

Casting Lots, Gambling, and Artificial Intelligence

KENT T. SAUNDERS
Anderson University (SC)

LARRY G. LOCKE
University of Mary Hardin-Baylor
LCC International University

ABSTRACT: Casting lots was widely practiced in the ancient Near East as a method for making decisions. In the Bible, casting lots was a common method to determine the will of God when allocating land, determining duties, assigning guilt, selecting individuals for responsibility, and other matters. Additionally, there are instances in the Bible where the use of lots can be seen as an unbiased random allocation method or, possibly, an act of gambling. How might this ancient, biblical practice inform the modern use of artificial intelligence in business decisions? The authors begin with an exegesis of casting lots in the Bible, particularly on the question of whether casting lots was a form of gambling. The authors then compare the biblical practice of casting lots with the use of artificial intelligence in business decision-making. The authors argue that neither practice may fairly be defined as “gambling” of the kind forbidden by different Christian traditions. The authors identify a common ethical issue for casting lots and the use of artificial intelligence—the surrender of control over a decision, resulting in the potential to transfer moral responsibility for that decision. While the authors accept that casting lots resulted in a transfer of moral responsibility, they conclude that using artificial intelligence should not similarly allow for a surrender of moral responsibility.

KEYWORDS: Gambling, casting lots, artificial intelligence

INTRODUCTION

There are many passages and stories in the Bible that describe the use of lots. Lot-casting in the Bible can be read as random selection or as divine providence. For example, the book of Esther tells the story of how Haman plotted to destroy the Jews and determined the time to do this by casting the *pur* (i.e. lot) (Esther 3:7). However, Esther was queen for “such a time as this” (Esther 4:14, NIV) and was able to upset the plot and turn it around to destroy Haman. The foiling of this plot led to the creation of the Jewish holiday of Purim (Esther 9:30-32). Hallo (1983) and Besser (1969) suggest that Esther can be read “as a commentary on the element of chance in human life” (Hallo, 1983, p. 26). Alternatively, there are some who believe that chance does not exist and all events in the universe are determined by God. Winitzer (2011) describes how the use of lot-casting in Esther by Israel’s foe achieves “the exact reverse of that which its

practitioners seek” implying that God’s will is done even in matters that appear to be chance (p. 187).

Beyond the book of Esther, casting lots was widely practiced in the ancient Near East as a method for making decisions, dividing land, and selecting people in an unbiased manner. Taggar-Cohen (2002) discusses the use of lot-casting in the Babylonian story of the flood. Crone and Silverstein (2010) note that the “gods themselves are said to have divided the world” by lot in both Akkadian and Greek mythology (p. 424). The use of lots for several “legal and commercial purposes is well attested in every period of ancient Mesopotamian history” (Hallo, 1983, p. 20).

The biblical practice of casting lots has certain similarities to the modern practice of using artificial intelligence (AI) to make business decisions. These similarities invite a common ethical conclusion that the authors intend to contest. However, an important gating issue is whether casting lots or the use of AI is morally acceptable or whether they constitute gambling of the kind condemned by some Christian traditions. The question of whether AI

can ethically be handled the same as casting lots is moot if both are morally unacceptable because they constitute gambling. Therefore, the authors begin by defining gambling and then reviewing Christian traditions as to its moral acceptability. The authors compare the biblical use of lots to various modern definitions of gambling and conclude that lot-casting, as seen in Scripture, does not satisfy those definitions. The authors likewise conclude that the use of AI in most business decision applications does not constitute gambling.

The authors then identify an ethical issue that AI bears in common with biblical lot-casting. Like lot-casting, AI can produce outcomes that are opaque to the human decision makers and involve a surrender of control over potentially important decisions. The ethical element lot-casting and use of AI have in common is the potential shifting of moral responsibility for decisions away from the individuals involved in the decision. Casting lots in the Bible involved shifting the moral responsibility for a decision to God. Is this moral shift of responsibility for decision outcomes acceptable for Christian business leaders using AI? The authors conclude that the use of AI in business decisions should not allow for the same shifting of moral responsibility involved with casting lots in the Bible, even though both involve surrendering control over the decision.

WHAT IS A GAMBLE?

MacKenzie (1895) describes gambling as:

the result of a bet, property is transferred from one to another upon the occurrence of an event which, the two parties to the bet, was a matter of complete chance, or as nearly so as their adjustment of conditions could make it. (pp. 24-25)

Hobson (1905) defines gambling as “the determination of the ownership of property by appeal to chance” where chance is “the resultant of a play of natural forces that cannot be controlled or calculated by those who appeal to it” (p. 135). The Oxford University Press (2019) online dictionary Lexico.com defines gamble as follows:

Intransitive verb: Play games of chance for money; bet. Take risky action in the hope of a desired result.

Noun: An act of gambling; an enterprise undertaken or attempted with a risk of loss and a chance of profit or success.

For our purposes here, there are four specific features that will be instrumental in the definition of a gamble: action taken, risk of loss, short-term, and zero-sum game.

Action Taken

In order for a gamble to take place, the gambler must take some form of action. The action could be a variety of measures (e.g. place a bet, buy a ticket, etc.). If an event happens to someone or for someone without that person taking an action then a gamble has not taken place. Receiving a gift or incurring a loss without an act on the part of the affected party is not a gamble.

Risk of Loss

One of the more noteworthy Bible passages related to risk is Ecclesiastes 11:2 (NIV): “Invest in seven ventures, yes, in eight; you do not know what disaster may come upon the land.” In this passage the writer (commonly considered to be King Solomon) advocates diversification or hedging when investing because “you do not know what disaster may come upon the land.” In effect, there is a risk of loss with an investment. Correspondingly, in a gamble, something *must* be put at stake outside the control of the gambler. There must be a risk of a loss. For example, the chance of a fair coin flip landing on heads is 1/2. Taking an action to place a bet on heads as the outcome of a fair coin flip will result in a loss if the outcome ends up tails. For a gamble to take place there must be an action taken and a risk of loss.

Short-Term

The length of time that value is at risk is a general distinguishing feature of a gamble. Gambles are typically short-term bets. Saunders (2016) compares investing and gambling and writes:

In most cases, the time that value is at risk can help to identify the difference between an investment and a gamble. The longer the horizon, the more likely an investment is being conducted. The shorter the horizon, the more likely a gamble is being conducted. (p. 65)

Similarly, in order to dissuade gamblers from using typical investment vehicles for speculative purposes, MacKenzie (1895) suggests the requirement that people must hold their stocks for three months before selling them in order to “put an end to a large amount of pure speculation” (p. 37). Thus, a characteristic of a gamble is that the result occurs in the short-term, if not immediately.

Zero-Sum Game

In a typical gamble, there is a clear winner and a clear loser. The result of the gamble transfers value from one party to another with no net benefit, a zero-sum game. Gustafson (2019) includes a list of ways that gambling is both similar to, and different from, a business venture. Gustafson concludes that “the fact remains that the results of the entrepreneur are much more beneficial to society at large than gambling” (p. 25). In effect, business ventures can result in a positive-sum game that make society better off whereas gambling is primarily a transfer scheme. Thus, a gamble requires that an action be taken, there is a risk of loss, the outcome is determined in the short-term, with the resulting allocation being a zero-sum game. Having defined gambling, the authors now explore its morality under various Christian traditions.

IS GAMBLING BAD?

It is not the purpose of this paper to determine whether gambling is bad. No conclusion to the section heading will be offered. However, an overview of some thoughts on the matter from both a religious and a governmental perspective are provided below.

Hallo (1983) points out that “[b]iblical law did not bother to proscribe it [gambling] or to list it [gambling] among the many other alien abominations catalogued in Leviticus or Deuteronomy” (p. 23). Luebchow (1985) concludes that the “Scriptures do not either condemn or forbid gambling” (p. 4). Some believe that gambling is an individual right and people should have the freedom to gamble if they want (McGowan & Brown, 1994). On the other hand, some believe that gambling preys on the poor and those who become addicted, contributes to crime, and should be abolished (Borna & Lowry, 1997).

There are a wide variety of perspectives within Christianity regarding gambling. Kumar, Page, and Spalt (2011) find that the ratio of Catholics to Protestants in different regions in the United States, and the resulting influence on gambling attitudes, impacts investors’ portfolio choices and corporate decision-making. Many protestant denominations consider gambling a sin. For example, The United Methodist Church (2012) states that gambling is “a menace to society, deadly to the best interests of moral, social, economic, and spiritual life, destructive of good government and good stewardship” (para. 163). 1 Corinthians 10:23, Philippians 2:3-4, and 1 Timothy 6:10 are often cited in support of the posi-

tion against gambling. On the other hand, the Roman Catholic Church generally takes the view that gambling is amoral. The Catechism of the Catholic Church (1997) states that games of chance “are not in themselves contrary to justice” (para. 2413 of Part III). From the Catholic perspective, gambling does not become a problem until it is taken to an extreme and becomes addictive. In effect, the Catholic perspective distinguishes between moderation and excess.

Friesen and Maxson (1980) note that the “American church has managed to divide itself over a whole range of issues,” including attending movies, mowing the lawn on Sunday, and gambling for recreation, among others (pp. 382-383). Some conscientious Christians would deem some activities as “obviously” wrong whereas other conscientious Christians would deem the same activity as “obviously” in the area of freedom. In the chapter titled “Wisdom When Christians Differ” Friesen and Maxson (1980) present how Christians can use Romans 12:2 to help discern what to do in cases where an activity is not explicitly prohibited in the Bible and use Romans 14:1-15:13 to develop a framework for decision-making on controversial activities.

Analogously, governmental positions with respect to gambling are varied. Reith (2004) reports historical cycles of prohibition and acceptance of governmental use of lotteries. During periods of prohibition, it was argued that “operation of chance in lotteries divorced the creation of wealth from the efforts of labour, undermining the protestant work ethic and the ideology of meritocracy that formed the basis of capitalist societies” (Reith, 2004, p. 5). Gustafson (2019) states that the “lure of quick riches without toil undermines prudence, perseverance, hard work ethic, and other virtues important for society to progress” (p. 8). On the other hand, lotteries’ ability to raise money for governments without direct taxation has allowed lotteries to become “entrenched in fiscal policy” for governments around the world since the 1970s (Reith, 2004, p. 8).

Gambling has become an interwoven part of everyday life in many modern communities. Whether this is good or bad is beyond the scope of this paper. It is adequate for the purposes of this paper to acknowledge that gambling has sometimes been condemned by both religious authorities and secular governments. Those condemnations are sufficiently serious to require a determination of whether casting lots and use of AI in business decision-making constitute gambling before seeking to analogize the biblical understanding of casting lots to the use of AI. The next

section will consider what the Bible says about casting lots in relation to gambling and decision-making.

CASTING LOTS AS A DECISION-MAKING TOOL OR AS A GAMBLE?

Lindblom (1962) provides a comprehensive overview of lot-casting in the Old Testament and notes that “lot-casting is spread all over the world and has existed at all times” (p. 164). In the Bible, the casting of lots was conducted by Israelite kings (1 Samuel 30:7-8) as well as Babylonian kings (e.g. Ezekiel 21:21-22). Lots could be small stones held in the fold of a garment and then drawn out or shaken to the ground or lots could be sticks or arrows drawn from a quiver. Kitz (2000) writes that “one of the primary functions of lot-casting is to aid in the distribution of valued commodities” (p. 208). Aquinas (1966) describes three types of lot-casting: divisory, consultatory, and divinatory. Divisory lot-casting was used to determine who should have something or who should do something (e.g., Numbers 26:55-56). Consultatory lot-casting occurs when someone sought God’s guidance (e.g., Jonah 1:7). Divinatory lot-casting was designed to obtain information about the future (e.g., 1 Samuel 23:9-12).

There are many examples of lot-casting in both the Old and the New Testaments. The following sections present groups of examples; albeit, the groupings are somewhat different from the groupings used by Aquinas.

Casting Lots for Divine Guidance (Usually With the High Priest)

The study of chance raises some interesting questions related to divine providence. Bellhouse (1988) compares differing perspectives in the early seventeenth century between those who think random events are determined by chance (e.g., Gataker, 1619) and those who believe that random events are determined by God (e.g., Balmford, 1623). For an example of the chance perspective, consider how modern-day users of a toy Magic 8-Ball find inconsistent answers when repeating the same question. Gataker (1619) notes that in “an ordinary Lot there is nothing more uncertain, ready upon every new shaking of the Lot pot to give out a new sentence” (p. 159).

Alternatively, Reeves (2015) reviews the teachings of Augustine, Aquinas, and Calvin to show why “most Christian theologians see chance as antithetical to Christian views of divine providence” (p. 618). Aquinas (1966) writes that “many human events which seem to

occur by fate and chance, in reality are arranged according to divine providence” and casting lots “is no more than a search for divine guidance in contingent and human affairs” (p. 60). Proverbs 16:33 (NIV) summarizes the view of lot-casting as divine providence: “The lot is cast into the lap, but its every decision is from the Lord.” Chewning (2011) elaborates that “chance and luck are concepts that can only exist apart from an absolutely sovereign God” and “nothing occurs in history by ‘chance’ or is a function of ‘luck’” (footnote 67 on p. 40).

Waltke (1995) outlines six methods for determining the will of God in the Old Testament: prophets, Urim and Thummim, casting lots, dreams, signs, and words. In the Old Testament, the high priest wore a breastpiece containing the Urim and Thummim and used them as a divinely ordained means of communication with God (Exodus 28:30). Oftentimes Urim and Thummim are considered similar to lots.

Casting Lots to Allocate the Promised Land

In Genesis 15:18, God promises a specific area of land to the Israelite descendants of Abraham. The book of Numbers decrees to be “sure that the land is distributed by lot” (Numbers 26:55, NIV). Numbers 33:50-54 (NIV) reads:

⁵⁰ On the plains of Moab by the Jordan across from Jericho the Lord said to Moses, ⁵¹“Speak to the Israelites and say to them: ‘When you cross the Jordan into Canaan, ⁵²drive out all the inhabitants of the land before you. Destroy all their carved images and their cast idols, and demolish all their high places. ⁵³Take possession of the land and settle in it, for I have given you the land to possess. ⁵⁴Distribute the land by lot, according to your clans. To a larger group give a larger inheritance, and to a smaller group a smaller one. Whatever falls to them by lot will be theirs. Distribute it according to your ancestral tribes.

Moses did not enter into the Promised Land. However, Joshua successfully conquered the land of Canaan, and the Israelite inheritance was “assigned by lot...as the Lord had commanded through Moses” (Joshua 14:2, NIV). Even more specifically, Joshua 18:10 (NIV) states that “Joshua then cast lots for them in Shiloh in the presence of the Lord, and there he distributed the land to the Israelites according to their tribal divisions.” Chewning (2011) states that though the land was distrib-

uted by lots, the “division of the land had God’s intentions incorporated in it” (p. 12).

Casting Lots to Determine Duties

1 Chronicles 24-26 describes how duties were assigned through lot-casting. 1 Chronicles 24:5 (NIV) specifically states, with respect to the division of priests, that they “divided them impartially by casting lots.” Nehemiah 10:34 describes how the priests determined when each family would bring wood to burn on the altar in the temple. Luke 1:8-9 describes how lot-casting was responsible for Zechariah being in the temple prior to receiving his vision of the angel Gabriel. 1 Chronicles 24-26 and Nehemiah 10:34 demonstrate that lots were used as an impartial, unbiased, random selection method. The combination of Nehemiah 10:34 with Luke 1:8-9 shows how sometimes what appear to be random events can be used by God to deliver his message.

Casting Lots to Assign Guilt

It was common throughout the Old Testament to cast lots to assign guilt and determine blame. Four examples are considered here. First, casting lots was used on the Day of Atonement to select which of two goats would be sacrificed and which would be the scapegoat (Leviticus 16:8-10). Second, casting lots was most likely the method for identifying Achan as the one who had violated the Lord’s commands by stealing plunder in battle (Joshua 7:14-26). Third, casting lots was used to determine that Jonathan had violated Saul’s command to fast during battle (1 Samuel 14:38-44). The fourth and final example of casting lots to assign guilt is when the sailors in the book of Jonah cast lots to determine who caused the violent storm (Jonah 1:7).

Casting Lots to Select People for Responsibility

In Judges 20:8-10, casting lots was used to determine which Israelites would attack the city of Gibeah. 1 Samuel 10:20-24 describes the process for selecting Saul as the first King of Israel. Nehemiah 11:1 describes how casting lots was used to select which people would leave the country and move to the city of Jerusalem. Acts 1:23-26 contains the last mention of casting lots in the Bible. In this passage, the disciples cast lots to select Matthias as the replacement apostle for Judas Iscariot.

Casting Lots to Allocate Possessions

Several passages in the Bible refer to casting lots as a means to allocate possessions. The first three passages

considered here relate at least in part to dividing people. The first passage considered is Job 6:27. In this passage, Job was responding to Eliphaz, and the reference to lot-casting has less to do with allocating people or possessions and more to do with Job’s frustration with Eliphaz for not providing helpful advice. Joel 3:3 refers to other nations’ use of casting lots to decide which Israelites would become slaves. Finally, casting lots in Obadiah 1:11 refers to Edom’s guilt for standing idly by while Jerusalem was divvied up by its enemies.

The final five passages with casting lots used as a means to allocate possessions are related to the Crucifixion. Matthew 27:35, Mark 15:24, Luke 23:34, and John 19:23-24 all describe the allocation of Jesus’ clothes during the Crucifixion which was foretold in Psalm 22:18. John 19:23-24 (NIV) reads:

²³When the soldiers crucified Jesus, they took his clothes, dividing them into four shares, one for each of them, with the undergarment remaining. This garment was seamless, woven in one piece from top to bottom. ²⁴“Let’s not tear it,” they said to one another. “Let’s decide by lot who will get it.” This happened that the scripture might be fulfilled that said, “They divided my clothes among them and cast lots for my garment.” So this is what the soldiers did.

Casting lots was used in the Bible in a variety of contexts to make important decisions. The examination of lot-casting in the Bible has provided examples of seeking divine guidance, allocating the Promised Land, determining duties, assigning guilt, and allocating possessions. The question that will be considered now is whether any of these examples would be considered gambling.

IS CASTING LOTS IN THE BIBLE GAMBLING?

Consider Proverbs 18:18 (NIV): “Casting the lot settles disputes and keeps strong opponents apart.” The NLT translation replaces “casting the lot” with “flipping a coin,” and the MSG translation uses “draw straws.” In this case, casting the lot/flipping a coin/drawing straws appears to be an unbiased and egalitarian decision method and not a means of gambling. In order for a gamble to take place, four questions must be considered. Was an action taken by the affected parties? Was there a risk of loss from the action? Was the outcome determined in the short term? Was the action a zero-sum game that reallocated possessions from one person to another? Based on

the answers to these questions (i.e., the criteria necessary for a gamble), it is clear that biblical examples of casting lots to seek divine guidance, allocation of the Promised Land, determining duties, or assigning guilt were not gambling. Casting lots to allocate possessions is worth a closer look.

Passages related to the Crucifixion (Matthew 27:35, Mark 15:24, Luke 23:34, John 19:23-24 along with Psalm 22:18) and the allocation of Jesus' possessions are by far the most controversial passages in terms of whether casting lots was an act of gambling. Hallo (1983) refers to lot-casting as "gambling for the garment of the condemned man in Psalm 22" (p. 21). Luebchow (1985) considers the casting of lots for Jesus' clothing (Matthew 27:35, Mark 15:24, Luke 23:34, and John 19:23-24) to be the "most striking example of gambling in the Bible" (p. 2). Tkacz (2008) writes, "Unanimously, the four Gospels report the soldiers' gambling for Jesus' clothes, specifically by casting lots for them" (p. 716). However, Bellhouse (1988) considers the division of Christ's clothes to be an example of the use of lots as a "randomizer" (p. 66).

As mentioned previously, the New Living Translation of the Bible specifically uses the term "gambled" in both Matthew 27:35 and Luke 23:34 as it relates to allocating the clothes of Jesus during the Crucifixion. When comparing the five Crucifixion passages between the NIV and the NLT translations, a consistent use of divide/divided/dividing and cast/casting lots is used in the NIV, whereas the NLT inconsistently uses gambled/divide/divided and consistently uses throw/throwing dice to describe the allocation of Jesus' clothes. There is a consistent translational difference between casting lots and throwing dice, but the NLT provides inconsistent terminology as it relates to dividing or gambling. In that the four Gospels all describe the same event, it would stand to reason that consistent terminology would make sense.

The New Testament was originally written in Greek. Although the original "autograph" manuscripts of the biblical authors are no longer available, BibleHub.com provides twelve versions of the Greek New Testament. For Matthew 27:35, all twelve Greek versions use the term *διαμερίσαντο*. For Mark 15:24 the Greek term used is *διαμερίζονται* or *διαμερίζον τὰ*. For Luke 23:34, all twelve Greek versions use the term *διαμερίζόμενοι*. For John 19:24, all twelve Greek versions use the term *Διαμερίσαντο*, which is the same term used in Matthew 27:35. All of these Greek terms from the four Gospels are variations of the verb *διαμερίζω*. Abbott-Smith (1922) defines *διαμερίζω* as to distribute. Strong (1890) defines

διαμερίζω as to partition thoroughly. Dodson (2010) defines *διαμερίζω* as to divide up into parts, break up, or distribute. Additionally, there is nothing in the text to suggest the soldiers had any risk of material loss through their participation in the distribution of Jesus' clothes. Simply because casting lots or throwing dice was the means to divide/distribute/partition does not imply the soldiers were gambling as we have defined it.

Therefore, in contrast with Hallo (1983), Luebchow (1985), and Tkacz (2008), but consistent with Bellhouse (1988), it is the opinion of the authors that the use of casting lots during the Crucifixion is as a random allocation method and not an example of gambling. Irrespective of the translational differences, there is no evidence that the soldiers had any risk of loss in the distribution of the clothing. Additionally, it was Christ's garment that was distributed among the soldiers and Christ took no action to initiate a gamble. Incurring a loss without any action on the part of an affected party is not a gamble. This use of casting lots or throwing dice does not constitute a gamble any more than flipping a coin to decide where to go to dinner or rolling the dice in a friendly board game is a gamble.

The analysis above that found casting lots to be distinct from gambling seems equally applicable to the use of artificial intelligence. Although highly adept at gaming and with some of its terminology originating in gaming theory, AI as applied in business is generally dissimilar to gambling (Shi & Chen, 2018; Wadhwa, 2018). While it might satisfy Lexico.com's definition of a gamble in some applications, it would generally fail the definitions offered by Mackenzie (1895), Hobson (1905), and by the authors herein. Many business decisions involve an element of risk, but they are made in an attempt to produce profits without involving an equal reduction in the profits of others. Business, to the extent it generates wealth, is not a zero-sum game.

ARTIFICIAL INTELLIGENCE IN BUSINESS DECISION-MAKING

The term, "artificial intelligence" includes a broad range of systems with various attributes and abilities. Generally, what differentiates AI from other systems is that they are "intelligent systems with the ability to think and learn" (Jarrahi, 2018). The use of AI in business decision-making has grown rapidly in the last ten years and now has become part of everyday modern life through

AI-driven interfaces like Alexa and Google (Uzialko, 2019). In the five years from 2013 to 2018, investment in AI tripled (Bughin, et al., 2017) and in 2016 alone amounted to between \$26 and \$39 billion (Quan & Sanderson, 2018). The recent growth in AI has been identified with two technical innovations occurring around 2015—the accessibility of high-speed, high-powered, parallel processing capabilities and new applications of big data allowing businesses to store massive amounts of information for use in that processing (Sincavage, n.d.).

One of the primary applications of AI has been in business decision-making (Mohanty, n.d.). Businesses have utilized AI to affect operating cost savings by displacing expensive human employees in common business decisions like underwriting loan applications or scheduling preventive maintenance (Taylor, n.d.) This displacement is an echo of the industrial revolution when technologies such as textile mills began replacing artisans like weavers (Mohanty, n.d.). Unlike the mechanization of labor, however, AI is intended to replace much higher-level, white-collar workers who had previously been shielded from the effects of automation by their ability to make decisions in an environment of uncertainty (Wladawsky-Berger, 2017). The Finnish ERP company, Basware, for example, now reports that AI performs 90% of its exception handling (Castelluccio, 2017). AI has been used in business not just to make decisions but to carry out those decisions through its connection to the internet (Charlan, 2015; Marr, 2019). Tesla's self-driven cars and FedEx's delivery robots both demonstrate the expansion of AI from decision-making to decision execution. AI, however, also holds out additional promise. Its proponents suggest it can not only make and act on business decisions more cheaply, it can also make them more quickly and more accurately (Chou, 2018). AI-intensive companies like Amazon have grown rapidly in part due to their ability to quickly identify customer patterns and accurately predict future purchase behaviors (Mohanty, n.d.).

ARTIFICIAL INTELLIGENCE AND CASTING LOTS

In some ways, casting lots can be thought of as an early method of automating decisions. As demonstrated above, automated decision-making, including AI and its use of algorithms and machine learning to make decisions, has become increasingly used across multiple business disciplines and organizations (Shrestha, Ben-Menahem &

Krogh, 2019). Should a Christian business leader relegate a decision to an automated process? How would the biblical model of casting lots inform that decision?

If a modern Christian business leader used casting lots as a means of determining divine direction for a business decision, would that be theologically supportable? To begin, consider the Old Testament examples. Lindblom (1962) writes that the “Urim and Thummim must yield to the Torah” (p. 178). The Good News translation of Sirach 33:3 states, “If you are wise, you will believe in the Law; you will find it as reliable as the sacred lots.” Both of these quotations seem to indicate that lot-casting may not be necessary to make a decision given the existence of the written word of God, explicitly, the first five books of the Old Testament. They also correspond to the authors’ general intuition that casting lots seems unnecessary when making decisions based on facts or beliefs that are held with confidence.

Notwithstanding that argument, we know that casting lots continued to be used in the New Testament by people of faith to discern the will of God. Specifically, casting lots was used to select Matthias as an apostle (Acts 1:23-26). However, many scholars have noted that there are no additional instances of lot-casting after the Holy Spirit came upon the church at Pentecost. According to Aquinas (1966), “Now that the Holy Spirit guides the church, it would be insulting to try to obtain divine guidance through divination” (p. 62). Similarly, Waltke (1995) writes, “We have been given God’s Word, and his Holy Spirit resides in us, so we do not rely on merely rolling dice” (p. 65).

Yet, even with the Old Testament, the New Testament, and the presence of the Holy Spirit, unbiased selection methods continue to be used by Christians to make decisions. As an example, Thordarson (2014) describes how a modern-day church casts lots to select delegates for a constituency meeting (p. 95). In addition, even though there are no additional examples of lot-casting in the Bible after the selection of Matthias, there is likewise no prohibition of lot-casting as a method for decision-making. Presumably this would include business decision-making.

Just because casting lots might be an acceptable means of Christian decision-making does not necessarily mean that using AI would be equally acceptable. For all its vaunted achievements, AI brings with it a series of ethical issues not found in casting lots. The customer and employee data gathering required to allow AI to engage in machine learning has produced concerns over the

current growth in corporate surveillance and the loss of privacy that it entails (Zuboff, 2019; Walch, 2019). AI can also raise issues of bias in its decision-making when imprudently used (Colson, 2019). Despite the fact that AI decisions are supposed to be made by dispassionate machines, it turns out that the algorithms that drive its decision-making can come to reflect the same biases as its human predecessors (Manlapig & Ko, 2019). Microsoft's now infamous chatbot, Tay, had to be taken offline after it engaged in a racist exchange on Twitter (Hunt, 2016).

Assuming these ethical issues are not present or can be managed in a particular application of AI, there is an additional ethical issue of AI that is seemingly similar to an issue raised by the biblical practice of casting lots. Because the AI system that makes business decisions evolves independently of its human programmers as it gains new data and applies that data to adjust its algorithms, the actual "reasons" behind an AI decision become increasingly opaque as the system matures (Müller, 2020). This opacity means that the AI's decisions at some point become unpredictable to the business leaders who deploy it (Shaw, 2019). Just as casting lots involves surrendering control and introducing uncertainty to a decision, so does deploying an AI system.

The ethical issue raised by the use of AI in business decisions, similar to one seen in casting lots, is the potential impact it has on assigning moral responsibility for the decision. One of the presumed benefits of casting lots to divide the Promised Land in Joshua 18:10 was the fact that it meant none of the participants in the decision would be held responsible for the outcome. This avoidance of responsibility could be very useful in cases like division of the Promised Land as it could help defuse potential claims of mistreatment if one tribe of Israelites became jealous of another over the quality of their respective inheritances. In Old Testament examples of lot-casting, such as the use of the Urim and Thummim in 1 Samuel 14, the decision was considered surrendered to God. Whether God actively responded to these uses of the Urim and Thummim by intervening in the outcomes they prescribed is unknowable at an empirical level and, as discussed above, a complicated question theologically. But even if one believed it were so, would that mean it is appropriate to consider the surrendering of a business decision to an AI system to be tantamount to surrendering it to God?

The fear that AI and other advanced technologies will take on the powers associated with God is present in the current literature and has long been a staple of science fic-

tion (Metcalf, Askay, & Rosenberg, 2019; Shani, 2015). One response of technologists to the potential displacement of human decision-makers by AI and its resulting power over humanity has been to reincorporate humans into AI decision-making. So called "Artificial Swarm Intelligence" purports to be able to improve the decisions of AI by incorporating crowd intuition as an input to the algorithms themselves (Metcalf, Akay, & Rosenberg, 2019). It seems clear, however, that existing and foreseeable AI systems do not possess all the attributes required to satisfy an orthodox definition of God. However fast and accurate they become, whatever ethic their systems may develop, there is no foreseeable risk that AI systems will achieve the omnipresence, omnibenevolence, eternity, and other metaphysical and moral attributes described in a Christian doctrine of God (Grenz, 1994).

Rather than considering an AI system to be God, Christian businesspeople might more readily presume that God could intervene in the decision of an AI system in the same way that Old Testament Hebrews believed God would reveal His will through the Urim and Thummim. In March, 2018, a Tesla vehicle being driven by its AI autopilot crashed into a concrete barrier killing the individual in the driver's seat (Chokshi, 2020). Is Tesla morally responsible for the actions of its AI system installed in the car? Its decisions were outside Tesla's control, but does that mean they were surrendered to God? Certainly it is possible for God to intervene in such a system, but relying upon that intervention might bring with it the possibility of idolizing the AI system, like children asking questions of the Magic 8-Ball. Like Aquinas (1966) noted with respect to lot-casting, it seems presumptuous of Christians to require that God always direct them in novel ways (like casting lots or AI systems) rather than through His traditional methods of prayer, Scripture, and the church (Blackaby & King, 1998). It would also invite the Christian businessperson to place her faith in the AI system itself rather than the God who superintended it.

The common surrender of a decision outcome in both casting lots and the use of AI highlights the need to distinguish the use of AI from biblical lot-casting in terms of the ethical issue—the potential transfer of moral responsibility. Casting lots in the biblical tradition was performed as an act of faith in God, allowing Him to involve Himself in important decisions and relying upon Him to superintend the outcome. Importantly, those casting lots surrendered both the outcome and the responsibility for it. We have demonstrated, however, that, while the matter is open to debate, theologians tend to draw a distinction

between biblical lot-casting and casting lots in the church era. Given that AI systems are not God and that reliance upon God's intervention in them, by analogy to casting lots, is theologically dubious, the authors conclude that business leaders should not surrender moral responsibility for decisions made by AI as the ancient Israelites did in casting lots. As a mechanical system, the AI is nothing more than a tool wielded by the business. The business is no less responsible for the AI system's decisions than a carpenter is for the cuts made by his saw. Even if the AI were to advance to the point of attaining some measure of personality, the legal doctrine of *respondeat superior* would presumably be applicable, rendering the business responsible for the decisions and actions of the AI (Lior, 2020). While modern philosophers debate the moral agency of AI (Müller, 2020), that debate may not impact the responsibility business leaders bear for its decisions.

CONCLUSION

Lot-casting, flipping a coin, and rolling a die are methods that can be used to determine an outcome or make a decision. Lot-casting in the Bible was used for seeking divine guidance, allocating the Promised Land, determining duties, assigning guilt, and allocating possessions. Lot-casting in the Bible was not gambling and does not satisfy the four criteria necessary for a gamble to take place (action taken, risk of loss, short-term, zero-sum game). Applications of artificial intelligence in business decision-making share some important attributes with casting lots. Neither qualifies as gambling, but both involve surrendering control of a decision, and both potentially allow for the simultaneous transfer of responsibility for that decision. While biblical examples of casting lots might involve the transfer of responsibility for a decision to God as an act of faith, a business leader's transferring responsibility to AI for a decision would not be equally supportable theologically or legally. Our biblical forebearers were not responsible for the results of casting lots. Business leaders, however, should retain responsibility for the decisions made by their AI systems.

The time is now for Christian business leaders to clarify our approach to AI in business decisions. Some of the key opportunities of sanctification afforded to all believers are the chances we have to sort through difficult ethical issues (Philippians 2:12). As a generation growing up with graphing calculators, the current generation has proved that people can be deskilled when decisions

are delegated to technology (Reznichenko, 2007). This would be true for all manner of business skills used in decision-making. Research indicates that the more we surrender ethical decisions, the worse we become at making them (Stocker, 2016). Christian businesspeople have the opportunity to harness the speed and accuracy of AI to be more faithful, more ethical, and more responsible with the resources God has gifted them. But this improvement will only occur if they proceed faithfully, retaining responsibility for all the actions of the businesses they manage.

Suggestions for further study on related issues include the examination of the following questions. Is the gambling industry ethically comparable to other entertainment industries, such as theme parks or movies, according to a scriptural analysis? Does the economic growth and development stimulated by gambling businesses offset the potential moral cost of increased crime and other negative effects, creating net social benefit, under a biblically acceptable ethic? Are there examples of the use of algorithms in AI systems that would satisfy the authors' definition of gambling and what would be the moral implications for a business utilizing those systems? In what ways is a business morally responsible for decisions made by its AI systems?

REFERENCES

- Abbott-Smith, G. (1922). *A manual Greek-English lexicon of the Greek New Testament*. Retrieved from <https://greeklexicon.org/>
- Aquinas T. (1966). *Commentary on Saint Paul's Epistle to the Ephesians* (M. L. Lamb, Trans.). Albany, New York: Magi Books. (Original Work published 1259-1268).
- Balmford, J. (1623). *A short and plaine dialogue concerning the unlawfulness of playing at cards*. London, United Kingdom: Boile.
- Bellhouse, D. R. (1988). Probability in the sixteenth and seventeenth centuries: An analysis of Puritan casuistry. *International Statistical Review*, 56(1) 63-74.
- Besser, S. P. (1969). Esther and Purim: Chance and play. *Central Conference of American Rabbis Journal*, 16, 36-42.
- Blackaby, H., & King, C. (1998). *Experiencing God: How to live the full adventure of knowing and doing the will of God*. Nashville, TN: Broadman & Holman.
- Borna, S., & Lowry, J. (1987). Gambling and speculation. *Journal of Business Ethics*, 6, 219-224.

- Bughin, J., Hazan, E., Ramaswamy, S., Chui, M., Allas, T., Dahlström, P., Henke, N., & Trench, M. (2017). Artificial intelligence: The next digital frontier? McKinsey Global Institute Discussion Paper.
- Castelluccio, M. (2017). Artificial intelligence in business. *Strategic Finance*. Retrieved from <https://sfmagazine.com/post-entry/april-2017-artificial-intelligence-in-business/>
- Catechism of the Catholic Church (1997). Retrieved from https://www.vatican.va/archive/ccc_css/archive/catechism/p3s2c2a7.htm
- Charlan, R. (2015). The algorithmic CEO. *Fortune*, 171(2), 45-46.
- Chewning, R. C. (2011). Capitalism from its genesis to its eschatology. *The Journal of Biblical Integration in Business*, 13(1), 5-45.
- Chokshi, N. (2020). Tesla autopilot system found probably at fault in 2018 crash. *New York Times*. Retrieved from <https://www.nytimes.com/2020/02/25/business/tesla-autopilot-ntsb.html>
- Chou, J. (2018). Artificial intelligence can help leaders make better decisions faster. *Entrepreneur.com*. Retrieved from <https://www.entrepreneur.com/article/317748><https://www.entrepreneur.com/article/317748>
- Colson, E. (2019). What AI-driven decision-making looks like. *Harvard Business Review*. Retrieved from <https://hbr.org/2019/07/what-ai-driven-decision-making-looks-like>
- Crone, P., & Silverstein, A. (2010). The ancient Near East and Islam: The case of lot-casting. *Journal of Semitic Studies*, 55(2), 423-450.
- Dodson, J. J. (2010). *Greek-English lexicon*. Retrieved from <https://greeklexicon.org/>
- Friesen G. & Maxson, J. R. (1980). *Decision making and the will of God: A biblical alternative to the traditional view*. Portland, Oregon: Multnomah.
- Gatiker, T. (1619). *Of the nature and use of lots*. London, United Kingdom: Griffin.
- Grenz S. (1994). *Theology for the community of God*. Nashville, TN: Broadman and Holman, 118.
- Gustafson, A. B. (2019). The roles of risk and uncertainty in gambling and entrepreneurship. Working paper, Creighton University.
- Hallo, W. W. (1983). The first Purim. *Biblical Archeologist*, 46, 19-26.
- Hobson, J. A. (1905). The ethics of gambling. *International Journal of Ethics*, 15(2), 135-148.
- Hunt, E. (2016). Tay, Microsoft's AI chatbot, gets a crash course in racism from Twitter. *The Guardian*. Retrieved from <https://www.theguardian.com/technology/2016/mar/24/tay-microsofts-ai-chatbot-gets-a-crash-course-in-racism-from-twitter>
- Jarrahi, M. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision-making. *Business Horizons*, 61(4), 577-586.
- Kumar, A., Page, J. K., & Spalt, O. G. (2011). Religious beliefs, gambling attitudes, and financial market outcomes. *Journal of Financial Economics*, 102, 671-708.
- Kitz A. M. (2000). The Hebrew terminology of lot casting and its ancient Near Eastern context. *The Catholic Biblical Quarterly*, 62, 207-214.
- Lindblom, J. (1962). Lot-casting in the Old Testament. *Vetus Testamentum*, 12, 164-178.
- Lior, A. (2019). AI entities as AI agents: Artificial intelligence liability and the AI respondeat superior analogy. *Mitchell Hamline Law Review*. 46.
- Luebchow, R. G. (1985). Is gambling ever right? *Wisconsin Lutheran Seminary Digital Library*. Retrieved from <https://essays.wls.wels.net/bitstream/handle/123456789/3178/LuebchowGambling.pdf>
- MacKenzie, W. D. (1895). *The ethics of gambling*. London, United Kingdom: The Sunday School Union.
- Manlapig, E., & Ko, E. (2019). Considering the data analytics revolution and lessons for Christian business faculty. *Christian Business Academy Review*, 14(1). Retrieved from <https://cbfabcbar.org/index.php/cbar/article/view/505>
- Marr, B. (2019). What is the artificial intelligence of things? When AI meets IoT. *Forbes*. Retrieved from <https://www.forbes.com/sites/bernardmarr/2019/12/20/what-is-the-artificial-intelligence-of-things-when-ai-meets-iot/#390288f9b1fd>
- McGowan, R., & Brown, T. (1994). The ethics of tolerance and the evolution of smoking and gambling as public policy issues. *International Journal of Value-Based Management*, 7(3), 255-269.
- Metcalf, L., Askay, D., & Rosenberg, L. (2019). Keeping humans in the loop: Pooling knowledge through artificial swarm intelligence to improve business decision-making. *California Management Review*, 61(4), 84-109.

- Mohanty, A. (n.d.) Artificial intelligence is revolutionizing business decision-making. *Scrabbl*. Retrieved from <https://www.scrabbl.com/artificial-intelligence-is-revolutionizing-business-decision-making>
- Müller, V. C. (2020). Ethics of artificial intelligence and robotics, *The Stanford Encyclopedia of Philosophy* (Fall 2020 Edition), Edward N. Zalta (ed.), forthcoming. Retrieved from <https://plato.stanford.edu/archives/fall2020/entries/ethics-ai/>
- Quan, X., & Sanderson, J. (2018). Understanding the artificial intelligence business ecosystem. *IEEE Engineering Management Review*, 46(4), 22-25.
- Reeves, J. (2015). The secularization of chance: Toward understanding the impact of the probability revolution on Christian belief in divine providence. *Zygon: Journal of Religion and Science*, 50(3), 604-620.
- Reith, G. (2004). The economics of ethics: Lotteries and state funding. *Economic Sociology: European Electronic Newsletter*, 6(1), 4-12.
- Reznichenko, N. (2007). Learning mathematics with graphing calculator: A study of students' experiences. *Proceedings of the Annual EERA Conference*. Retrieved from <http://ezproxy.oswego.edu:2048/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED497716&site=ehost-live&scope=site>
- Saunders, K. T. (2016). Is there a difference between investing and gambling? A Christian perspective. *The Journal of Biblical Integration in Business*, 19, 57-71.
- Shani, O. (2015). From science fiction to reality: The evolution of artificial intelligence. *Wired*. Retrieved from <https://www.wired.com/insights/2015/01/the-evolution-of-artificial-intelligence/>
- Shaw, J. (2019). Artificial intelligence and ethics. *Harvard Magazine*. Retrieved from <https://harvardmagazine.com/2019/01/artificial-intelligence-limitations>
- Shi, J., & Chen, M. (2018). Multi-model optimization with discounted reward and budget constraint. *Proceedings of 2018 International Conference on Mathematics and Artificial Intelligence*, 10-14.
- Shrestha, Y. R., Ben-Menahem, S. M., & Krogh, G. von (2019). Organizational decision-making structures in the age of artificial intelligence. *California Management Review*, 61(4), 66-83.
- Sincavage, D. (n.d.). How artificial intelligence will change decision-making for businesses. *Tenfold*. Retrieved from <https://www.tenfold.com/business/artificial-intelligence-business-decisions>
- Stocker, M. (2016). Bewary of 'ethical' artificial intelligence. *Nature*. Retrieved from <https://www.nature.com/articles/540525b>
- Strong, J. (1890). *Strong's Greek Dictionary of the New Testament*. Retrieved from <https://greeklexicon.org/>
- Taggar-Cohen, A. (2002). The casting of lots among the Hittites in light of ancient Near Eastern parallels. *The Journal of the Ancient Near Eastern Society*, 29, 97-103.
- Taylor, K. (n.d.). Top 5 examples where artificial intelligence was used for decision making. *Hitechnector*. Retrieved from <https://www.hitechnector.com/blogs/artificial-intelligence-decision-making/>
- The United Methodist Church. (2012). *The Book of Resolutions of the United Methodist Church*. Nashville, Tennessee: The United Methodist Publishing House.
- Thordarson, T. (2014). Should a Christian leader always wait on God to act? *The Journal of Applied Christian Leadership*, 8(2), 92-96.
- Tkacz, C. B. (2008). Esther, Jesus, and Psalm 22. *The Catholic Biblical Quarterly*, 70, 709-728.
- Uzialko, A. (2019). How artificial intelligence will transform business. *Business News Daily*. Retrieved from <https://www.businessnewsdaily.com/9402-artificial-intelligence-business-trends.html>
- Wadhwa, V. (2018). Don't believe the hype: Artificial intelligence isn't taking over business decision-making. *Washington Post*. Retrieved from <https://www.washingtonpost.com/news/innovations/wp/2018/03/19/dont-believe-the-hype-ai-isnt-taking-over-business-decision-making/>
- Walch, K. (2020). Ethical concerns of AI. *Forbes*. Retrieved from <https://www.forbes.com/sites/cognitiveworld/2020/12/29/ethical-concerns-of-ai/#265282de23a8>
- Waltke B. (1995). *Finding the will of God: A pagan notion?* Grand Rapids, Michigan: Eerdmans Publishing Company.
- Winitzer, A. (2011). The reversal of fortune theme in Esther: Israelite historiography in its ancient Near Eastern context. *Journal of Ancient Near Eastern Religions*, 11, 170-218.
- Wladawsky-Berger, I. (2017). The emerging, unpredictable age of AI. *MIT*. Retrieved from <http://ide.mit.edu/news-blog/blog/emerging-unpredictable-age-ai>
- Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. New York: Hachette Book Group.

ABOUT THE AUTHORS



Kent T. Saunders is a professor of finance and economics at Anderson University in South Carolina. He earned a BS from Ball State University with a major in mathematical economics, an MA in economics from Clemson University, and a PhD from Clemson University in applied economics. Dr. Saunders' research interests are teaching pedagogy, investments, and economic growth in the countries of the former Soviet Union. Kent has been married to his wife, Chrissie, since 1991, and together they have three grown children.



Larry G. Locke is a professor and associate dean of the McLane College of Business at the University of Mary Hardin-Baylor and a Research Fellow at LCC International University. He holds a JD from Harvard Law School, an MBA from Harvard Business School, and an MATH from Gordon Conwell Theological Seminary. He has 13 years experience as a lawyer in the financial services industry. Mr. Locke is an ordained Baptist minister and served as senior pastor of an independent Baptist church in Massachusetts for seven years. He has been married to his wife, Lisa, since 1985. They have three grown children.