

Chapter 2

The History of Gambling and Its Intersection with Technology, Religion, Medical Science, and Metaphors

Abstract In this chapter, we offer a brief history of gambling and then discuss the intersection of pathological gambling with technology, religion, and science. While technological innovations, assisted by the development of probability theory helped to make gambling a more profitable industry, other historical currents were at work. Substance use and abuse, the temperance movement, and moral panics in general—all of these had key roles to play in the evolution of pathological gambling as an idea. Chronic drunkenness was our first widely recognized (and medicalized) addiction, followed by addictions to opiates and other substances—all of which set the stage for the recognition of behavioral addictions such as pathological gambling. We end with a discussion of metaphor, shedding light on questions concerning the literal veracity of psychobehavioral disease constructs. We argue that metaphor is endemic to all human conceptualization and that this on its own need not invalidate disease conceptions of behavior such as pathological gambling.

Keywords History • Technology • Luck • Medical science • Temperance • Metaphors

2.1 Gambling, Luck, and Rituals

Evidence for gambling and luck-oriented rituals has been found dating back to as early as 4000 BC (David, 1962; Schwartz, 2006; Reith, 1999). Although numerous papers and books have been written on the history of gambling (Asbury, 1938; Binde, 2007; Dixon, 1991; Schwartz, 2006), little scholarly attention has been paid to the history of the disease conception of problem gambling. This book examines the history of the notion that problem gambling is a disease and examines what it means to call it a disease. A place to start is simply an account of the changes in conceptualization by reference to the history of gambling itself.

For centuries, governments have variously tried to benefit from the proceeds of gambling or to prohibit the activity altogether (Rose, 1991; Skolnick, 2003). In the

Western world, during the first half of the twentieth century, governments tried mainly to limit the availability of gambling (often to degrees approaching outright prohibition). This often resulted in legal and political battles between some citizens who wished to gamble and governments that insisted on trying to protect people from themselves. Similar battles have been fought over drugs, alcohol, prostitution, and pornography. The modern gambling scene has been characterized by a number of dramatic changes over the past 100 years. First, since the 1970s, there has been a remarkable liberalization of gambling laws so that, in the West, people now have much more freedom to bet. Second, this change has been accompanied by a rapid shift among governments from a prohibition model of governance to an exploitation model (Skolnick, 2003). Third, there has been a rapid commercialization of the gambling product that has shifted gambling from private bets between individuals to bets against large casinos, corporations, or governments. Fourth, the games themselves have shifted from games that often involved some element of skill to games that employ random chance using random number generators. And fifth, since the 1980s, casino gambling has shifted from card and dice games to electronic gambling machines (Ernkvist, 2009). Coincident with these changes, problem gambling was first recognized as a mental disorder in the mid-twentieth century (Bergler, 1943, 1957; Freud, 1961), and, in 1980, was incorporated into the Diagnostic and Statistical Manual (American Psychiatric Association, 1980) used by psychiatrists to place labels on their patients.

2.2 The History of Gambling

Gambling has been around in some form or other for thousands of years. Gambling games have been found in the pyramids. The casting of lots, an early form of dice, is mentioned in the bible. Most human cultures around the world have engaged in some form of gambling (Schwartz, 2006). Taking risks is an intrinsic part of our existence. Gambling can be defined as risking something of value (usually money) for the possibility of gain with an uncertain outcome. Risk taking has always been an essential part of survival. Among a troop of monkeys, a male who does not take risks will never become the dominant male and never have an opportunity to pass on his genes to the next generation. Human endeavors such as exploration, work, trade, and (of course) war involve taking calculated risks in order to secure a gain. However, gambling is a peculiar type of risk. Typically it only involves the risk of wealth, rather than any physical risk. Also, in modern commercial gambling, the expected long-term payoff is nearly always negative.

The history of the disease model of problem gambling has been colored by many important currents, and here two are discussed: changes in the technology of gambling itself and the conflicted relationship between gambling and religion. The appendix includes a list of some of the important historical events and developments.

2.3 Probability Theory

When considering the notion that excessive gambling is an addiction or a disease, it is important to be aware of the technological changes that have occurred over the past few hundred years. Arrows, spears, sticks, stones, or other weapons were among the earliest devices used for gambling. Later, dice were created from sheep hucklebones, which are roughly a cubic rectangle in shape with four long sides and two small rounded ends (David, 1962; Schwartz, 2006). The dice would only land on one of the four longer sides (not the ends). In addition, of those four long sides, two were larger than the other two. This meant that the dice would more likely land on the larger sides than the smaller sides. The earliest six-sided dice have been dated to 3000 BC (Schwartz, 2006). Board games such as senet were developed in ancient Egypt. The Romans bet on chariot races and held lotteries for prizes (Schwartz, 2006). According to David (1962), by the “time of the emergence of Rome and the Romans as the dominating power in Europe, gaming was the common recreation among all classes and types of people, so much so that it was found necessary to promulgate laws forbidding it, except at the Saturnalia” (p. 7). Cards were first used in China as early as the twelfth century and had spread to Europe by the fourteenth (Hargrave, 1966).

One complication for a study of the history of gambling is that many gambling devices were not solely used for gambling. The use of arrows or other weapons as gambling devices cannot be determined from the archaeological records. Similarly, hucklebones or astragali were also used for religious divination, and it is difficult to determine if a particular artifact was used for gambling or divination. However, in archaeological sites, hucklebones are far too common to have only been used for religious purposes (Schwartz, 2006). Similarly, it is often unclear whether board games such as senet were only played for amusement or as a means of gambling. To complicate matters, there were no strong lines drawn between sports, games, and gambling until the twentieth century. Early sport contests such as pedestrianism were run as a form of gambling. In fact, gambling was often the only means by which these athletes could earn money from their performances (Schwartz, 2006, p. 338). Asbury (1938) treats the terms sportsman and gambler as interchangeable.

Though gambling was a well-established recreational hobby well before the Roman Empire, back then the understanding of random chance was quite different from our modern view. According to David (1962),

The beginning of the Christian era finds us then with dice, with astragali, with throwing-sticks, with board games, and with games of chance which use neither boards nor men. The idea of counting and enumeration is firmly established but not the concept of number as we know it now. The paraphernalia of chance events has been organized for man's pleasure and entertainment. Randomization, the blind goddess, fate, fortune, call it what you will, is an accepted part of life. But for an understanding of man's mental attitude towards these chance events, and his conception of chance in general, it is necessary to turn attention to a different stream of thought—divination (p. 12).

According to David (1962), ancient peoples had an entirely different understanding of random chance that was tied more to religion than to mathematics. We will return to the issue of divination in Sect. 2.5.

In addition, for most of human history, the calculation of probability was well beyond the ability of even the brightest minds. People simply lacked the mathematical operations that would make such calculations possible. The Roman system of Is, Vs, and Xs did not facilitate the simple arithmetic operations needed to compute probability. The famous Roman philosopher, lawyer, and statesmen, Cicero, had some understanding of the concept of luck as random chance (David, 1962), but never developed it mathematically. In addition, according to Mlodinow (2008), the Romans did understand the idea of a half-truth. In Roman law, it was believed that two half-truths equaled a certainty. Mlodinow points out that in reality two half chances (assuming the chances were indeed 50%) would equal a three quarters chance ($1 - 0.5 * 0.5 = 0.75$).

The Greeks are famous for mathematical accomplishments such as the Pythagorean theorem, but that was not worked out with numbers. The Pythagorean theorem was discovered using geometry and literally used squares (see Bronowski, 1973, pp. 158–159). Something as simple as, which is more likely, the chance of rolling a 9 or a 10 with 3 dice would be a difficult problem until an easy-to-use system of mathematics was available. The fact that people did not appreciate the “stability of statistical ratios” (see David, 1962, p. 22) may be in part due to the absence of well-formed and balanced dice. However, some well-formed (true) dice have been found. David (1962) goes on to suggest that it was more the absence of a belief in the importance of empirical observation that hindered progress towards an understanding of random chance.

The earliest known advances in solving this puzzle were made in India (Bag, 1966; David, 1962) and China (Mlodinow, 2008). In Europe, the breakthrough came with the adoption of Indian-Arabic numerals during the Renaissance (Mlodinow, 2008). Several advances were made due to practical questions related to gambling (Mlodinow, 2008). It was in the sixteenth century that Cardano (1501–1576) started to make real headway towards an understanding of random chance (Mlodinow, 2008; Schwartz, 2006). Cardano was himself “addicted” (David, 1962, p. 56) to gambling on chess and dice. David (1962) credits him with drawing an abstraction about dice from observation and with checking his theoretical computations against practical experience, in short, a scientific approach to the puzzle. Further developments were provided by Galileo (1564–1642) who was asked by his patron to work out the chances of rolling a 9 or a 10 with 3 dice. The ideas of Cardano, Galileo, and others were then synthesized into a more general account by Pascal (1623–1662) in the seventeenth century. Pascal’s exploration of the topic began when he was asked to solve a problem related to scoring a game that had not been completed. To solve the puzzle, Pascal corresponded with his colleague Fermat (Mlodinow, 2008; Schwartz, 2006). During this exchange, Pascal developed a triangle based on very simple math (addition) that could be used to work out the opportunities (permutations) for something to occur (see Fig. 2.1). Working out the opportunities for an event is a key to determining the chance that it could happen

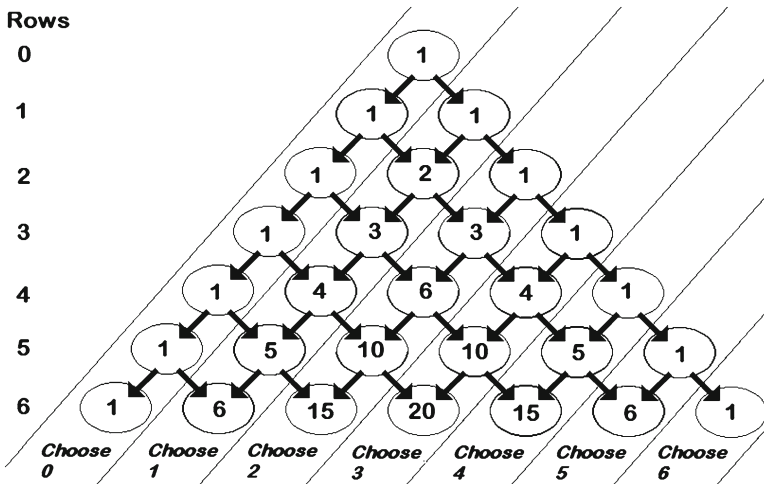


Fig. 2.1 The first six lines of Pascal's triangle illustrating how it is used to determine opportunities

(Mlodinow, 2008). Though today this triangle is called Pascal's triangle, Pascal and Fermat did not invent the idea (Bag, 1966; David, 1962; Mlodinow, 2008). In fact the basic idea had been discovered and forgotten and then rediscovered several times in history until it was finally understood (David, 1962). Pascal used it to develop a more complete understanding of probability. In addition, Pascal also discovered a number of useful properties of this triangular arrangement (David, 1962).

The first six lines of Pascal's triangle are shown in Fig. 2.1. We used arrows and diagonal lines to make the pattern easier to understand. The arrows indicate which numbers from one line are used to compute the numbers on the next line. Rows one to six indicate the size of the number pool or how many numbers one has to choose from. For example, for lotto 6/49, the pool is made up of 49 numbers. The diagonal columns indicate how many numbers are chosen from the pool where the order does not matter and without repeating a number (exactly like choosing 6 numbers for a lotto 6/49 ticket). Moving from left to right, the first diagonal column represents choosing 0 from the pool, the second diagonal column represents choosing 1 from the pool, the third represents choosing 2, and so on. For example, if you have a pool of 6 numbers, there is only one way of choosing no numbers from it, 6 ways of choosing 1 number, 15 ways of choosing 3 numbers, 20 ways of choosing 4 numbers, 15 ways of choosing 5 numbers, and only 1 way of choosing 6 numbers. Suppose there was a lottery with a pool of 6 numbers in total (1, 2, 3, 4, 5, 6) in which each ticket consisted of 3 numbers (lotto 3–6). Reading along the 6th row, go to the diagonal column labeled “choose 3,” and the number is 20. This means there would be a total of 20 possible tickets, and the chances of winning would be 1 in 20. For lotto 6/49 (see Turner & Ferentzy, 2010), a player selects 6 numbers from a pool of 49 numbers. If the table extended down to 49 rows (see Fig. 2.2), the opportunities listed in the “choose 6” numbers column would be 13,983,816.

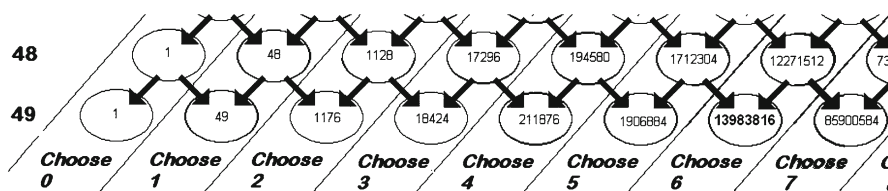


Fig. 2.2 Extending the triangle down to the 49th line to illustrate its utility for a lotto 6/49

These examples are given here to illustrate how important this triangle was to the discovery of probability theory. The problem is that the triangle was still quite tedious to compute and hard to use for complex problems. Today most gambling math can be easily computed using factorials. For example, the factorial of a number (e.g., $4!$) is the product of all positive integers less than or equal to 4 (e.g., $4! = 4 \times 3 \times 2 \times 1 = 24$). A lottery, for example, in which the player selects 6 numbers out of 49 numbers where the order in which they are drawn does not matter can be worked out as follows $((49!)/((49-6)!))/(6!) = 13,983,816$ or 1 in 14 million. This is considerably a faster method than working out Pascal's triangle to the 49th row. These ideas were further developed by Huygens (1629–1695), Newton (1643–1727), Leibnitz (1646–1716), Bernoulli (1654–1705), de Montmort (1678–1719), de Moivre (1667–1754), Bayes (1702–1761), Laplace (1749–1827), Kramp (1760–1826), and numerous others (see Arnold, 1978; David, 1962; Higgins, 2008; Mlodinow, 2008; Schwartz, 2006) so that by the mid-eighteenth century, the mathematics of probability was well established.

Until the sixteenth century, gambling was largely a matter of private bets between individuals. In addition, gambling games were typically zero-sum games in that the total wealth of the two individuals was not altered during the game but simply redistributed from one person to the other. In the sixteenth century, a more complete understanding of probability was developed (Mlodinow, 2008; Schwartz, 2006). Around the same time, the casino, or *ridotti*, came into existence as a place where Italian merchants could go to relax and entertain themselves. These *ridotti* offered banked gambling games in which the casino had a subtle house edge. Probability mathematics made it possible for a casino to compute the chances of a game with enough precision so that the casino could offer a game to its customers that ensured a profit for the casino but paid back to the customers enough so that they felt the game was fair. According to Schwartz (2006), the development of “mercantile gambling provided a way to legitimately make a living from gambling by running houses where gambling was permitted” (p. 93). In addition, the games became simpler and faster (Schwartz, 2006). The very complex game of *hazard*, for example, was simplified into the game of *craps* (Asbury, 1938). Banked games led to an unprecedented wave of gambling mania in Europe. From 1650 to 1800, “gambling occupied a place in European society far more prominent than before or since” (Schwartz, 2006, p. 91). This model of casinos is still with us today. In fact most of the table

games found in casinos today (e.g., baccarat, craps, blackjack,¹ roulette) date from the seventeenth and eighteenth centuries (Arnold, 1978; Asbury, 1938; Schwartz, 2006). The concurrent growth of casino gambling and probability mathematics is not coincidental, but the extent to which probability theory leads to the growth of gambling or that the growth of gambling leads to the discovery of probability theory is difficult to determine. The two may well have evolved in a reciprocal manner.

2.4 Gambling Devices and Technology

The development of different gambling devices had also been tied to advances in the understanding of random chance. Ancient dice made from hucklebones were typically not perfect cubes. This meant that the dice were in fact weighted, with dice landing on some sides more often than others. Cards were first introduced in the twelfth century. Cards were a convenient way to gamble but a relatively inefficient randomizer (Turner & Powell, 2007). The poor quality of randomization of cards makes card counting (Thorpe, 1966) and shuffle tracking (Patterson, 1990) possible, as well as several types of cheating such as stacking the deck (Asbury, 1938; Jillette & Lynn, 2005). Most modern table card and dice games were developed between 1600 and 1800 and are at least in part a result of the discovery of probability theory. Roulette may date back to the Roman age (Asbury, 1938), but a clear lineage for the game can be traced to the eighteenth century when a more sophisticated grasp of probability allowed for the development of a game that held the house edge to an incredibly small 2.6%. There are legends that the roulette wheel was invented by Blaise Pascal (Mlodinow, 2008, p. 86). Roulette was a huge advance in randomization, but even that game does produce some deviation from random chance if the wheel is not balanced correctly (Barnhart, 1992; Bass, 2001).

The American Mississippi and the Old West were hotbeds of gambling (see Asbury, 1938) and led to the creation of numerous types of gambling card games, which collectively are now called poker. These games were particularly popular during the 1880s (Schwartz, 2006).

The current dominance of gambling by machine games began in 1891 with the invention of an automatic poker machine designed to take advantage of the popularity of poker (Schwartz, 2006). The winners won from 1 to 4 cigars. In 1898, Charles Fey invented the first slot machine that paid out coins to the winner. The machines were banned in California in 1909 but survived as vending machines that dispensed gum and used symbols of fruits to represent the flavors of the gum that the player could win (Schwartz, 2006). Other machines paid off in trade rather than in cash or in cash with a payoff to the local police. These machines were “virally” popular. For example, by 1931 organized crime boss Frank Costello reportedly controlled

¹The name “blackjack” is a relatively new addition (see Arnold, 1978, p. 146), but the game is virtually the same as the game of 21 played in France, 200 to 300 years ago.

over 25,000 machines in New York City that took in more than 25 million dollars a year (Schwartz, 2006, pp. 331–332).

In the mid-1960s, mechanical slot games began to give way to electromechanical machines, which in turn were replaced by fully digital gambling machines by the mid-1980s (Ernkvist, 2009). Mechanical slots used gears and flywheels to create unpredictable outcomes; digital slot machines use a computerized random number generator (RNG) to determine the outcome. Mechanical randomization is never perfect and is dependent on initial conditions (Bass, 2001; Mlodinow, 2008). For example, if a person knows the location of the ball relative to the wheel when the ball is thrown, they can theoretically predict the outcome of the spin with enough accuracy to make a profit from roulette (see Bass, 2001). Dice made with holes to indicate the numbers have a bias in favor of larger numbers such as 6 because the side with the 6 is slightly lighter than its opposite side with only 1 hole. Casino dice avoid this problem by having the holes filled in with plastic. Nonetheless, unless dice are perfectly balanced, they may have some bias. Casinos tend to throw away dice after only a few uses because as they get worn, they start to show a slight bias.

Using a computer to generate random numbers would address most of the problems with mechanical randomizers. However, the pseudo RNG used in EGMs is not random—just very complex. The random number generator in fact runs in a fixed sequence based on Lehmer's congruential iteration that produces a very erratic sequence of numbers but always in the exact same order (Ernkvist, 2009; Kilby, Fox, & Lucas, 2004; Turner & Horbay, 2004). The sequence may run for four billion numbers before being repeated. However, if the machines relied just on the long and erratic sequence to protect their profit margin, the casinos and the suppliers of these machines would soon go broke. Although it might cost several million dollars, it would be possible for a player to track the machine, to uncover the code, and then to predict the next outcome with absolute certainty. If the player knew the RNG that was in use, it would only take a small segment of spins to crack the machine's code. To solve this problem, the RNG runs continuously so that the outcome the player get depends on the value of the RNG at the exact millisecond that the spin button is pressed. Note that this is a bit of a simplification because the EGM first has to receive the signal that the spin button has been pressed and then run the algorithm to obtain the current value of the RNG. The lag between the button press and reading the value from the RNG adds some additional uncertainty to the games' outcome. As a result of the combination of an erratic sequence of numbers and the uncertainty of the button press, the continuously running RNG makes electronic gambling machines perhaps closer to true random chance than any other form of gambling (see Ernkvist, 2009; Harrigan, 2007; Turner & Horbay, 2003). Up until the mid-1970s, gambling machines accounted for just over 30% of casino revenue in Nevada (Ernkvist, 2009). A number of innovations such as a continuously running RNG, virtual reels, multiline games, video gambling games, customer loyalty programs, bill acceptors, wide area progressive jackpots, and bonus features have emerged in the past 35 years and have established electronic gambling as the most profitable form of gambling today (Ernkvist, 2009). By the first decade of the twenty-first century, gambling machines dominated the floor in most North

American casinos and accounted for nearly 70% of casino revenue (Ernkvist, 2009; Canadian Partnership for Responsible Gambling, 2009).

This rapid change in technology has been paralleled by rapid changes in the academic acceptance of problem gambling as a concept worthy of scientific study. Very few studies on problem gambling were published prior to 1980. Today the field is a popular research topic and there are now four academic journals devoted to this one topic that jointly print over 100 articles per year on problem gambling. In addition, numerous studies are published in journals devoted to addiction, psychiatry, public health, and psychology.

This rapid change in technology has also been paralleled by rapid changes in the demographics of problem gamblers. During the 1980s when gambling was first officially recognized as a psychiatric disorder, most gamblers were men who played on table games or bet at the races (e.g., Custer & Milt, 1985). In more recent years, the majority of problem gamblers have had a problem with electronic gambling machines (Counter & Davey, 2006; Dorion & Nicki, 2001; Urbanoski & Rush, 2006). Furthermore, up until the 1990s, a very large portion of problem gamblers were male (Custer & Milt, 1985; Volberg, 2003). Electronic gambling has shifted the population of problem gamblers. Although males are still in the majority, there are now a substantial number of women who experience problems with gambling (Jackson, Thomas, Holt, & Thomason, 2005; Phillips, 2009; Volberg, 2003). Heater and Patton (2006) reported that half of the problem gamblers who contact the helpline in Manitoba were female (Heater & Patton, 2006). Urbanoski and Rush (2006) report that in Ontario by 2002, although females made up only 34% of the caseload in treatment for problem gambling, they accounted for 53% of slot machine players in treatment.

2.5 The Turbulent Relationship Between Religion and Gambling

The history of gambling is also tied to the history of religion. According to the ancient Egyptians, gambling was a gift from the god Thoth. Ancient peoples believed that by using some sort of random procedure such as casting lots, they could determine the will of God or predict the future. In addition to astragali, priests in the ancient world were remarkably good at finding random events from which to divine the future including reading the entrails of slaughtered beasts, coconut shells, broken eggs, feces and urine, rose petals, cracks in bones, tea leaves, the lines on a palm, astrological charts, and, more recently, tarot cards (Schwartz, 2006). Even today in India many prospective couples have their fortunes read in order to determine if the omens are in their favor.

In general, religions have had an ambivalent relationship with gambling. Polytheistic and animalistic religions typically accept gambling and often merge gambling with religious rites (Binde, 2007). In nearly all “religions is some sort of mechanism whereby the deity may be consulted and if willing make his (or her)

wishes known to the suppliant” (David, 1962, p. 13). Divination often involved the creation and reading of random events such as the patterns in the entrails of animals, egg shells, tea leaves, or astragali (David, 1962; Mlodinow, 2008; Schwartz, 2006). David argues that casting lots was a practical solution when dealing with a number of unknown gods:

To appease one was to offend the other, and the constant recourse to lot-casting, tali, and so on to probe the divine intent was a solution of a difficulty for which one has every sympathy (p. 19).

On the other hand, religions that claim a strict monopoly in matters concerning the divine and supernatural tend to have a critical attitude towards gambling. For Christianity, a negative attitude towards gambling was in part because dicing or lot-casting was seen as part of the Roman pagan religion that they were trying to replace (David, 1962). Islamic teachings tend to condemn gambling (Schwartz, 2006) and have taken what is probably the most consistent antigambling stance among modern religions. In spite of this condemnation, the conservative Islamic government of Iran uses a lottery to raise money (Mohseni, 2002). Binde (2007) notes that although gambling occurs frequently in Hindu mythology and is practiced by many people in India, religious authorities harshly condemn it, and most forms of gambling are today illegal in India.

Many religions have discouraged gambling or have tried to control it by limiting it to particular times of the year (e.g., festivals). For example, in the Roman republic, officials tried to curb the enthusiasm for gambling through restrictive laws, but during the year-end holiday of Saturnalia, those laws could be flouted with impunity. According to David (1962), the prohibitions against gambling other than during Saturnalia were repeatedly “renewed and ignored” (p. 7). Several emperors including Claudius and Augustus were well known for their gambling (David, 1962).

According to Schwartz (2006), in the Jewish tradition habitual dice players were not permitted to be magistrates or witnesses in courts. Nonetheless, during Hanukkah, a dreidel (a four-sided top) is used to celebrate the Maccabean revolt against Antiochus (Schwartz, 2006). According to Jewish tradition, Antiochus tried to stamp out the Jewish religion. People who were studying the Torah would play with a dreidel and claim to be gambling if caught.

Christians have also had a similar ambivalence towards gambling. Unlike the pagan Romans who consulted the god using random chance, for Christians such as St. Augustine,

Nothing happened by chance, everything being minutely controlled by the will of God. If events appear to occur at random, that is because of the ignorance of man and not in the nature of the events. Man's true endeavor was to discover and submit himself to the Divine Will, and not, presumably, to cloud this search by looking at patterns of behaviour in aggregates of events. (David, 1962, p. 26).

This indicates that Christianity was a marked departure from the pagan Romans in terms of their view of random chance. Christianity has warned against gambling, but its prohibition was almost always riddled with loopholes or just ignored (Schwartz, 2006, p. 33). The Roman Catholic Church does not view games of chance as sinful in themselves but only when played to excess so that they lead to

deprivation. The Puritans who settled in America were more stringently monotheist than their Catholic and Anglican counterparts. For them, God's will was completely beyond human comprehension. Yet this entailed a paradox: God's will, Divine Providence, is the attribute to which Puritans paid the most attention. Financial success, for example, was seen as divine providence, the reward for hard work and faith. Games of chance were thought sinful because they trivialized providence (Miller, 1939, pp. 10–11, 30; see also Winship, 1996).

Though other determinants were involved, protestant attitudes towards sin and redemption contributed to the emergence of Christian perfectionism and, in its wake, the antialcohol temperance movement (Schmidt, 1995; Warner, 2009). The temperance movement is of particular importance to the history of the relationship between religion and addiction, as well as the emergence of many disease conceptions of addiction that are still current—the basics of the dominant chronic disease conception of addiction were adopted (and promoted) by temperance in the nineteenth century when medicine was still on the fence (Cassedy, 1976; Levine, 1978). Perfectionism, of course, also took on a range of secular variants consistent with Enlightenment visions of human virtue (Rorabaugh, 1979). Still, the temperance movement was religiously oriented and dedicated initially to promoting moderation in beverages such as wine and beer and abstinence only from hard liquor. Later, complete abstinence in the use of all intoxicating liquor was advocated (Berk, 1974; Blocker, 1989; Encyclopedia Britannica, 2011; Tyrrell, 1979). Partly a reaction to the excessive use of distilled spirits (Warner, 2002), the earliest prominent temperance organizations were arguably founded at Saratoga, New York, in 1808 and in both Massachusetts and Connecticut in 1813 (Berk, 1974; Blocker, 1989; Encyclopedia Britannica, 2011; Fraser, 1985; Keller, 1942; Schmidt, 1995; Tyrrell, 1979). But the phenomenon was widespread and marked by groupings with varying degrees of formal organization (and clout). As Krout (1925) points out, an indicator of the movement's broad appeal was that in the early going, temperance organizations would be formed in different regions at roughly the same time yet without cooperation or even awareness of each other's existence.

Promoted by churches and often affiliated with woman's suffrage, abolition, and the so-called progressivist movement in general, the temperance movement spread rapidly across the USA and Canada (Blocker, 1989; Dorchester, 1884; Jaffe, 1981; Krout, 1925; Tyrrell, 1979). According to one estimate, by 1833, there were 6,000 local societies in the USA alone (Encyclopedia Britannica, 2011). People who joined the movement normally took the Temperance Pledge to refrain from drinking, though as already mentioned, the substance of the pledge would change over time (Blocker, 1989; Dorchester, 1884; Tyrrell, 1979). Temperance and abstinence became the objects of education and legislation in many regions. In addition, as will be reported in Chap. 4, the movement expanded its objectives to include other problematic behaviors including opiate use and gambling. The movement combined moral and political action and had an international scope. Temperance movements in the nineteenth century pushed initially for a greater understanding of the addicted person and an encouragement for them to take the Temperance Pledge, though their attitude did harden with drive for prohibition in the late nineteenth century (Levine, 1978).

One part of the overall movement of particular note for the current book was the Washingtonians who presaged many aspects of the mutual aid groups that exist today such as Alcoholics Anonymous (Blumberg & Pittman, 1991). Washingtonians promoted the idea of relying on each other and sharing their alcoholic experiences to keep each other sober. Though total abstinence from alcohol was their goal, it is worth noting that while most Washingtonians believed in God, such beliefs were not officially part of their doctrine—many Washingtonians were openly either atheist or agnostic. This short-lived organization fell apart perhaps due to a loss of focus as they expanded too broadly beyond their original goal. Infighting over religion and politics hastened to their demise—most notably disagreements over the need for faith and whether alcoholic beverages should be prohibited through legislation (which most members considered unduly punitive) (Krout, 1925; Pegram, 1998; Blumberg & Pittman, 1991). Our fifth chapter discusses both the Washingtonians and the larger temperance movement, with the former peaking in the 1840s and the later in the early twentieth century.

One overriding truism about the relationship between addiction and morality has been the occurrence of exaggeration and fear. Morally centered discussions of topics such as electronic gambling machines, comic books, rock and roll, crime rates, drug use, video games, immigration, prostitution, and Internet pornography have been marked by similar exaggerations and sometimes develop into moral panics (Cohen, 2002). A moral panic can be defined as an intensity of feeling of fear expressed in a population about an issue that some people believe threatens their social order (Jones & Jones, 1999). According to Cohen (1972), a moral panic occurs when a condition, episode, or group of people are defined as a threat to societal values and interests. A moral panic often involves concern or awareness that the target of the panic is likely to have a negative impact on society (Ben-Yehuda & Goode, 1994). The concern may be justified to some extent as is the case with excessive substance use or perhaps adolescents mimicking video games and, for example, engaging in street racing as a result. But a key feature of moral panic is exaggeration, excessive fear, and hence the overreaction in action advocated or taken. The targeted issue must generate some consensus among those concerned in order to organize the panic or action (against the target group or behavior). Those who spread the moral panics have been labeled *moral entrepreneurs* (Cohen, 1972); this role might be played by religious leaders, concerned parents, the media, or politicians hoping to capitalize on the stated fear in order to win votes. In addition, there must be hostility between mainstream society and the target group or behavior setting up a clear division between polite society (us) and the target group or behavior (them; Ben-Yehuda & Goode, 1994). The fear and the action taken or advocated by those who fear are disproportionate to the threat posed by the feared group or behavior (Cohen, 1972). In addition, moral panics are often volatile and may disappear as quickly as they appear (Jones & Jones, 1999). However, moral panics involving addictive behaviors have reoccurred frequently. As will be seen in this book, the history of rhetoric about addiction is often the history of various moral panics over some form of intoxicating substance or behavior (in this case gambling).

2.6 Gambling, Problem Gambling, and Professional Gambling

Gambling may be an intrinsic aspect of the human condition. It is unlikely that humans would dominate the planet today if not for our willingness to take risks for the possibility of gain. The thrill that many people get from taking risks may be an important part of our ancestry. Gambling games are a culturally limited form of risk taking that typically does not involve any real threat to one's life or health. As a pastime, gambling is not universal—but according to Schwartz (2006), it is easier to list the cultures which do not engage in gambling than to list those that do.

The possibility of problem gambling also appears to be a common weakness in human nature. An examination of historical literature suggests that problem gambling was known, but no systematic examination of the issue occurred until the nineteenth century. As mentioned, in Jewish law, habitual dice players were not permitted to serve as magistrates (Schwartz, 2006). However, it is unclear if this was directed at players who were habitual because of compulsion or at professional players who took advantage of the weaknesses of others. Given that the astragali of the time were most often unbalanced, both professional and problem gamblers may well have existed.

In the Hindu book *The Mahabharata*, Yudhishtira gambles away his entire kingdom, his freedom, and finally his wife's freedom (Schwartz, 2006), suggesting Yudhishtira had a rather severe gambling problem. Another Hindu poem describes gambling as "open theft" (Schwartz, 2006, p. 15)—more in line with the professional gambler than the problem gambler.

Gambling problems have been the target of church sermons (Bernhard, 2008) and fiction (Dostoyevski, 1996/1866; Flavin, 2003). Gambling has consistently been a popular topic for myths, books, songs, poems, operas, and, more recently, films (Dement, 1999; Turner, Fritz, & Zangeneh, 2007). An examination of these works of art suggests that people have long been aware of the potential for problems with gambling. For example, *Carmina Burana* by Carl Orff (1994) is based on medieval songs dating from approximately 1230 that portray "the wheel of fortune" (fate) and the uncertainties of life. The idea of the wheel as described in *O Fortune* is itself an early version of the gamblers fallacy. A wheel turns in a rather nonrandom manner. According to these songs, if a person has been dragged down into the mud and water at the bottom of the wheel, there is a strong possibility that their fortune could improve. Conversely, someone at the top of their success is due for a fall. Another song, *The Tavern*, describes excessive gambling where some people lose even their clothing. Similarly in the fourteenth-century *Canterbury Tales*, Geoffrey Chaucer (1993) included the Pardoner's Tale that describes how excessive drinking, gambling, and swearing are certain paths to death. The *Rake's Progress*, a series of paintings by William Hogarth, depicts the decline and fall of Tom Rakewell, the spendthrift son and heir of a rich merchant, who comes to London; wastes all his money on luxurious living, prostitution, and gambling; and as a consequence is imprisoned in the Fleet Prison and ultimately Bedlam (Wikipedia, 2010). Tchaikovsky's *Queen of Spades* (1993) was first performed in 1890 and was based

on an 1833 short story by Alexander Pushkin. The opera depicts a man obsessed with finding a system to beat the game of faro. These works of art suggest that people were aware of problem gambling, but the treatment of the topic tended to be moralistic rather than scientific.

Significantly, the theme of compulsion was often applied inconsistently, or not at all. While there has long been some awareness of what we might call “addiction,” notably with respect to alcohol, for centuries, such awareness was not systematic (Ferentzy, 2001; Levine, 1978; Warner, 1994). An interesting feature (from our point of view) of much of the older gambling literature is that it rarely separates the problem gambler from the professional gambler. For example, in an examination of sermons from the eighteenth and nineteenth centuries, Bernhard (2008) found instances where gamblers were described as cheats and criminals, but it is unclear if this refers to problem gamblers cheating in desperation or professional gamblers using gambling to defraud other players. Similarly, some of the “gamblers” in Asbury’s (1938) book were clearly problem gamblers (e.g., John “bet a million” Gates), some were clearly professional casino managers (e.g., Richard Canfield), but others were a confused mix of the two (e.g., Canada Bill). The confused blend of professional and problem gambling may have been a reality in the gambling scene prior to the twentieth century. A remarkable number of the people Asbury describes making a living from gambling such as casino owners ended up losing whatever they had earned through gambling. The clearer separation between the problem and the professional gambler that we have today may be in part a result of the refinements in probability theory and the commercialization of gambling in the twentieth century. A clear understanding of probability makes it much easier to make a consistent profit from the games one is running.

A more focused approach to compulsion began to take hold in the eighteenth and nineteenth centuries. Prototypical versions of a disease conception of substance addiction can be found in sermons dating back to the eighteenth and seventeenth centuries (Levine, 1978; Warner, 1994). Hard drinking was thought, for example, to get worse over time. In current terminology, drunkenness was derided as “progressive.” Yet this involved a conception of sin in general, applying to behaviors such as swearing and adultery (Ferentzy, 2001). So the current situation, wherein PG and substance abuse are understood with similar concepts, is not entirely novel. Bernhard (2008) was able to find examples of all ten of the DSM-IV symptoms for pathological gambling in sermons from the eighteenth and nineteenth centuries. There are some explicit references to gambling as a disease from the nineteenth century (Flavin, 2003; Asbury, 1938) and a hymn from 1905 compares gambling to leprosy (Flavin, 2003, pp. 222–223). This hymn is of particular note because it depicts gambling as contagious.

Current disease conceptions of addiction stem largely from the political and medical attention given to alcohol in the nineteenth and early twentieth centuries. Chronic drunkenness—whether labeled dipsomania or inebriety—was the prototypical “addiction,” followed by other substance addictions, and then a host of compulsive behaviors (Levine, 1978; Reinarman, 2005). For example, when Levenstein (1878a/1981, 1878b) discussed morphine withdrawal in the late nineteenth century,

he compared it to alcoholic delirium tremens rather than to withdrawal from opium—which was already well known and obviously more similar. More recently, a similar addiction model has come to target a range of behaviors (Carnes, 1983; Griffiths, 1996; Miller, 1980; Orford, 1985), with pathological gambling often portrayed as an addiction (Brown, 1991; Griffiths, 2005; Jacobs, 1986). Hence, it should not be surprising that efforts to tackle problem gambling often adopt ideas and practices from the substance abuse field. Arguably the label “disease,” when applied to addictions, has varied from metaphoric use to strictly literal. Peele (1989, 2003), for example, has questioned the literal veracity of labeling addictions as diseases. Szasz (1973, 1974) has explicitly invoked the notion of metaphor to disparage the disease status of both mental illness and addiction. This raises questions pertaining to what exactly it might mean to ask whether addictions are literally or metaphorically diseases.

2.7 The Meaning of Metaphor

While debates over the literal veracity of behavioral disease conceptions abound (Barham, 1984; Fingarette, 1988; Flavin & Morse, 1991; Meyer, 1994; Peele, 1989, 2000, 2003; Schaler, 1998, 2000; Szasz, 1973, 1974), we are not aware of any attempt to address this topic with a sound grasp of the distinction between the metaphoric and the literal. It is our intention to lay such a foundation before proceeding further.

Human language permits a considerable degree of flexibility in as much as the message conveyed can often differ from the exact literal meaning of the words. For the purpose of this discussion, we will use a standard dictionary definition of literal meaning. According to the Merriam-Webster Dictionary (Woolf, 1974), literal meaning can be defined as “adhering to fact or to the ordinary or usual meaning (as of a word)” (pg. 410). According to one linguistic tradition, the standard pragmatic model (Searle, 1979), the meaning of a sentence that is intended literally is the same as the expressed meaning of the words in the sentence (Searle, 1979). For example, consider the following:

1. The cat is on the mat.

The word “cat” refers to a small furry animal, and “mat” refers to a small floor covering. The words “is on” indicate the location of the animal relative to the floor covering. Conversely, in a figurative sentence, the expressed meaning differs from the exact meaning:

2. My job is a jail.

The word “jail” does not refer to a prison but uses characteristics of the concept signified by “jail” to express a sense of confinement. According to Searle’s (1979) standard pragmatic model, literal sentences take the form of S is P, where S is the subject and P is the predicate. In literal sentences, the literal meaning (P) is also the

intended meaning or referent (R). However, in a metaphoric sentence, the literal meaning (P) is not the intended meaning (R). For example, “Sam is a pig” could be used to describe a pig named Sam, but similar phrases involving a name and the predicate “pig” are more often used to indicate that the person identified as the subject of the sentence, named “Sam” (S), is filthy or gluttonous (R). The pragmatic interpretation based on familiarity, context, and word usage would favor a nonliteral reading of the sentence. Often the literal meaning would not make sense in the context, or would be an inappropriate use of the word. For example, a jail is a type of location, whereas a job is not a location. Similarly, pigs are not usually given human names. The conflict between the context and the word usage is a signal that alerts the reader to the fact that the sentence is not intended literally (Ortony, Schallert, Reynolds, & Antos, 1978; Turner & Katz, 2003). In addition, when a word is used metaphorically, it is sometimes used as a different part of speech than when it is used literally (Deignan, 2005; e.g., “dog” is a literal noun, whereas “dogged” is a metaphoric verb).

A metaphor sometimes assumes the structure of “S is a P” but may also take many different forms (e.g., “Sam the pig”; “That pig, Sam”). In addition, there are actually a variety of different figures of speech, each of which is characterized by using a word, phrase, or sentence to convey a nonliteral meaning. These include simile, analogy, metonym, personification, idiom, synecdoche, and proverb (Turner, 1995). Many of these figures of speech use metaphors or are types of metaphors (Lakoff, 1987; Lakoff & Johnson, 1980; Turner, 1995; Turner & Katz, 2003). A simile, for example, is a metaphor in which the nonliteral intention of the sentence is made explicit by including the word “as” or “like.” This hedge weakens the strength of the statement but makes the metaphor easy to understand. For example, “Sam acts like a pig” implies that Sam is not actually a pig and also provides some indication of the particular “piglike” features that are intended. Metaphors are stronger statements about the subject of the sentence than similes; Sam is not merely *like a pig*; Sam *is a pig*. This strength comes with the risk that the meaning may not be as clear. An analogy is typically an explicit comparison, more like a simile, that is more structurally complex and involves the mapping of multiple features from predicate to subject. An idiom (see Gibbs, 1980, 1986) is a figure of speech that is so well known that it is understood directly without the reference to the underlying metaphor (e.g., “kicked the bucket” = died). Other related forms of figurative language include personification, proverbs, metonym, and synecdoche.

It has been argued that the standard pragmatic model implies a two- or three-stage analysis of metaphor interpretation wherein the first interpretation is literal, the literal meaning is later rejected, and finally the metaphoric meaning is extracted (Ortony et al., 1978; Turner & Katz, 2003). It has been argued that if metaphors were understood in two or three stages, then it should take longer to understand a sentence used figuratively than one used literally (Ortony et al., 1978). Turner and Katz (2003) found that this was the case with unfamiliar proverbs, but not with familiar proverbs. The standard pragmatic model appears to break down when one deals with very familiar metaphors or idioms. Studies by Ortony et al. (1978) and

Glucksberg (2003) have shown that people can understand metaphors as quickly as literal language. In addition, Gibbs (1980, 1986) and others have shown that idioms are understood more quickly when used in their conventional figurative sense than in their literal sense. The issue of literal versus figurative meaning is often obscured in the use of common metaphors or idioms. The use of “pig” to describe persons is so common that on hearing the sentence, “Sam is a Pig,” many readers would assume that Sam was filthy or gluttonous rather than a farm animal.

Many consider metaphor a device of the poetic imagination, part of extraordinary rather than ordinary language. However, Lakoff and Johnson (1980) have shown that metaphors are pervasive in everyday life—not just in poetry but in ordinary language, thought, and action (Lakoff & Johnson, 1980). They have argued that the human conceptual system is fundamentally metaphorical. Consider the following:

- I am feeling up.
- That boosted my spirits.
- You are in high spirits.
- I am feeling down.
- I fell into a depression.

Each of these uses a directional metaphor (in *italics*) to describe moods that can be summarized as *Happy is up*; *Sad is down*. The last example includes the word depressed and is particularly relevant to the current discussion. The mental disease “depression” is named in a manner consistent with this directional metaphor.

Lakoff and Johnson (1980) catalogued several such families of metaphors, showing how they underlie a large number of ideas. Lakoff (1987) expanded this study into a more general account of how we categorize and make sense of the world. Far from being rare, poetic devices and metaphors are fundamental to conceptualization (Lakoff & Johnson, 1980). Nonmetaphorical thought is for Lakoff only possible when we talk about purely physical reality. As a result, conceptual metaphors typically are about physical position (up vs. down) or containment (in vs. out). The greater the level of abstraction of an idea, the more layers of metaphor are required to express it. People normally do not notice these metaphors, as they are very familiar and integral to ordinary language. Lakoff (1987) has argued not only that our conceptual system is fundamentally based on metaphors but also that the mind is, essentially, *embodied*: almost all of human cognition, including abstract reasoning, depends on and makes use of such concrete and “low-level” referents rooted in the sensorimotor system and the emotions (see also Lakoff & Johnson, 1999). A key aspect of this argument is that people are not normally aware of the metaphoric basis of much of their language, categorization, and reasoning. *If Lakoff and Johnson are right, then it is understandable that so-called mental and behavioral diseases borrow terms originally applied to biological ailments—this would just be another example of thought proceeding from the physical toward the more abstract.*

Lakoff and Johnson’s (1980) theory has been criticized by some psychologists who argue that the metaphoric root is not automatically accessed when reading an

instance of a conceptual figure of speech (Keysar & Bly, 1995; Keysar, Shen, Glucksberg, & Horton, 2000). However, the importance of Lakoff and Johnson's (1980) work is not their specific theory but the incredibly rich fabric of metaphors in conventional language that they have revealed. More recent linguistic analysis (Deignan, 2005; Steen, 2007) confirms the importance of metaphor in language. Deignan (2005), for example, includes a number of words that are used figuratively more often than they are used literally and observes that some verbs are only used as metaphors (e.g., *dogged*).

Metaphors are used for a number of reasons. For example, metaphors can be used to make a text more interesting or more colorful. Metaphors can provide a means of communicating complex ideas (e.g., "the atom is like a planetary system"), communicating one's feelings about a topic (e.g., "it is as hot as hell"), or obscuring the intended meaning as is often done in many creative poems. An important aspect of the motivation behind metaphors is that it is easier to understand and remember things that are grounded in physical experience (Paivio, 1986). Metaphors and analogies are often used to help people understand and organize information about unfamiliar and abstract ideas (Lakoff & Johnson, 1980; Turner, 1995; Turner & Katz, 2003). Metaphor actually belongs to a family of mental shortcuts which also includes mental models (Johnson-Laird, 1983, 1989), mental imagery (Paivio, 1986), heuristics (Kahneman & Tversky, 1982), and analogy (Gentner, 1983). All of these are employed to concretize, organize, and simplify the world. These shortcuts can be useful, but reliance on them can lead to errors in reasoning (Johnson-Laird, 1983, 1989; Kahneman & Tversky, 1982). The most important mental trap for metaphors is that the choice of a metaphoric vehicle downplays features inconsistent with the metaphor (Lakoff, 1987).

Although scientific reasoning attempts to define ideas using empirical methods, scientific models are derived in a manner quite similar to other mental models: a simplification and concretization of abstract ideas. For example, both Newton's particle theory of light and Maxwell's wave theory of light (see Coren & Ward, 1989, p. 58) use designations borrowed from common experience to explain some properties of electromagnetic radiation. During the nineteenth century, these two models were in competition with each other for dominance. These metaphors are still current, however, not only because of the clarity they provide but also because they facilitate predictions regarding the properties of light.

Though useful, metaphor can become a hindrance if we accept it too strongly. Metaphors reveal some aspects of a subject domain but hide others. For example, calling Sam a pig reveals perhaps that the person in question eats too much, is greedy, or is filthy. However, Sam could be a respected teacher, a loyal friend, or a skilled mathematician. Part of the reason that both Newton's particle theory of light and Maxwell's wave theory of light (see Coren & Ward, 1989, p. 58) are still in use today is that the features hidden by the particle theory are revealed by the wave theory, and vice versa. It is therefore important to examine both aspects of a metaphoric categorization: what it reveals and what it hides.

2.8 Metaphoric Categorization and the Disease Model

What a metaphor reveals and what it hides depends on the prototype used. Consider, for example, the following statements: (1) a duck is a bird, (2) a penguin is a bird, and (3) a plane is a bird. The third example is clearly metaphor. According to both Lakoff (1987) and Glucksberg (2003), categorization is defined not by comparison with an abstract concept but by reference to a prototype or exemplar. For the category “bird,” the prototype might be a type of song bird called a robin. In essence, identifying a member of a category is a comparison of that member to the prototype: (1) a duck is a robin, (2) a penguin is a robin, and (3) a plane is a robin. Here it is clear that all three are dependent on the nature of the prototype. The plane is still understood through metaphor, but even the example of the duck could be viewed as metaphoric.

The issue of whether addictions are literally or metaphorically diseases can hinge on the many definitions and the selected prototypes for the category “disease.” As mentioned, categories (both literal and figurative) reveal some things and hide others. To draw a link between a duck and a robin emphasizes some features such as eggs, feathers, and nests but hides the differences in habitats (trees vs. ponds), sounds (chirps vs. quacks), and size (small vs. medium). If the receiver of a message were only familiar with song birds such as robins, after hearing the sentence “a duck is a bird,” he or she might mistakenly assume that the duck is a song bird. This issue is a particularly troublesome when people use a familiar metaphor that they may not realize is a metaphor. When metaphors become too familiar, people cease to see them as metaphors and instead understand them directly as if they were literal sentences (Gibbs, 1980; Turner & Katz, 2003). The addiction as a chronic disease metaphor has in fact become so familiar that it is now itself used as a metaphor for numerous other behavior disorders. As mentioned, metaphors help us to understand and organize information about the unfamiliar. We use familiar and literal categories to make sense of unfamiliar and abstract ideas (Turner, 1995; Turner & Katz, 1997, 2003). While a metaphor can enhance understanding, it can become a hindrance if we fail to apply some critical acumen to the issue. This can be especially troublesome when attempts are made to merge popular conceptions with scientific categories, and disease conceptions of addiction have evolved in conjunction with a practical and experience-based method of recovery known as the Twelve-Step program offered originally by Alcoholics Anonymous (AA) and later by Gamblers Anonymous (GA).

It is our contention that the question—“Is pathological gambling literally or only metaphorically a disease?”—raises a moot point because both literal and figurative meanings are founded on categorization by prototypes. Calling it a metaphoric categorization in no way diminishes its significance. So medical science that addresses addictions, including pathological gambling, can be properly scientific despite its reliance on metaphors. However, it is important to examine the nature of the prototypes (literal or figurative) that underlie the disease models in order to examine what the prototypes reveal and what they hide. This in turn may give us a

different perspective on some of the controversies haunting our field. It could be argued that alcoholism and problem gambling are only metaphorically diseases. But as Lakoff and Johnson (1980) have argued persuasively, all abstractions—including those aimed at physical diseases and mental disorders (e.g., depression)—are founded on metaphors. While it can be argued that much of scientific discourse is based on definitions, not prototypes, even in such cases, the starting point would have to be a certain conception of disease. Those who argue for or against the “disease model” will have a particular prototypical disease or set of diseases in mind. If the issue were exclusively about definition, arguments could just as easily be about what type of disease it was rather than whether it is a disease at all. No matter how we categorize problem gambling (disease, disorder, public health problem, etc.), the reality is that people who suffer from the disorder do indeed suffer and that helping professionals can often alleviate their distress. The more important questions for this book involve the following: when a science links categories such as addictions and diseases, what aspects of the predicate of the sentence (e.g., disease) are being attributed to the subject of the sentence (e.g., addiction)? What, in essence, does it reveal about the affliction and what does it hide? We will return to this question in the final chapter.

In this book, we explore the history of ideas about problem gambling and where problem gambling fits into a larger conception of health. We focus on two aspects of this history: (1) the nature and origins of the terms and concepts currently applied to problem gambling and (2) the history of how these terms and concepts have changed, remained constant, or, more often, changed in ways subtle enough to require learned clarification.

References

- American Psychiatric Association [APA]. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.
- Arnold, P. (1978). *The encyclopedia of gambling: The game, the odds, the techniques, the people and places, the myths and history*. Glasgow: Collins.
- Asbury, H. (1938). *Sucker's progress: An informal history of gambling in America from the Colonies to Canfield*. New York: Thunder Mouth Press.
- Bag, A. K. (1966). Binomial theorem in ancient India. *Indian Journal of History of Science*, 1, 68–74. Retrieved 16-juin-11, from http://www.new1.dli.ernet.in/data1/upload/insa/INSA_1/20005aef_68.pdf.
- Barham, P. (1984). *Schizophrenia and human value*. New York: Basil Blackwell.
- Barnhart, R. T. (1992). *Beating the wheel: Winning strategies at roulette*. New York: Carol Publishing Group.
- Bass, T. (2001). *The eudaemonic pie*. Lincoln, NE: Authors Guild (backprint edition).
- Ben-Yehuda, N., & Goode, E. (1994). *Moral panics: The social construction of deviance*. Oxford: Blackwell.
- Bergler, E. (1943). The gambler: A misunderstood neurotic. *Journal of Criminal Psychopathology*, 4, 379–393. Reported in Selected Papers of Edmund Bergler, M.D. 1933–1961. New York: Grune and Stratton, 1969.
- Bergler, E. (1957). *The psychology of gambling*. New York: Hill and Wang.

- Berk, S. E. (1974). *Calvinism versus democracy: Timothy Dwight and the origins of American evangelical orthodoxy*. Hamden: Archon Books.
- Bernhard, B. (2008). *Social responsibility matters: Historical and anthropological perspectives on culpability and gambling*. A paper presented at the Alberta Gaming Research Institute's 7th Annual conference, Banff, AB.
- Binde, P. (2007). Gambling and religion: Histories of concord and conflict. *Journal of Gambling Issues*, (20), June. <http://www.camh.net/egambling/issue20/03binde.htm>.
- Blocker, J. (1989). *American temperance movements: Cycles of reform*. Boston: Twain Publishers.
- Blumberg, L. U., & Pittman, W. L. (1991). *Beware the first drink! The Washington temperance movement and alcoholics anonymous*. Seattle: Glen Abbey.
- Bronowski, J. (1973). *The Ascent of Man*. London: British Broadcasting Corporation.
- Brown, I. (1991). Gaming, gambling and other addictive play. In J. Kerr & M. Apter (Eds.), *Adult play: A reversal theory approach* (pp. 101–118). Amsterdam: Swets & Zeitlinger.
- Canadian Partnership for Responsible Gambling. (2009). *Canadian gambling digest 2007–2008*. Downloaded December 30, 2010, from <http://www.cprg.ca/digest.cfm>.
- Carnes, P. (1983). *Out of the shadows: Understanding sexual addiction*. New York: CompCare.
- Cassedy, J. (1976). An early American hangover: The medical profession and temperance 1800–1860. *Bulletin of the History of Medicine*, 50, 405–413.
- Chaucer, G. (1993) *The Canterbury Tales*. A complete translation into modern english. Translated into English by R.L. Ecker & E.J. Crook. Hodge & Braddock Publishers. Downloaded October 28, 2008, from <http://www.ronaldecke.com/ct.htm>.
- Cohen, S. (1972). *Folk devils and moral panics*. London: MacGibbon and Kee.
- Cohen, S. (2002). *Folk devils and moral panics* (3rd ed.). London: Routledge.
- Coren, S., & Ward, L. M. (1989). *Sensation and perception* (3rd ed.). San Diego: Harcourt Brace Jovanovich, Publishers.
- Counter, A., & Davey, B. (2006). *What is the Ontario Problem Gambling Helpline (OPGH)?* Paper presented at the 2006 conference of the Responsible Gambling Council (Ontario), Toronto. Retrieved July 16, 2008, from http://www.rgco.org/articles/anne_counter_brad_davey_discovery_2006.pdf.
- Custer, R., & Milt, H. (1985). *When luck runs out*. New York: Facts on File.
- David, F. N. (1962). *Games, gods, and gambling: A history of probability and statistical ideas*. New York: Hafner.
- Deignan, A. (2005). *Metaphors and corpus linguistics*. Amsterdam: John Benjamins Publishing Company.
- Dement, J. W. (1999). *Going for broke: The depiction of compulsive gambling in film*. Lanham, MD: The Scarecrow Press.
- Dixon, D. (1991). *From prohibition to regulation: Bookmaking, anti-gambling and the law*. London: Clarendon.
- Dorchester, D. (1884). *The liquor problem in all ages*. New York: Phillips & Hunt.
- Dorion, J. P., & Nicki, R. M. (2001). Epidemiology of problem gambling in Prince Edward Island: A Canadian microcosm. *Canadian Journal of Psychiatry*, 46, 413–417.
- Dostoyevski, F. (1996). *The gambler* (C. Garnett, Trans.). New York: Dover Publications. (Originally published 1866).
- Encyclopedia Britannica. (2011). *Temperance movement*. Accessed on line June 7, 2011, from <http://www.britannica.com/EBchecked/topic/586530/temperance-movement>.
- Ernkvist, M. (2009). *Creating player appeal*. Göteborg, Sweden: University of Gothenburg.
- Ferentzy, P. (2001). From sin to disease: Differences and similarities between past and current conceptions of chronic drunkenness. *Contemporary Drug Problems*, 28, 363–390.
- Fingarette, H. (1988). *Heavy drinking: The myth of alcoholism as a disease*. Berkeley: University of California Press.
- Flavin, M. (2003). *Gambling in the nineteenth-century English novel: A Leprosy is o'er the Land*. Brighton: Sussex Academic Press.
- Flavin, D., & Morse, R. (1991). What is alcoholism? Current definitions and diagnostic criteria and their implications for treatment. *Alcohol Health and Research World*, 15, 266–272.

- Fraser, J. W. (1985). *Pedagogue for God's kingdom: Lyman Beecher and the second great awakening*. London: University Press of America.
- Freud, S. (1961). Dostoevsky and parricide (1928). In J. Strachey (Ed. & Trans.), *Standard edition of the complete psychological works of Sigmund Freud* (Vol. XXI, pp. 175–196).
- Gentner, D. (1983). Structure-mapping: A theoretical framework for analogy. *Cognitive Science*, 7, 155–170.
- Gibbs, R. W. (1980). Spilling the beans on understanding and memory for idioms in conversation. *Memory and Cognition*, 8, 149–156.
- Gibbs, R. W. (1986). Skating on thin ice: Literal meaning and understanding idioms in conversation. *Discourse Processes*, 9, 17–30.
- Glucksberg, S. (2003). The psycholinguistics of metaphor. *Trends in cognitive sciences*, 7(2), 92–96.
- Griffiths, M. (1996). Behavioural addiction: An issue for everybody? *Employee counselling today: The Journal of Workplace Learning*, 8, 19–25.
- Griffiths, M. (2005). A 'components' model of addiction within a biopsychosocial framework. *Journal of Substance Use*, 10, 191–197.
- Hargrave, C. P. (1966). *A history of playing cards and a bibliography of cards and gaming*. New York: Dover.
- Harrigan, K. A. (2007). Slot machine structural characteristics: Distorted player views of payback percentages. *Journal of Gambling Issues*, 20, 215–234.
- Heater, J., & Patton, D. (2006). Gender differences in problem gambling behaviour from help-line callers. *Journal of Gambling Issues*, 16.
- Higgins, P. (2008). *Number story: From counting to cryptography*. New York: Copernicus.
- Jackson, A. C., Thomas, S. A., Holt, T. A., & Thomason, N. (2005). Change and continuity in a help-seeking problem gambling population: A five-year record. *Journal of Gambling Issues*, 13. Retrieved January 24, 2006, from http://www.camh.net/egambling/issue13/jgi_13_jackson.html.
- Jacobs, D. (1986). A general theory of addiction: A new theoretical model". *Journal of Gambling Behavior*, 2, 15–31.
- Jaffe, A. (1981). *Addiction reform in the Progressive Age: Scientific and social responses to drug dependence in the United States*. New York: Arno Press.
- Jillette, P., & Lynn, M. D. (2005). *How to cheat your friends at poker: The wisdom of Dickie Richard*. New York: St. Martin's Press.
- Johnson-Laird, P. N. (1983). *Mental models: Towards a cognitive science of language, inference, and consciousness*. Cambridge, MA: Harvard University Press.
- Johnson-Laird, P. N. (1989). Mental models. In M. I. Posner (Ed.), *Foundations of cognitive science* (pp. 469–499). Cambridge, MA: A Bradford Book.
- Jones, M., & Jones, E. (1999). *Mass media*. London: Macmillan Press.
- Kahneman, D., & Tversky, A. (1982). Judgement under uncertainty: Heuristics and biases. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), *Judgement under uncertainty* (pp. 3–22). Cambridge: Cambridge University Press.
- Keller, C. R. (1942). *The second great awakening in Connecticut*. New Haven: Yale University Press.
- Keysar, B., & Bly, B. (1995). Intuitions of the transparency of idioms: Can one keep a secret by spilling the beans? *Journal of Memory and Language*, 34, 89–109.
- Keysar, B., Shen, Y., Glucksberg, S., & Horton, W. (2000). Conventional language: How metaphorical is it? *Journal of Memory and Language*, 43, 576–593.
- Kilby, J., Fox, J., & Lucas, A. F. (2004). *Casino operations management* (2nd ed.). New York: Wiley.
- Krout, J. A. (1925). *The origins of prohibition*. New York: Knopf.
- Lakoff, G. (1987). *Women, fire and dangerous things: What categories reveal about the mind*. Chicago: The University Press.
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.

- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to Western thought*. New York: Basic Books.
- Levenstein, E. (1878a). *Morbid craving for morphia*. New York: Arno Press (1981).
- Levenstein, E. (1878b). Delirium tremens: A symptom of morbid craving for morphia. *Quarterly Journal of Inebriety*, 2, 217–220.
- Levine, H. (1978). The discovery of addiction: Changing conceptions of habitual drunkenness in America. *Journal of Studies on Alcohol*, 39, 143–174.
- Meyer, R. E. (1994). Toward a comprehensive theory of alcoholism. In T. F. Babor, V. Hesselbrook, R. E. Meyer, & W. Shoemaker (Eds.), *Types of alcoholics: Evidence from clinical, experimental, and genetic research* (pp. 238–250). New York: New York Academy of Sciences.
- Miller, P. (1939). *The New England mind: The seventeenth century*. Boston: Beacon.
- Miller, W. (1980). *The addictive behaviors*. Oxford: Pergamon Press.
- Mlodinow, L. (2008). *The Drunkard's walk: How randomness rules our lives*. New York: Vintage Books.
- Mohseni, R. (Producer & Director). (2002). *Iranian lottery* [Documentary Film]. Iran: AzersamFilms. http://www.raminmohseni.com/iranian_lottery.htm.
- Orff, C. (1994). *Carmina Burana* [Opera]. Directed by Leonard Slatkin. United States: BMG Music.
- Orford, J. (1985). *Excessive appetites: A psychological view of the addictions*. Chichester: Wiley.
- Ortony, A., Schallert, D., Reynolds, R., & Antos, S. (1978). Interpreting metaphors and idioms: Some effects of context on comprehension. *Journal of Verbal Learning and Verbal Behavior*, 17, 465–477.
- Paivio, A. (1986). *Mental representations: A dual coding approach*. New York: Oxford University Press.
- Patterson, J. (1990). *Blackjack: A winner's handbook*. New York: Perigee Books.
- Peele, S. (1989). *Diseasing of America: Addiction treatment out of control*. Lexington, MA: Lexington Books.
- Peele, S. (2000). A prototypical case of alcoholism treatment and coercion: G. Douglas Talbott. In S. Peele, C. Buffe, & A. Brodsky (Eds.), *Resisting 12-step coercion: How to fight forced participation in AA, NA, or 12-Step treatment* (pp. 143–153). Tucson, AZ: See Sharp Press.
- Peele, S. (2003). Is gambling an addiction like drug and alcohol addiction? Developing realistic and useful conceptions of compulsive gambling. In G. Reith (Ed.), *Gambling: Who wins? Who loses?* (pp. 208–220). Amherst, NY: Prometheus Books.
- Pegram, T. R. (1998). *Battling Demon Rum: The struggle for a Dry America, 1800–1933*. Chicago: Ivan R. Dee.
- Phillips, B., (2009). *A focus on problem gambling: Results of the 2006/07 New Zealand Health Survey*. Wellington, New Zealand: Ministry of Health. Available at <http://www.moh.govt.nz>.
- Reinarman, C. (2005). Addiction as accomplishment: The discursive construction of disease. *Addiction Research and Theory*, 13, 307–320.
- Reith, G. (1999). *The age of chance: Gambling and western culture*. New York: Routledge.
- Rorabaugh, J. (1979). *The alcoholic republic: An American tradition, 1790–1840*. New York: Oxford University Press.
- Rose, I. N. (1991). The rise and fall of the third wave: Gambling will be outlawed in forty years. In W. Eadington & J. Cornelius (Eds.), *Gambling and public policy* (pp. 65–86). Reno, University of Nevada: Institute for the Study of Gambling & Commercial Gaming.
- Schaler, J. (1998). Drugs and free will. In J. A. Schaler (Ed.), *Drugs: Should we legalize, decriminalize or deregulate?* (pp. 235–248). New York: Prometheus.
- Schaler, J. (2000). *Addiction is a choice*. Chicago: Open Court.
- Schmidt, L. A. (1995). A battle not man's but God's: Origins of the American temperance crusade in the struggle for religious authority. *Journal of Studies on Alcohol*, 56, 110–121.
- Schwartz, D. (2006). *Roll the bones*. New York: Gotham Books.
- Searle, J. (1979). Metaphor. In A. Ortony (Ed.), *Metaphor and thought* (pp. 92–123). Cambridge: Cambridge University Press.

- Skolnick, J. H. (2003). Regulating vice: America's struggle with wicked pleasure. In G. Reith (Ed.), *Gambling: Who wins? Who loses?* (pp. 311–321). Amherst, NY: Prometheus Books.
- Steen, G. J. (2007). *Finding metaphor in grammar and usage*. Amsterdam: John Benjamins Publishing Company.
- Szasz, T. (1973). Mental illness as a metaphor. *Nature*, 242, 305–307.
- Szasz, T. (1974). *Ceremonial chemistry: The ritual persecution of drugs, addicts, and pushers*. Garden City: Anchor.
- Tchaikovsky, P. I. (1993). *Pique Dame: The Queen of Spades*. Conducted by V. Gergiev. Russia: Philips.
- Thorpe, E. O. (1966). *Beat the dealer: A winning strategy for the game of twenty-one* (2nd ed.). New York: Vintage Books.
- Turner, N. E. (1995). *The role of literal meaning in proverb comprehension*. Doctoral dissertation, the University of Western Ontario, London in partial completion of a Ph.D. in Cognitive Psychology.
- Turner, N. E., & Ferentzy, P. (2010). The natural life history of a lottery: The importance of large wins in the establishment and survival of a lottery. *International Gambling Studies*, 10(1), 19–30.
- Turner, N. E., Fritz, B., & Zangeneh, M. (2007). Images of gambling in film. *Journal of Gambling Issues*, 20, 117–144.
- Turner, N. E., & Horbay, R. (2003). Doubling revisited: The mathematical and psychological effect of betting strategy. *Gambling Research*, 15, 16–34.
- Turner, N. E., & Horbay, R. (2004). How do slot machines and other electronic gambling machines actually work? *Journal of Gambling Issues*, (11), 10–50. <http://www.camh.net/egambling/issue11/index.html>.
- Turner, N. E., & Katz, A. N. (1997). Evidence for the activation of literal and of convention meaning during the comprehension of proverbs. *Pragmatics and Cognition*, 5, 199–233.
- Turner, N. E., & Katz, A. N. (2003). The availability of conventional and of literal meaning during the comprehension of proverbs. In W. Mieder (Ed.), *Cognition, comprehension and communication* (pp. 531–554). Baltmannsweiler, Germany: Schneider Verlag Hohengehren GmbH.
- Turner, N. E., & Powell, J. (2007). Probability, random events, and the mathematics of gambling. In R. Murray (Ed.), *Helping the problem gambler*. Toronto, ON: Centre for Addiction and Mental Health. Retrieved May 17, 2007, from <http://www.problemgambling.ca/>.
- Tyrrell, I. (1979). *Sobering up: From temperance to prohibition in Antebellum America, 1800–1860*. Greenwood Press: Westport.
- Urbanoski, K., & Rush, B. R. (2006). Characteristics of people seeking treatment for problem gambling in Ontario: Trends from 1998–2002. *Journal of Gambling Issues*, 16. Available at <http://www.camh.net/egambling/issue16/index.html>.
- Volberg, R. (2003). Has there been a “feminization” of gambling and problem gambling in the United States? *Electronic Journal of Gambling Issues*, 8. doi:10.4309/jgi.2003.8.7.
- Warner, J. (1994). Resolv'd to drink no more: Addiction as a preindustrial construct. *Journal of Studies on Alcohol*, 55, 685–691.
- Warner, J. (2002). *Craze: Gin and debauchery in the age of reason*. New York: Random House.
- Warner, J. (2009). Temperance, alcohol, and the American evangelical: A reassessment. *Addiction*, 104, 1075–1084.
- Wikipedia. (2010). *A rake's progress*. http://en.wikipedia.org/wiki/Rakes_progress.
- Winship, M. P. (1996). *Seers of God: Puritan providentialism in the restoration and early enlightenment*. Baltimore: John Hopkins University Press.
- Woolf, H. B. (Ed.). (1974). *The Merriam-Webster Dictionary*. New York: Pocket Books.

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Metaphors

Ferentzy, P.; Turner, N.

2013, XIII, 174 p., Hardcover

ISBN: 978-1-4614-6698-7