risk making the law overbroad.

³⁵¹ Separating the definition does lead to one unintended side effect, which is that the game the device is constructed for the purpose of gaining an advantage in, per § 2, need not be the same as the game the device is actually used in, per § 1. It is likely no situation would ever occur where this would matter, but in the unlikely event that an advantage player used a device designed to gain an advantage in one type of game in an attempt to gain an advantage in a different type of game, that act would still be illegal under this law. NEV. REV. STAT. § 465.015 (2011).

³⁵² *Supra* Section III.C.1.

³⁵³ *Supra* Section II.D.

³⁵⁴ A few of the video poker prediction devices could fall through the same loophole. All those devices made their predictions before the beginning of the game in which the advantage was used. However, most continued to run during the next game in order to beep or buzz to alert the player when to press the button on the machine, and those would still be covered. However, the device that synchronized with a stopwatch would not, because it also could have been turned off before the game was played, since it was the stopwatch, not the device, that told the player when to press the button.

of related games. Under this expanded definition of “game,” if the device user can use the results of previous games to predict the outcome of a subsequent game, those related games are considered one “game” and the use of the device is illegal.

Additionally, expanding the definition of game in this way prohibits casinos from preferentially shuffling based on information provided by devices, because each series of games dealt from of a single deck or shoe of cards is considered a single “game” for the purpose of the law.³⁵⁵ If a casino uses a device to track the cards played and to signal a casino employee to shuffle early when the remaining cards would provide a disadvantage to the casino,³⁵⁶ the device is enabling the casino to gain an advantage in the game.³⁵⁷ Such a device is illegal under this law.³⁵⁸

5. Exceptions: handwritten and printed documents, Board and Commission approved devices

The requirement that a device be “designed, constructed, altered or programmed for use in obtaining an advantage” might appear to automatically exclude ordinary devices like pencils, paper, and books. However, because this law includes “altered,” a weak argument could be made that when someone takes notes with a pencil, that person is altering the paper in order to obtain an advantage. To avoid an argument like this, handwritten notes are simply exempted.

Similarly, books about how to win at games are quite clearly designed and constructed for assisting readers in gaining an advantage. Accordingly, if a court accepted them as mechanical devices, they too would be illegal. Similarly, blackjack basic strategy cards have been regarded as devices in the past.³⁵⁹ So again, to avoid all of these arguments about whether books, cards and other printed material are or are not devices, the law simply exempts them. If a casino does not want players using strategy cards or making notes at a particular game, the casino can simply make a house rule that those activities are not allowed, and bar anyone who breaks the rule from gambling. Making writing or reading into a felony would be disproportionate and pointless.³⁶⁰

³⁵⁵ This is assuming the casino’s device is not shuffle-tracking, or otherwise monitoring where the cards will be after the shuffle. If the device does do this, the “game” will not end with the shuffle, and will last for as long as the device is able to continue tracking to predicting the locations of the cards.

³⁵⁶ Technically, someone could argue about whether “avoiding a disadvantage” is the same as “gaining an advantage,” but the results are the same in the long run; the casino will win more. Therefore, it seems unlikely a court would allow this distinction.

³⁵⁷ Note that the device is gaining the advantage in the game which is ended early by the cards being shuffled, not in the following game.

³⁵⁸ Note that this law does not make it illegal to use player strategy analysis to identify and bar card counters. His law also does not make it illegal for a casino to preferentially shuffle without the aid of a device. If a jurisdiction wished to prohibit or regulate either of these activities, it would need to do so through other statutes or gaming commission regulations.

³⁵⁹ Interview with Robert Nersesian, *supra* note 125.

³⁶⁰ It might also be unconstitutional under the 1st Amendment of the U.S. Constitution.

Finally, when devices or games have been individually examined and approved by the Gaming Commission (or equivalent regulatory agency in the jurisdiction), this law will not apply. This serves two functions.

First, this exemption avoids problems with trying to apply this law to devices that have already been approved or that are in the process of being approved.³⁶¹ Any device that successfully passes the approval process will already have been examined in much more detail than this law requires.³⁶² Furthermore, this exemption only applies when those devices are used as approved. If an approved device is used in an unapproved way to gain an advantage, the user would still be subject to prosecution under this law.

Second, this exemption replaces the previous “as permitted by the Commission” exemption, avoiding situations where the Commission might be either too lenient or too strict. The Commission is unlikely to ever accidentally give out an unwise exemption, because it must put every device through the full approval process. Similarly, the Commission is unlikely to withhold approval of a worthy device because the Commission’s job is to approve devices. The detailed approval process allows the Commission to approve devices without fear that it might contradict the will of the legislature.

6. *Penalties*

Part 4 of this law is not written to be used verbatim, but is instead designed to be adapted to the specific misdemeanors and felonies appropriate for the jurisdiction in which the statute is enacted.³⁶³ A first time offender will only be convicted of a misdemeanor, unless that person has prior convictions for gambling offenses or wagers more than a certain dollar amount. A repeat offender or a first-timer betting a large enough amount of money will be convicted of a felony. This is similar to the two-tiered system in the current New Jersey law. This tiered system will cause most foolish people using smartphone apps to only be charged with misdemeanors, but still cause serious players trying to win large sums of money to be charged with felonies.

D. *Potential Modifications*

1. *Restore ability for Commission to approve any device*

Part 5(c) automatically exempts any approved game or gaming device. However, if the Commission wants the additional authority to grant exemptions to devices which have not gone through the official approval process, a part

³⁶¹ Such as Dealer Bluff Six Card Poker. See Part II.F.4.

³⁶² In Nevada, this would include all gaming devices (i.e., slot machines) approved under Nev. Gaming Comm’n Reg. 14.030 and also all games (i.e., table games) approved under Nev. Gaming Comm’n Reg. 14.230. However, this would *not* include associated equipment approved under Nev. Gaming Comm’n Reg. 14.260, because the associated equipment approval process is not as thorough. If a piece of associated equipment looks like it might violate NEV. REV. STAT. § 465.075 (2011), it should either be changed so that it clearly does not, or, if it has a legitimate purpose for the feature that conflicts with NEV. REV. STAT. § 465.075 (2011), the device can instead go through the longer process to become approved as a gaming device.

³⁶³ In some jurisdictions this section would be omitted completely because the penalties would be listed in a different statute.

5(d) could be added to restore the language from part 1(d) of the current Nevada statute, “5(d). any device or type of device otherwise permitted by the Commission.” This would give the Commission the flexibility in special situations to quickly approve a device without going through the long approval process.

2. *Add examples from Nevada’s device law*

Although Nevada completely overhauled the rest of the device law in 2011, it left the four examples from the 1985 version nearly untouched. These four examples prohibit a device which:

- A. Projects the outcome of the game;
- B. Keeps track of cards played or cards prepared for play;
- C. Analyzes the probability of the occurrence of an event relating to a game; or
- D. Analyzes the strategy for playing or betting to be used in the game.

These examples were the only thing resembling a definition of device in the original Nevada law and are undoubtedly the reason the Nevada Supreme Court upheld the conviction in *Anderson*. In a law that precisely defines which devices are covered, these examples are not necessary, though including them should not cause any problems, especially if they are prefaced with the language in the new Nevada law, “including, without limitation,”³⁶⁴ to make it clear that this list of examples is non-exhaustive.

3. *Add Notice Requirement from New Jersey’s Device Law*

New Jersey’s device law includes the clause “[e]ach casino licensee shall post notice of this prohibition and the penalties of this section in a manner determined by the division,”³⁶⁵ which is not in this model law. This requirement could be helpful, especially for casual device users like those using smartphones, because it could alert potential violators who are ignorant of the law. Ideally, alerting these potential violators would prevent them from breaking the law in the first place, which is a much better outcome than catching and prosecuting them after the fact.

Conversely, the notice requirement may not be effective, in which case, it would be a waste of time and resources. Patrons could easily miss notices, either because they were posted in obscure places or because so many notices for different things were posted together that the patrons simply ignored them all. Legislatures should decide whether to include a clause like this based on how effective they think it would be in their jurisdiction.

4. *Remove references to table games*

Some jurisdictions do not offer table games such as blackjack or roulette and have only electronic devices such as video poker, slot machines, or video lottery terminals. These jurisdictions should make a few changes to the law to more accurately fit their situation. First, these jurisdictions should remove the language “[t]his includes, but is not limited to, a series of card games played

³⁶⁴ *Id.*

³⁶⁵ N.J. STAT. ANN. § 5:12-113.1(c) (West 2011).

from the same deck or shoe where that deck or shoe is not reshuffled between games,” because it is meaningless in a jurisdiction without card games. Next, if the jurisdiction has chosen to include the four examples from the Nevada law, it should remove the second example, “[k]eeps track of cards played or cards prepared for play.” Finally, as mentioned above, these jurisdictions should review the phrase “any casino game or slot machine” and adjust it to accurately describe the types of games available in that jurisdiction.

E. Summary

This model law includes provisions to cover current issues device laws face. This law should be appropriate for all jurisdictions where gambling is legal and should require only small changes to the language to clarify the types of devices and specific penalties appropriate to that jurisdiction. Hopefully, this law will be comprehensive enough to work with minimal or no changes for many decades. By design, this law makes it easier to allow new technologies than to prohibit them. If a new technology needs to be allowed, such as for a new type of game casinos want to offer, the Commission can use its authority to approve it. However, if a new technological threat arises, the legislature must amend the law to prohibit that technology.

IV. FUTURE CONSIDERATIONS

A. Potential Threats From New Technologies

As Niels Bohr said, “[p]rediction is very difficult, especially of the future.”³⁶⁶ However, a few generalities can be made based on current trends. First, computers of all types will undoubtedly continue to get smaller, faster, and cheaper. This means players will be able to use devices that are practically undetectable. In the past, if authorities could catch a player and confiscate that player’s device, they would have a very strong case. In the future, detecting devices will be more difficult, and a player may not even have the device on his person at all, because communicating remotely with devices outside the casino will be so much easier.

For example, a player might use a cell phone camera in his pocket combined with a Bluetooth hearing aid to send video of a game to a remote computer across a cellular network and receive back audio signals telling him how to play. Even if this payer was caught in the act and all his equipment was confiscated, authorities would have a difficult time making a case against him. His cell phone and Bluetooth hearing aid would both be legal because they were not created or modified for gaining an advantage. The computer that *was* created for that purpose was never in the casino, and without it, the player can claim that he made his bets on his own, and that claim would be very difficult to disprove.

If situations like this arise, one solution would be to expand the law to also outlaw the use of ordinary devices when used to gain an unfair advantage. However, it would be tricky to differentiate between an unfair advantage, such

³⁶⁶ BASS, *supra* note 155, at 15.

as for the player using the camera described above, and a fair advantage, such as for a disabled person who needed to use similar technology just to see.

Another solution might come from advances in the player analysis systems described above. These systems are already used to catch cheaters, such as colluding dealers and players. A sophisticated enough system might be able to detect repeated plays made with such precision that the player must be using a device. The casino would likely be unable to legally prove the player used a device,³⁶⁷ but the casino could at least bar the player by politely asking them not to play any more games.³⁶⁸ In fact, in the case of any type of undetectable device, identifying and barring certain players may eventually become the only way to stop device users. If this practice becomes common, regulations would likely have to be put in place to allow casinos to protect themselves, while ensuring they did not go too far.

Other technologies, such as biotechnologies, could provide different problems, such as enhancing a person's natural abilities.³⁶⁹ This would allow an individual to honestly argue he used no device as defined by the statute. However, it is likely that in the long run all effective technologies will eventually lead to the same result—undetectable devices. At that point, the device users become indistinguishable from other legal advantage players and must be identified and dealt with without the help of a device law.

B. Device Laws and the Internet

Most Internet gambling is currently illegal in the United States, but that is already starting to change. Many observers expect Internet gambling to expand greatly in the future. Website operators, regulators, and legislators are just starting to figure out how to deal with the most common type of programs for advantage playing on the Internet—bots. Bots go beyond merely assisting players and can play games entirely by themselves. Attempting to modify the existing device laws to cover the use of devices on the Internet would not make sense because bots are so completely different from any of the devices described in current device laws.

The Nevada Gaming Control Board has already begun addressing this problem by developing standards for online poker.³⁷⁰ Interestingly, these stan-

³⁶⁷ Even if the casino collected highly credible evidence of super-human playing strategy, the player could still be a savant. These extraordinary people can predict outcomes similar to a computer, but are very rare. A fictional example would be the main character in *Rain Man*, who could remember cards dealt in blackjack with superhuman precision. *RAIN MAN* (United Artists 1988). A real-world example is a savant who played roulette at Caesar's Palace in Las Vegas, watched the ball at and calculated its trajectory quickly enough to accurately place bets, and won "multiple seven figures" from the casino. Interview with Robert Nersesian, *supra* note 125 (Mr. Nersesian said he had first hand knowledge of this incident, but declined to give the name of the player involved).

³⁶⁸ This is true in Nevada. New Jersey prohibits casinos from barring legal advantage players, so in New Jersey the casino would still need to find additional evidence that the player was using a device.

³⁶⁹ See Kolber, *supra* note 31, at 312–314.

³⁷⁰ Technical Standards for Gaming Devices & Associated Equip., Nev. Gaming Control Bd. Standard. 6.190-7 (Jan. 27, 2012).

6.190 Game operation and information requirements.

dards do not explicitly prohibit the use of bots, or any other computer assisted advantage play. The regulation says operators must be *able* to detect and prevent certain actions, but does not say the operators must actually monitor or prevent anything. However, the regulations do suggest that operators will have the option of banning certain types of advantage players if they wish. This lack of restrictions is strange because this is exactly the situation where computer aided play would appear to pose the biggest threat.

Of course, even if bots become illegal, as they should, and even if the penalty for using them is very high, enforcing the law will still be so difficult that some players will likely continue to use bots anyway. One method currently designed to make the use of bots more difficult is to require users to perform tests that presumably only people can solve.³⁷¹ Unfortunately, these tests are only marginally effective. There are some cases where bots would have trouble operating alone, such as in an online poker game with a simultaneous chat session where players all talked to each other. However, even in these situations a live player could talk in the chat room, while simultaneously using a program to tell him how to play the game.

A different approach to this problem would be to require users to install anti-cheating software, similar to that currently used in some online video games. However, because most gambling games are so simple, users could just run the software on a separate computer and still use it to tell them how to play. Another approach would be for sites to analyze each player's strategy and identify the most skilled players. Then, for online poker or other player-vs.-player games, the site could at least place players of similar skill ratings in games together, so that no one would be at a disadvantage. This strategy would not get rid of bots, but might result in them receiving a skill rating that resulted in most bots playing in games against each other.

For house-banked games, the only real solution is to adjust the odds of the games so that they cannot be beaten, because it will likely be impossible to prevent bots from playing these games. As a side effect, this will help casinos in the real world, because they will be the only ones able to offer potentially beatable house-banked games.

7. Interactive gaming systems that offer games where authorized players play against each other (i.e. Poker) must be able to do the following:

- (a) Provide a mechanism to reasonably detect and prevent player collusion, artificial player software, unfair advantages, and ability to influence the outcome of a game or tournament. This includes the ability to control multiple interactive gaming accounts simultaneously for the purposes of gaining an advantage in a game or tournament;
- (b) Prevent authorized players from occupying more than one seat at any individual table;
- (c) Provide the operator's policy on using player collusion and artificial player software (bots);
- (d) Provide authorized players with the option to join a table where all authorized players have been selected at random; and
- (e) Inform authorized players of the length of time each player has been seated at a particular table; and .
- (f) Clearly indicate to all authorized players at the table whether any players are playing with house money or are celebrity players.

³⁷¹ These are known as Turing tests (or more precisely, reverse Turing tests). A simple example of this type of test is the CAPTCHAs commonly used on websites.

CONCLUSION

When a new law is written in response to an unanticipated technological advancement, the legislature must balance between rushing to pass a hastily drafted law and delaying while they examine the problem more thoroughly. Passing a law too quickly may inadvertently stifle innovation,³⁷² while waiting too long may allow the problem to get out of hand.³⁷³ Later, the new law will likely have to be revised, as the technology and how we use that technology continue to develop. Revisions to the law must strike the same balance between the risks of rushing and waiting. However, if the previous law was well drafted, risks should become smaller with each revision.³⁷⁴ Device laws have nearly reached this point, where the basics are well-established and future revisions will primarily add incremental improvements.

The one thing all new laws must strive for is to specify as clearly as possible exactly what actions they prohibit and what they allow. Sometimes enacting a law that is clearly wrong may be preferable to enacting one that is vaguely right. A law with unreasonable but clearly defined requirements may do less damage in the long run than a law with apparently reasonable but vague or ambiguous requirements. The clearly unreasonable law will simply be identified as such and quickly changed, while the vaguely reasonable law is more likely to stay on the books and give conflicting parties grounds to continue arguing and wasting legal resources for years to come.

Device laws are relatively uncontroversial, but their history still clearly shows the hazards of vagueness and the benefits of clarity. Of course, we should always strive to make new laws both clear and reasonable, so they will prohibit harmful behavior and simultaneously allow freedom to create and innovate. As the pace of technology continues to accelerate, we will undoubtedly soon have many more opportunities to practice striking this balance.

³⁷² See Yvette Joy Liebesman, *The Wisdom of Legislating for Anticipated Technological Advancements*, 10 J. MARSHALL REV. INTELL. PROP. L. 154, 180 (2010).

³⁷³ See Gregory N. Mandel, *Regulating Emerging Technologies*, TEMP. U. LEGAL STUD. RES. PAPER SERIES, Apr. 8, 2009, at 3, <http://ssrn.com/abstract=1355674>.

³⁷⁴ See, e.g., Part I.C, Part I.E for examples of device laws that have been improved incrementally over multiple revisions.