Game Theory, the Prisoner's Dilemma, and the Book of Mormon

Robert F. Schwartz

In all of man's written record there has been a preoccupation with conflict of interest; possibly only the topics of God, love, and inner struggle have received comparable attention.

—R. Duncan Luce and Howard Raiffa[1]

If people do not believe that mathematics is simple, it is only because they do not realize how complicated life is.

—John von Neumann[2]

After five hundred years of bloodshed, mistrust, and mutual antagonism between two nations, a Nephite prince follows his inner voice and goes to preach to his historical enemies, the Lamanites. On arrival, Lamanites straightway seize the prince and arraign him before the local king. The fate of the Nephite prince lies in the hands of the enemy king, who has utter discretion and power to execute, detain, imprison, or deport him. In what appears to be an act of cruel whimsy, the king asks his captive whether he intends to stay and live among the Lamanites. The Nephite responds emphatically that he intends to dwell among Lamanites until his dying day. Responding to this affirmation,

---

1. R. Duncan Luce and Howard Raiffa, *Games and Decisions: Introduction and Critical Survey* (1957; repr., New York: Dover, 1989), 1.

2. The source of this semiapocryphal quote is set out at http://www.math .uiowa.edu/~jorgen/vonneumannquotesource.html.

the king unshackles the prince and offers to make him part of his family, and from this point forward Nephite-Lamanite interaction changes profoundly.

What could explain this exchange? Ammon, the prince, has not yet opened his mouth to preach, yet something in the nature of his contact with the king reverses deep-rooted suspicion and gives rise to cooperation. While arguably the Book of Mormon's most important case of conflict resolution, the Ammon example is merely one of many interactions in the Book of Mormon that, on closer inspection, demand further thought and scrutiny.

The Book of Mormon brims with conflict from its earliest to its latest pages, and each struggle poses its own questions. When Laman, Lemuel, Sam, and Nephi approach Laban to get the brass plates, could they more effectively anticipate Laban's reaction and work to counteract it? Why does sibling rivalry and discontent in Lehi's family repeat itself in similar ways and ultimately spiral down into ongoing violence? How is it possible for Nephite authors such as Enos and others to express concern for Lamanite welfare and simultaneously pursue war against Lamanites, condemning them as wild, bloodthirsty, idolatrous, and filthy (Enos 1:20)? Why does war disappear for almost three centuries after Jesus's postresurrection appearance? Why does the Book of Mormon end in apocalyptic ruin rather than peace?

Because the Book of Mormon is holy writ (many principal characters proclaim themselves to be—or are viewed by later authors as—prophets of God), a believer will naturally view such questions through the lens of faith. The answer of a believer to many of these questions says that character X is devoted and obedient to God's will in a given conflict and is thus divinely prospered, whereas character Y is prideful in defying God and suffers ill effects as a result. Observations like these find intrinsic support within the Book of Mormon and its Judeo-Christian belief system, but failure to inquire further may deprive readers of crucial insights and patterns that are hidden in plain view.

A comparative study of game theory and the Book of Mormon provides such insights. Some comparative studies make more intuitive sense than others. Almost forty-five years have passed since a twenty-three-year-old student published groundbreaking work that revealed the existence and extent of chiastic patterns in the Book of Mormon, joining centuries-old knowledge of poetic forms in the Bible with then-nascent Book of Mormon studies. The ongoing enthusiasm of academics and

lay observers for the chiasmus study flows partly from a feeling that the Book of Mormon *should,* given its origin, evidence ancient Hebrew poetic forms.[3]

Many later studies uniting various disciplines with close analysis of the Book of Mormon evoke similar responses of accord and praise. For example, the record's descriptions of lands, seas, and general topography give a natural entrée to geographic studies.[4] Other topical suitors include ancient history,[5] American history,[6] modern literature,[7] geology,[8] semiotics,[9] and law.[10] Despite this diversity, no student of the Book of Mormon has ever rigorously applied game theory to its histories and social structures.

The architects of game theory sought to provide a mathematical, axiomatic base for economics, and by this measure the discipline admittedly fails to present itself as a natural scriptural bedfellow.[11] From its earliest days, however, game theory has set about to measure, map, and try to resolve conflicts of interest, identifying optimal outcomes

---

3. John W. Welch, "Chiasmus in the Book of Mormon," *BYU Studies* 10, no. 1 (1969): 69; see also, for example, Joseph M. Spencer, *An Other Testament: On Typology* (Salem, Ore.: Salt Press, 2012), 2–7.

4. See, for example, David Palmer, review of *Exploring the Lands of the Book of Mormon*, by Joseph L. Allen, *BYU Studies* 30, no. 3 (1990): 136.

5. See Terryl L. Givens, *By the Hand of Mormon: The American Scripture That Launched a New World Religion* (New York: Oxford University Press, 2002), 89–116; C. Wilfred Griggs, "The Book of Mormon as an Ancient Book," *BYU Studies* 22, no. 3 (1982): 259–78.

6. See Richard L. Bushman, "The Book of Mormon and the American Revolution," *BYU Studies* 17, no. 1 (1976): 3–20.

7. See Gordon K. Thomas, "The Book of Mormon in the English Literary Context of 1837," *BYU Studies* 27, no. 1 (1987): 37–45; Richard H. Cracroft, "The Gentle Blasphemer: Mark Twain, Holy Scripture, and the Book of Mormon," *BYU Studies* 11, no. 2 (1971): 119–40.

8. See Benjamin R. Jordan, "'Many Great and Notable Cities Were Sunk': Liquefaction in the Book of Mormon," *BYU Studies* 38, no. 3 (1999): 119–22.

9. See Steven L. Olsen, "Cosmic Urban Symbolism in the Book of Mormon," *BYU Studies* 23, no. 1 (1983): 79–92.

10. See John W. Welch, *The Legal Cases in the Book of Mormon* (Provo, Utah: Neal A. Maxwell Institute, 2008).

11. John von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behavior*, 60th anniv. ed. (Princeton, N.J.: Princeton University Press, 2007), 1–15.

where struggles arise between individuals and groups. Recognizing the power of game theory as an analytical tool, modern jurists, politicians, lawyers,[12] sociologists,[13] Bible scholars,[14] and others continually work to grasp and apply its principles in their fields. This article represents the first sustained effort to do so in the Book of Mormon.

In their influential 1957 treatise on game theory, Duncan Luce and Howard Raiffa explain: "Game theory is not *descriptive*, but rather (conditionally) *normative*. It states neither how people do behave nor how they should behave in an absolute sense, but how they should behave if they wish to achieve certain ends."[15] During the 1930s and 1940s, luminaries of twentieth-century mathematics (most notably John von Neumann and John Nash) developed game theory's bedrock principles and assumptions. A vital example of these principles is John Nash's "equilibrium point." Nash shows that the best choice in many conflicts is the choice that cannot be bested regardless of the approach taken by one's opponent (more on this later). Though central to game-theory decision making, Nash's equilibrium point is called into question by a simple game/conflict called the "Prisoner's Dilemma."

The Prisoner's Dilemma has its origin in research by game theorists Merrill Flood and Melvin Dresher (and takes its name from a story about two prisoners that was created to explain the research to lay audiences).[16] Initially aiming to validate Nash's work in a practical trial, Flood and Dresher demonstrate that individuals might choose a mutually beneficial outcome even though it carries more risk than an equilibrium point approach. Hailed as the foundation of "many of the best-developed models of important political, social and economic processes,"[17] the Prisoner's Dilemma has grown over time to be seen as game theory's most persistent call to reflection on the pursuit and

---

12. See Douglas G. Baird, Robert H. Gertner, and Randal C. Picker, *Game Theory and the Law* (Cambridge, Mass.: Harvard University Press, 1994).

13. See Luce and Raiffa, *Games and Decisions*.

14. See Steven J. Brams, *Biblical Games: Game Theory and the Hebrew Bible*, rev. ed. (Cambridge, Mass.: MIT Press, 2002).

15. Luce and Raiffa, *Games and Decisions*, 63.

16. Merrill M. Flood, "Some Experimental Games," U.S. Air Force Project RAND Research Memorandum RM-789-1 (June 20, 1952). For a brief explanation of the origin of the Prisoner's Dilemma, see note 31 herein.

17. Robert Axelrod, *The Evolution of Cooperation* (London: Penguin, 1990), 28–29.

possibility of cooperation where conflicts arise. This call finds particular expression in the Book of Mormon.

The thesis of the present work is threefold: first, the Book of Mormon can be read as an extended, iterated Prisoner's Dilemma, with its unique histories reflecting outcomes that are consistent with modern game theory; second, reading the Book of Mormon in light of the Prisoner's Dilemma brings the text's patterns of conflict into sharp relief and provides a useful framework for understanding those patterns; and, last, a close reading of the Book of Mormon yields insights into the Prisoner's Dilemma that reaffirm a pattern not generally evident in studies of the Prisoner's Dilemma but which can be seen in the initial experiment carried out by Flood and Dresher.

AN INTRODUCTION TO GAME THEORY AND THE PRISONER'S DILEMMA

Although the primary aim of this article is to explore how the Prisoner's Dilemma can (and should) inform study of the Book of Mormon, the Prisoner's Dilemma must first be understood in relation to certain foundational principles of game theory. To this end, the introductory section of this article will briefly lay out principles established by von Neumann and Nash. Having laid this foundation, it will then explain what the Prisoner's Dilemma is and how it has developed conceptually. The main portion of the article will then discuss how the Prisoner's Dilemma relates to the Book of Mormon.

Von Neumann, Zero-Sum Games, and the Minimax Principle

Princeton-based Hungarian mathematician John von Neumann worked out game theory's threshold and starting point, which constitutes his best-known contribution to the field: the minimax principle. Von Neumann developed the minimax principle in what he referred to as "zero-sum two-person games."[18] "Game" in this context means a conflict between two individuals or groups over a finite resource or reward. The label "zero-sum" comes from the condition that the sum of all outcomes in the conflict must equal zero; in other words, one person's gain is the other person's loss, and neither "player" can gain more by adding to the limited resource that is the subject of the conflict (another term for "zero-sum" in game-theory parlance is "strictly competitive").

---

18. Von Neumann and Morgenstern, *Theory of Games*, 48.

Attempts to explain zero-sum games sometimes involve children and a cake.[19] Two children have a cake that they are to divide and consume, and the entire cake can be assigned a value of 1. Any portion of the cake that one child can secure for itself (creating positive value for that child) will come at the expense of the other child. Suppose that child 1 secures a portion equal to 0.6, meaning that 0.4 goes to child 2. The 0.4 to child 2 creates a value of −0.4 for child 1, giving child 1 a net gain of 0.2. The opposite will be true for child 2, who receives a positive value of 0.4 but a lost value of 0.6, leaving child 2 with an overall position of −0.2. While child 1 wins this conflict, the overall gains and losses of both children amount to zero.

But more is needed. In a zero-sum conflict, each player makes a choice that is independent of the other player and that must be made without knowledge of how the other player will exercise her choice (the game is, in other words, what game theorists would refer to as "noncooperative").[20] In making choices, each player seeks to achieve two aims: (1) increase as much as possible the amount gained from the conflict and (2) guard as much as possible against the risk posed by the other player seeking to do the same.

Von Neumann's great insight is that the optimal choice for either player in a zero-sum game is not simply the choice that yields the possibility of greatest gain. Instead, the minimax principle prescribes a course of action that combines the qualities of increasing as much as possible the minimum amount one player receives (maximize the minimum, or maximin) and decreasing as much as possible the top amount accruing to the other player (minimize the maximum, or minimax).[21] Applying this to the cake example, if one child cuts the cake and the other has first choice of the pieces then the cutter will cut the cake directly down the middle. This both minimizes the maximum that the other child will receive (no more than half) while maximizing the minimum amount that she will receive (half).

---

19. See William Poundstone, *Prisoner's Dilemma: John von Neumann, Game Theory, and the Puzzle of the Bomb* (New York: Anchor, 1993), 52–55; Katie Salen and Eric Zimmerman, *Rules of Play: Game Design Fundamentals* (Cambridge, Mass.: MIT Press, 2004), 239–41; Steven J. Brams, Michael A. Jones, and Christian Klamler, "Better Ways to Cut a Cake," *Notices of the American Mathematical Society* 53, no. 11 (December 2006), 1314–21. Other well-known examples of zero-sum games include tic-tac-toe, checkers, and chess.

20. See Luce and Raiffa, *Games and Decisions*, 88–89.

21. See von Neumann and Morgenstern, *Theory of Games*, 153–54.

Von Neumann called the optimal solution to such a game its "saddle point."[22] A saddle point can be simply understood as the point at which the interests of each individual in a zero-sum conflict are optimally balanced—the confluence of minimax and maximin in a way analogous to a mountain saddle pass that joins two opposing peaks.[23] In formulating theorems and identifying saddle points, von Neumann backed up his reasoning with rigorous mathematical proofs that go far beyond the scope of the present article. The vital point here is that the minimax principle elegantly illustrates the type of question that game theory seeks to address: where the interests of individuals or groups diverge, under what conditions can those interests find a mutual balance point?

Nash, Non-Zero-Sum Games, and Equilibrium Points

Someone who has grasped the minimax principle or notion of a saddle point already understands to a notable degree the intuition behind John Nash's "equilibrium point." However, where the minimax principle applies solely in the context of strictly competitive games, equilibrium points can be located in games where outcomes do not sum to zero.[24] Nash formulates the notion of equilibrium points explicitly to find a principle of more general applicability,[25] and a basic understanding of equilibrium points is key for anyone who wishes to grasp the Prisoner's Dilemma.

---

22. Von Neumann and Morgenstern, *Theory of Games*, 93–95.

23. Von Neumann and Morgenstern, *Theory of Games*, 95.

24. The remaining discussion in this article revolves around games that are competitive but not strictly competitive (not zero-sum). As discussed further in the context of the Prisoner's Dilemma, this means that while the interests of the players conflict, they do not conflict in all instances. In a competitive game, there may exist one or more outcomes that the players jointly prefer above all others despite conflict on other outcomes. In thinking about the distinction between competitive and strictly competitive conflicts, we should take care not to conflate the question of whether a game is competitive with whether it is cooperative. The former deals with the question of whether (and to what extent) the interests of the parties conflict, whereas the latter deals with the question of whether the parties can communicate before making their decisions (that is, whether they can collaborate in order to reach a given outcome). While this article has discussed both strictly and "merely" competitive games, all of the games discussed in this article (including the Prisoner's Dilemma) are noncooperative. For further discussion on strictly competitive vs. nonstrictly competitive games, see, for example, Luce and Raiffa, *Games and Decisions*, 59–60.

25. Howard W. Kuhn and Sylvia Nasar, eds., *The Essential John Nash* (Princeton, N.J.: Princeton University Press, 2002), 49–50, 85–86.

To understand the nature of an equilibrium point, consider two players (A and B) who can decide among the possible choices and related outcomes in a game that is represented in the table below (as illustrated, the first outcome in a given cell is for player A and the second outcome is for player B—for example, reading figure 1 below, if both players deploy choice 2, then A will have an outcome of 3 and B will have an outcome of 80):[26]

		B	
		Choice 1	Choice 2
A	Choice 1	7, 4	4, 0
	Choice 2	0, 3	3, 80

FIGURE 1. Player A's outcome is listed first, then player B's. The equilibrium point is 7, 4.

The equilibrium point for A and B in this game emerges when both players employ choice 1. Choice 1 represents an equilibrium point for both parties because *neither party can expect to benefit by employing any other choice.*[27] If A employs choice 1, the best possible outcome will be 7 and the minimum outcome will be 4. Likewise, if B employs choice 1, the best outcome is 4 and the worst outcome is 3. While B could potentially achieve an outcome of 80 by employing choice 2, B cannot expect to benefit by employing this strategy because A cannot justify choice 2 and will not choose it given the relative outcomes under choice 1.[28]

Where von Neumann's saddle point was the point at which minimax and maximin interests find optimal balance (an outcome that Nash called the "basic ingredient" of his equilibrium point theory),[29] Nash's equilibrium point can be understood as a similar but more general result where "each player's strategy is optimal against those of the others."[30] In other words, a player in a game reaches the equilibrium point when she happens upon a choice that cannot be bested when taking into account all strategies that the other player (or players) could employ.

Due to this article's focus on the Prisoner's Dilemma and given the intricacy of Nash's proofs, this article does not further consider the detail or nature of the games that Nash explored. Nash's core insight of equilibrium

---

26. See Poundstone, *Prisoner's Dilemma*, 98; see also Luce and Raiffa, *Games and Decisions*, 170–72.

27. See Luce and Raiffa, *Games and Decisions*, 170–72.

28. See Poundstone, *Prisoner's Dilemma*, 98.

29. Kuhn and Nasar, *Essential John Nash*, 85.

30. Kuhn and Nasar, *Essential John Nash*, 87.

point must be understood at a general level, however, because its application is what makes the Prisoner's Dilemma a true dilemma.

The Prisoner's Dilemma
(from the Flood-Dresher Experiment to the Axelrod Tournaments)

Like the example of children and cake and the encounter between A and B in figure 1, the Prisoner's Dilemma is a game—a conflict where players' relative choices determine their received outcomes. Merrill Flood and Melvin Dresher conceived and carried out the original Prisoner's Dilemma study (titled the "Non-Cooperative Pair") in or around January 1950, publishing it in 1952.[31] In the years following Flood and Dresher's experiment, the Prisoner's Dilemma became a subject of intense debate and analysis both within the game-theory community and far beyond.[32]

---

31. Flood, "Some Experimental Games," 17. The Flood-Dresher study took its moniker soon thereafter from a simple story involving two prisoners that Albert William Tucker (a Princeton mathematician and acquaintance of Flood and Dresher) produced to make the research accessible for audiences with little or no background in game theory. Poundstone, *Prisoner's Dilemma*, 116–18; Luce and Raiffa, *Games and Decisions*, 94–95. Tucker, who was a colleague of von Neumann and had taught John Nash, told a story to illustrate the Prisoner's Dilemma that went something like the following (here as related by Luce and Raiffa):

"Two suspects are taken into custody and separated. The district attorney is certain that they are guilty of a specific crime, but he does not have adequate evidence to convict them at a trial. He points out to each prisoner that each has two alternatives: to confess to the crime the police are sure they have done or not to confess. If they both do not confess, then the district attorney states he will book them on some very minor trumped-up charge such as petty larceny and illegal possession of a weapon, and they will both receive minor punishment; if they both confess they will be prosecuted, but he will recommend less than the most severe sentence; but if one confesses and the other does not, then the confessor will receive lenient treatment for turning state's evidence whereas the latter will get 'the book' slapped at him." Luce and Raiffa, *Games and Decisions*, 95.

If illustrated in a table, the game would appear as follows:

		Suspect 2	
		Not Confess	Confess
Suspect 1	Not Confess	1 year, 1 year	10 years, 3 months
	Confess	3 months, 10 years	8 years, 8 years

Why, precisely, this game poses a dilemma and the nature of its implications are further explored in the body of this article.

32. See, for example, Axelrod, *Evolution of Cooperation*, 28. Axelrod mentions Prisoner's Dilemma studies in relation to a variety of specific and abstract

Among the various debaters and students, Robert Axelrod (a mathematician and political scientist at the University of Michigan) published a pivotal subsequent study in 1984, *The Evolution of Cooperation.*

Axelrod boils down the Prisoner's Dilemma into the following tidy narrative:

> In the Prisoner's Dilemma game, there are two players. Each has two choices, namely cooperate or defect. Each must make the choice without knowing what the other will do. No matter what the other does, defection yields a higher payoff than cooperation. The dilemma is that if both defect, both do worse than if both had cooperated. . . . The Prisoner's Dilemma is simply an abstract formulation of some very common and very interesting situations in which what is best for each person individually leads to mutual defection, whereas everyone would have been better off with mutual cooperation.[33]

Axelrod summarizes the game's payoffs as follows:[34]

		B	
		Cooperate	Defect
A	Cooperate	3, 3	0, 5
	Defect	5, 0	1, 1

FIGURE 2. Player A's outcome is listed first, then player B's. The equilibrium point is 1, 1.

Looking at figure 2, someone schooled in game theory should immediately note that the game is not strictly competitive, since the outcomes for the players do not all sum to zero (for example, it is possible for both players to come out ahead if both players cooperate). Dealing with a non-zero-sum game and unable, therefore, to apply the minimax principle, we must ask where the equilibrium point lies.

The clear equilibrium point is, as Axelrod hints, mutual defection; stated another way, neither player can expect to do any better in a noncooperative environment than to defect. Although both players will perform better if they cooperate, each player faces the constant temptation to defect, scoring additional value and leaving the cooperator with a loss. Because cooperation opens up to each player the greatest possibility of loss, the only strategy that cannot be bested independent of any decision made by the other player is to defect. And therein lies the dilemma: the

---

fields including the arms race, "oligopolistic competition," vote trading, women's rights, collective action, rational thought, and others.

33. Axelrod, *Evolution of Cooperation*, 8, 9.

34. Axelrod, *Evolution of Cooperation*, 8.

most efficient result comes when both players choose an option that, while relatively safe, yields less overall utility (2) than if the players were to both take a choice that creates greater overall good both individually and collectively (6 when both cooperate).[35]

As part of his Prisoner's Dilemma analysis, Axelrod introduces nicknames for the payoffs (allowing him to avoid constant reference to numerical values). The payoff to each player for mutual cooperation is the "reward," or *R*. Where one player cooperates and the other defects, the defector gains the "temptation" (*T*) while the cooperator is left with the "sucker's payoff" (*S*). Where both defect, both players receive the "punishment" (*P*):[36]

		B	
		Cooperate	Defect
A	Cooperate	*R, R*	*S, T*
	Defect	*T, S*	*P, P*

FIGURE 3. Player A's outcome is listed first, then player B's. The equilibrium point is *P, P*.

Generalizing in this way, Axelrod injects a further dose of mathematical rigor in establishing two conditions that must be met in order for payoffs to qualify as a Prisoner's Dilemma:[37]

---

35. A rational observer would comment that the value of the 1.5 cents should be discounted to take account of the risk of the other player choosing choice 2 and subjecting the player to loss.

36. Axelrod, *Evolution of Cooperation*, 8–9, 206–7.

37. Axelrod, *Evolution of Cooperation*, 9–10, 206–7. The Axelrod version of the Prisoner's Dilemma meets both of these conditions: condition 1 is met because 5 > 3 > 1 > 0, and condition 2 is met because, once the calculation has been made, 3 > 2.5. While these conditions provide a handy guide in relation to Axelrod's version of the Prisoner's Dilemma (which one could call a "symmetric Prisoner's Dilemma," given the equal payoffs to both parties), they do not adequately describe the conditions that would have to exist for a Prisoner's Dilemma of the type described in the Flood-Dresher experiment (an "asymmetric Prisoner's Dilemma"). For an asymmetric Prisoner's Dilemma, the conditions would have to be revised slightly as follows:

Condition 1*: $(T1 + T2) > (R1 + R2) > (P1 + P2) > (S1 + S2)$

Condition 2*: $\dfrac{(R1 + R2)}{2} > \dfrac{(T1 + S1) + (T2 + S2)}{4}$

It should be noted here that while the Flood-Dresher experiment (explored later in the article) meets condition 1 (after sums are performed, 5 > 1.5 > 0.5 > –2), it does not meet condition 2 (having done the math, 0.25 = 0.25; this fails

Condition 1:   *T* (temptation payoff) > *R* (reward payoff) > *P* (punish-
            ment payoff) > *S* (sucker's payoff)

Condition 2: $R > \frac{(T + S)}{2}$

The first condition is essential because even in circumstances where it is hard (or practically impossible) to attach cardinal values to payoffs, we can still apply an ordinal hierarchy to assess payoffs relative to one another and have certainty that the players are receiving incentives that match the Prisoner's Dilemma model. The second condition speaks less to the relative value between payoffs and more to the power of the proposed reward (*R*) relative to the temptation (*T*) and the sucker's payoff (*S*). If *R* does not have greater value than the average of *T* and *S*, then this could suggest that a player does not have strong enough incentive to seek *R* because *T* could invariably yield higher returns (even if only obtained sometimes).[38] These generalized terms combined with the conditions make the Prisoner's Dilemma more flexible and easy to apply in a wide variety of situations while still retaining consistency.

Two primary questions drive Axelrod's analysis of the Prisoner's Dilemma: (1) "In situations where each individual has an incentive to be selfish, how can cooperation ever develop . . . without the aid of a central authority?"[39] and (2) "Since the Prisoner's Dilemma is so common in everything from personal relations to international relations," what

---

because the former should be greater than the latter as in the Axelrod experiment). While the Flood-Dresher experiment presents the first instance of a Prisoner's Dilemma (a game where the optimal outcome yields less overall gain than an outcome where both players spontaneously cooperate), we might argue that the failure of the reward (*R*) to outweigh the average of the temptation and the sucker's payoff ([*T* + *S*]/2) creates a more powerful incentive for the players to defect (noting that AA defects on almost ⅓ of his plays, and AA and JW together defect on just over ¼ of the 100 plays). Where symmetric and asymmetric payoffs are concerned, Axelrod does admit that the payoffs do not need to be symmetric provided that the two conditions are met. Axelrod, *Evolution of Cooperation*, 17. However, for the conditions to apply to asymmetric payoffs, they must be amended in the same manner as condition 1* and condition 2* above.

38. Axelrod writes in relation to the second condition: "The second part of the definition of the Prisoner's Dilemma is that the players cannot get out of their dilemma by taking turns exploiting each other. This assumption means that an even chance of exploitation and being exploited is not as good an outcome for a player as mutual cooperation. It is therefore assumed that the reward for mutual cooperation is greater than the average of the temptation and the sucker's payoff." Axelrod, *Evolution of Cooperation*, 10.

39. Axelrod, *Evolution of Cooperation*, 3, 6.

practical strategy can an individual apply to "choose effectively in an iterated Prisoner's Dilemma"?[40]

To test these questions, Axelrod organized and ran two Prisoner's Dilemma computer tournaments. He invited experienced game theorists to submit computer programs with encoded rules on whether to cooperate or defect on every move of an iterated Prisoner's Dilemma.[41] Fourteen academics from five disciplines (psychology, economics, political science, mathematics, and sociology) responded in the first tournament, and, following that tournament's success, sixty-two academics participated in the second tournament. Each tournament was structured as a round robin with 200 moves per round (making 400 separate choices per round for both players).[42] Each move was awarded points in accordance with figure 2 above, and to win the tournament a program would have to score the highest average number of points across all rounds.

The winner of both tournaments was a very simple program named TIT FOR TAT ("TFT").[43] The strategy encoded into TFT starts with a cooperative move and then does whatever the other player did on the prior move.[44] As long as the other player is willing to cooperate, TFT cooperates. The instant that a player defects, TFT follows suit. Axelrod calls TFT and strategies like it "nice" strategies, by which he means that they are never the first to defect.[45] The results of both tournaments show that TFT's strength derives from a combination of four characteristics: it is (1) nice (never defects first), (2) retaliatory/provokable (quickly reacts to defection), (3) forgiving (holds no grudges in relation to past defection and promptly cooperates along with the other party) and (4) clear (very easy to recognize in iterated play).[46]

A number of conclusions that Axelrod derives from the tournament results will be teased out as we apply the Prisoner's Dilemma to the Book of Mormon, but one key conclusion must be mentioned here: the propensity of individuals to cooperate depends on their scope for future

---

40. Axelrod, *Evolution of Cooperation*, 27, 29.

41. Axelrod, *Evolution of Cooperation*, 30–31. Axelrod mentions that he specifically invited individuals with a "rich understanding of the strategic possibilities inherent in a non-zero-sum setting . . . who had published articles on game theory in general or the Prisoner's Dilemma in particular."

42. Axelrod, *Evolution of Cooperation*, 30–31.

43. Axelrod, *Evolution of Cooperation*, 31–32.

44. Axelrod, *Evolution of Cooperation*, 31.

45. Axelrod, *Evolution of Cooperation*, 33.

46. Axelrod, *Evolution of Cooperation*, 54.

interaction (something that he refers to as the "shadow of the future").[47] Axelrod successfully demonstrates that TFT succeeds only if the value assigned to future interaction is high.[48] The lower the value that players attach to future dealing (perhaps, as Axelrod points out, owing to a "greater likelihood that the interaction will end soon, or to a greater preference for immediate benefits over delayed gratification"),[49] the more likely it becomes that players will defect and the poorer the results obtained by TFT. And the reverse is also true: as the shadow of the future lengthens, players become more prone to cooperate and the results obtained by TFT are more robust.

We are almost equipped to apply the Prisoner's Dilemma, but there remains a variation of the game that yields results that must be understood before starting a Book of Mormon analysis: the asymmetric Prisoner's Dilemma. The Prisoner's Dilemma as described by Axelrod is symmetric; in other words, the players receive equivalent payoffs in similar situations (*T, R, P* and *S* are the same for each player). Axelrod accepts that this equivalence is not necessary for a Prisoner's Dilemma to be considered as such (the important thing is for the two conditions described above to be met).[50] While taking this vital logical step, Axelrod does not explore how players might react if their payoffs are not equivalent.

Nonequivalent, asymmetric payoffs matter because they naturally occur in many (if not most) "real-life" situations, and the original Flood study gives us a compelling case in point. To carry out his "Non-Cooperative Pair" experiment, Flood chose Armen Alchian (AA) of UCLA and John Williams (JW) of RAND (both of whom were "familiar with two-person zero-sum game theory").[51] Flood presented AA and JW with the payoffs in figure 4 below, explaining that they would repeat the game 100 times and have an opportunity to record thoughts or reactions after each play:

---

47. Axelrod, *Evolution of Cooperation*, 59, 124–32.

48. Axelrod, *Evolution of Cooperation*, 126–32.

49. Axelrod, *Evolution of Cooperation*, 128.

50. Axelrod, *Evolution of Cooperation*, 17.

51. Flood, "Some Experimental Games," 17; see also Poundstone, *Prisoner's Dilemma*, 106. Flood noted more specifically, "They also knew something of the von Neumann–Morgenstern theory for non-constant sum games, but were not familiar either with the Nash work or the split-the-difference principle." Flood, "Some Experimental Games," 17.

		JW	
		Choice 1	Choice 2
AA	Choice 1	0.5¢, 1¢	−1¢, 2¢
	Choice 2	1¢, −1¢	0, 0.5¢

FIGURE 4. AA's outcome is listed first, then JW's. The equilibrium point is 0, 0.5¢.

Unlike the Axelrod tournaments, the Flood study has each player receive different payments in the same situations. The payoffs conform to the $T > R > P > S$ hierarchy, but they are not equal.

Flood ran the mini-tournament and then tallied up the results of the 100 games played between AA and JW. We can see that the AA-JW contest yields the following frequencies:[52]

		JW	
		Choice 1	Choice 2
AA	Choice 1	60%	8%
	Choice 2	18%	14%

FIGURE 5.

In a study designed to test whether players would choose the Nash equilibrium in practice, the players do not generally choose the most efficient outcome.[53] The 60 percent frequency of mutual cooperation vindicates the "shadow of the future" conclusion of the Axelrod tournaments over thirty years before those tournaments ever took place. In repeated play over 100 iterations, the players' scope for future interaction gives them incentive to do the risky thing and cooperate, steering away from the equilibrium point. Bolstering this "shadow of the future" analysis, AA even identifies explicitly that the end of the game could likely trigger

---

52. Flood, "Some Experimental Games," 18.

53. Flood, "Some Experimental Games," 1–4. Flood stated specifically: "I have long felt that the axiomatic structures developed by von Neumann-Morgenstern, and by others, should be tested for applicability and usefulness in controlled experimental situations—and I have called such activity 'experimental games'" (at 3). Flood and Dresher both worked for the RAND Corporation (RAND stood for "research and development"), a project set up initially as a joint venture between Douglas Aircraft and the U.S. Air Force to conduct military research. Poundstone, *Prisoner's Dilemma*, 84–86. Though in the years immediately following World War II RAND researchers concentrated mainly on the logistics and practical repercussions of nuclear war, their research broadened as the years progressed. Poundstone, *Prisoner's Dilemma*, 84–99.

defection by both parties. As the end of the game approaches and the players hit a stretch of prolonged cooperation, AA comments after move 91 of 100 (both parties having cooperated on the prior 9 moves): "When will [JW] switch as a last minute grab of (2) [defection]. Can I beat him to it as late as possible?"[54] AA knows that the end of the game will flip the players' incentives, giving them reason to value larger short-term gain over the steady long-term gains of cooperation.

In addition to the "shadow of the future," another trend jumps out of the Flood tournament: almost ⅓ of the game's outcomes consist of JW choosing 1 while AA defects and picks choice 2. Why does AA take advantage of JW, and why does he do it to JW 10 percent more often than JW does it to him?

Figure 4 plainly shows inequality in the results received by AA and JW; whatever AA might achieve, JW will achieve more in the same circumstances. While choice 2 is the optimal, safest bet, it leaves JW with very little and AA with nothing when both choose it together (although it does have the virtue of protecting both players from receiving –1¢ in a scenario where one or the other player defects). Given the game's setup, the only way that AA can get a decent result is to defect by choosing 2 when JW chooses 1. So mere observation of the payoffs suggests that AA might defect more often simply to increase his score; however, the players' notes give this story more color and shed light on two distinctly varying narratives about the game's progression.

JW recognizes early in the process that choice 2 is the game's equilibrium point, but that both players will do better if they are willing to assist one another in mutually choosing 1.[55] It is obvious to JW that he will personally gain more than AA from both cooperation and equilibrium point scenarios, but JW's thought is that cooperation under choice 1 yields greater good to both of them so AA may as well "get on the bandwagon . . . [and] invest in his own future."[56] In short, JW

---

54. Flood, "Some Experimental Games," 40.

55. Flood, "Some Experimental Games," 41. JW's exact thoughts (recorded after play number 10) were as follows (he was apparently thinking in terms of 10-play intervals): "I can guarantee myself a gain of 5, and guarantee that Player AA breaks even (at best). On the other hand, with nominal assistance from AA, I can transfer the guarantee of 5 to Player AA and make 10 for myself too. This means I have control of the game to a large extent, so Player AA had better appreciate this and get on the bandwagon." Flood, "Some Experimental Games," 41.

56. Flood, "Some Experimental Games," 41.

accepts the game's fundamental inequality and feels that both players should try to achieve as much as possible within their respective privileged and less-privileged spheres.

As AA defects throughout the game, trying to take points at JW's expense, JW expresses at turns bemusement and outrage. JW clearly views himself as a noble benefactor who is trying to do the "virtuous" thing while AA is jealous of his success, a petulant "stinker" who "learns slow."[57] JW's nutshell view of AA is probably best expressed after play 52, when he notes: "He *requires* great virtue but doesn't have it himself."[58]

AA also recognizes the outcome inequality, but as the player destined to come up short, he reacts to it differently than JW. Immediately after the first play, AA implicitly makes clear that, in his view, an equitable outcome can result only if both players achieve equal points (and he wins only if he has more points than JW).[59] As the game progresses and AA scores fewer points, he sees that JW is trying to encourage the cooperative 1-1 scenario but that the score can be equalized by pulling away and occasionally choosing 2 as JW sticks to 1.[60]

When JW retaliates against AA's capricious moves by choosing 2 himself, AA protests again and again that JW is unwilling to "share."[61] From AA's perspective, JW's winning posture places on him an obligation to allow AA to win some points at his expense. After move 59, AA records, "He does not want to *trick me*. He is satisfied. I must teach him to share."[62] Then, after move 70, "I'll try once more to share—by taking."[63] Faced with inequality, AA resorts to self-help to equalize results—vigilante justice.

And so a dichotomy emerges from the two narratives. For JW, the players achieve fair outcomes if they both obtain the maximum possible

---

57. Flood, "Some Experimental Games," 41–42. JW's self-epithet (recorded after play 41) was "always try to be virtuous," and he saw himself as giving AA chance after chance to meet him in the virtuous land of choice 1. His impressions of AA were variously: "The stinker," "He's crazy," "Maybe he'll be a good boy now," "To hell with him," "——, he learns slow!" "The ——," "A shiftless individual—opportunist, knave," and "He can't stand success."

58. Flood, "Some Experimental Games," 42.

59. Flood, "Some Experimental Games," 39. After play 1, AA recorded: "JW will play 1—sure win. Hence if I play 1—I lose."

60. Flood, "Some Experimental Games," 39.

61. Flood, "Some Experimental Games," 39. After moves 49, 58 and 67, AA remarked, "He will not share."

62. Flood, "Some Experimental Games," 39, emphasis in original.

63. Flood, "Some Experimental Games," 40.

points on a segregated basis. For AA, fairness requires absolute parity, which, given the setup of the game, requires JW occasionally to give AA extra points (that is, willingly allow AA to take advantage of his good will). In short, the better-off player in an asymmetric Prisoner's Dilemma is satisfied with the status quo while the player with the short straw desires actual equivalence and feels justified in taking advantage of his counterpart to achieve such equivalence (provoking retaliation from the better-off, for whom the setup works well).

The same trends that we see in the Flood-Dresher experiment and the Axelrod study permeate the Book of Mormon.

The Prisoner's Dilemma and the Book of Mormon

Given the (necessarily but unfortunately) long introduction to this article, we should remind ourselves of its core concerns: first, that the histories of the Book of Mormon can be read as an iterated Prisoner's Dilemma; second, that reading the Book of Mormon in light of the Prisoner's Dilemma will help us not only to understand its conflicts better but also to build a framework for understanding those conflicts; and, last, that a close reading of the Book of Mormon can offer us examples of asymmetric Prisoner's Dilemmas (that is, those with unequal payoffs similar to the Flood-Dresher study) and give us insight into the effects of asymmetry and how it might be addressed.

Approaching Book of Mormon History in a Prisoner's Dilemma Framework

Applying the Prisoner's Dilemma to the Book of Mormon raises vital questions and issues. Rather than address these points in the abstract, we will consider a story that arguably presents the first Prisoner's Dilemma in the Book of Mormon and use it as an entrée to further investigation.

In chapter 3 of 1 Nephi, we find the prophet Lehi and his family in the wilderness as recent exiles from Jerusalem. Lehi says to Nephi, his fourth son, that God has commanded him in a dream that Nephi and his brothers must backtrack to Jerusalem and obtain a set of scriptures and genealogy recorded on brass plates from a man named Laban (1 Ne. 3:2–4). Nephi and his brothers return to Jerusalem, where they "cast lots" on who will have to go and speak to Laban—who, we can surmise from the lot casting, does not have a reputation as an affable man (1 Ne. 3:9–11). Nephi's brother Laman comes up short and goes to Laban to ask for the plates, only to receive a terse, aggressive rebuff (1 Ne. 3:11–14).

After an intense debate on whether they should return empty-handed or try Laban again, the brothers decide to return to "the land of our inheritance" and collect "our gold, and our silver, and our precious things" to exchange for the plates (1 Ne. 3:15–23). As Nephi and his brothers again approach Laban to transact with their new wager, we might view the potential outcomes as follows:

Nephi and Brothers

		Cooperate	Defect
Laban	Cooperate	Laban gets "precious things" (*R*) Nephi & brothers get plates (*R*)	Laban gets nothing (*S*) Nephi & brothers take everything (*T*)
	Defect	Laban takes everything (*T*) Nephi & brothers get nothing (*S*)	Laban keeps plates (*P*) Nephi & brothers keep "precious things" (*P*)

FIGURE 6.

Nephi and his brothers hope for mutual cooperation, but what they receive from Laban is the sucker's payoff while he takes the temptation payoff (1 Ne. 3:25–26).

To determine whether this describes a formal Prisoner's Dilemma, we look to Axelrod's two conditions. The first condition requires that T (temptation payoff) $> R$ (reward payoff) $> P$ (punishment payoff) $> S$ (sucker's payoff). Because we are not dealing with numerical payoffs, the measurement becomes more subjective, and we must assess the hierarchy from the perspective of each party (assuming that the conditions are met, Axelrod notes along these lines that the "payoffs of the players need not be comparable at all").[64]

For both sides to this particular conflict, the temptation payoff consists of both the "precious things" and the plates together, while the sucker's payoff is nothing. For Nephi and his brothers, the reward payoff would be the plates and the punishment payoff would be the status quo of keeping the family's inheritance (and not obtaining the plates). The hierarchy of payoffs as it applies to Nephi and his brothers seems to fall into the following order:

> Obtain plates and keep "precious things" (*T*) > Obtain plates in exchange for "precious things" (*R*) > Keep "precious things" and fail to obtain the plates (*P*) > Lose "precious things" and receive nothing (*S*)

---

64. Axelrod, *Evolution of Cooperation*, 17.

Was *T* the most desirable option for Nephi and his brothers? Although seemingly innocuous as an initial step, Laman first seeks the plates from Laban while offering no cooperative compensation at all. A typical Book of Mormon reader does not think of Laman in this instance as acting in bad faith (and the textual evidence seems to indicate that he acts in good faith), but Laman effectively offers Laban the sucker's payoff. The brothers in fact seek *T* before they seek *R*. We also know that the brothers seek to give their precious things in exchange for the plates, making it safe to conclude that *R* is of greater worth than *P*, and that *S* is the least desirable option. For Nephi and his brothers, the text provides strong support for the hierarchy of *T* > *R* > *P* > *S*.

So what were Laban's preferences? Responding to Laman's initial wager with the avowal "thou art a robber, and I will slay thee" (1 Ne. 3:13), Laban makes clear that he is not going to give up the plates easily and that he is no one's sucker. Nephi's narrative also shows that after the second encounter Laban ends up with both the plates and the family inheritance, so Laban demonstrably values and goes for the *T* payoff. While Laban values *T* the most and *S* the least, it is less clear whether he places greater value on the plates (nominally his "punishment" payoff) or the "precious things" (his assigned "reward" payoff). Laban's repeated snubs of the brothers' attempts to get the plates indicate that he values the plates enough to hold onto them.

In regard to the "precious things," Nephi indicates that "when Laban saw our property, and that it was exceedingly great, he did lust after it, insomuch that he thrust us out, and sent his servants to slay us, that he might obtain our property" (1 Ne. 3:25). While this might indicate that Laban values the property higher than the plates, we must keep in mind that the story is being related by the recipient of the sucker's payoff (at least initially) and that Laban's desire for the property in this instance coincides with his grab for *T*. The dual facts that the plates contain a genealogical record and that Laban is their keeper could suggest that they also chronicle his family history and have idiosyncratic worth for him as well.

Thus, while Laban's hierarchy could follow the prescribed order, there is some question as to whether this was actually the case:

> Obtain plates and keep "precious things" (*T*) > Obtain "precious things" in exchange for the plates (*R*?) ≥ Keep plates and fail to obtain "precious things" (*P*?) > Receive and retain nothing (*S*)[65]

---

65. Wynn Stirling helpfully points out that another way of noting the Laban payoffs could be: "Obtain plates and keep 'precious things' (*T*) >

The same Laban caveat holds true for the second Prisoner's Dilemma condition:

$$R > \frac{(T+S)}{2}$$

Although Nephi and his brothers value the plates (R) more than the average payoffs of taking everything (T) and walking away with nothing (S) (especially given that their sole aim in returning to Jerusalem was to get the plates), the text provides less evidence that Laban values the brothers' property more than the average of T and S from his perspective (although one could rationally assume that this was the case).

This exercise illustrates the practical difficulty of applying the Prisoner's Dilemma to the Book of Mormon. The question as to whether Laban values the offered riches more than the plates is material because it goes to the heart of whether Laban has good (or even any) incentive to cooperate with Nephi and his brothers. While the fit is not perfect, the story of Nephi and Laban does hew to the Prisoner's Dilemma model and it seems fair (noting relevant caveats) to call it a Prisoner's Dilemma.

If we stipulate that we are dealing here with a robust instance of a Prisoner's Dilemma, what does this tell us? This story, after all, is explicable on a number of common sense levels. Laban is apparently a ruffian who wants to take property that does not belong to him. Further, he has already said no, and the brothers have their answer, so perhaps they should think more carefully about going back to strike a deal with a man who has a private security force. The Prisoner's Dilemma, however, demands that we look at the course of dealing and the scope for future interaction between these characters.

When we evaluate the Laban story as a Prisoner's Dilemma, it becomes clear that that the optimal course of action is mutual defection. This is where Laman and Laban end up after their first meeting, with each receiving the P payoff spelled out in figure 6. On this basis alone, the brothers might have taken a dim view of their chances (and the text shows that Laman and Lemuel do take a dim view, 1 Ne. 3:14). Further,

---

Obtain 'precious things' in exchange for the plates (R) ~ Keep plates and fail to obtain 'precious things' (P) > Receive and retain nothing (S)." Email, Wynn Stirling to Robert F. Schwartz, September 15, 2012. The "~" symbol means "is indifferent between," reflecting an antisymmetrical relationship. The statement $R \sim P$ formally means $R \geq P$ and $P \geq R$. In this instance, as we are not certain whether Laban's preferences were strictly indifferent and the ordinal preferences as laid out in the text are more easily understood by a lay reader, the "~" symbol has not been used.

the brothers and Laban have no scope for future interaction. Laban likely would have been aware of the family's hasty departure from Jerusalem, and his repeated death threats indicate that he does not anticipate future dealings with the brothers. With no shadow of the future to give the parties incentive to prefer delayed gratification over immediate gain, the man with the army does what is within his power to do.

And so, in this instance, the Prisoner's Dilemma can indicate *ex ante* what, *ex post*, was clearly destined to transpire when the brothers approach Laban. Approaching the text from this viewpoint does not detract from the divine importance of obtaining the plates as described in 1 Nephi. The brothers (or at least Nephi) recognize that they have a divine commission, but the lens of the Prisoner's Dilemma suggests that they could have, at the very least, gone to Laban with their family inheritance in the first instance instead of playing Laban for a sucker. Other strategies might likewise have boosted their chances (one of which Nephi is compelled to employ later). In any case, the Prisoner's Dilemma makes a prominent appearance in the earliest pages of the Book of Mormon.

Having applied the Prisoner's Dilemma to the encounter between Laban and Lehi's sons, we see that comparative study of the Book of Mormon and the Prisoner's Dilemma raises two fundamental challenges, each of which contains a multitude of questions and considerations:

First challenge. Assigning relative values to payoffs is difficult. Nephi desires the plates because he is deeply convinced that God has commanded him to retrieve them (see 1 Ne. 3:14–21). Laman and Lemuel, by contrast, lack apparent conviction and investment in obtaining the plates (see 1 Ne. 3:5, 14). As discussed above, the text does not fully resolve the question of whether Laban places greater value on the plates or the gold and silver. Does it matter that Laban would receive an R consisting of "gold and silver" whereas Nephi would receive R in the form of a brass-plate chronicle? What if Nephi derives more value from R than Laban? How does the brothers' status as sons of Lehi, a wanted criminal, change Laban's persuasion?[66] Do Laban's own legal duties (in respect of the plates or otherwise) impact relative payoffs values?

---

66. Hugh Nibley, *An Approach to the Book of Mormon*, 3d ed. (Salt Lake City: Deseret Book, 1998); the relevant passage discussing Lehi's public order crimes in Jerusalem can be accessed at http://maxwellinstitute.byu.edu/publications/ books/?bookid=60&chapid=612. In chapter 28 ("The Way of the Wicked") of *An Approach to the Book of Mormon*, Nibley writes: "The pattern of crime in

To line up potential Book of Mormon payoffs and show that they fit the Axelrod Prisoner's Dilemma conditions, a reader must scour the text for evidence that might or might not be forthcoming. Compounding this evidentiary problem is the fact that we receive Book of Mormon facts from narrators who either live through the events in question or clearly recognize one or another side as being in the right. So even where the text reports facts, we have to tread carefully in forming an "objective" view. And finally, can an action fairly bear the "defection" label if the text suggests that it effectively fulfills God's will?

Fortunately, the Prisoner's Dilemma model (especially as both generalized and formalized by Axelrod) is robust enough both to respond to and to withstand these concerns while remaining useful as a tool for measuring conflicts and their outcomes. As noted already, the players' respective payoffs do not need to match (we should not be worried if we seem to be comparing apples and oranges).[67] As long as the payoffs to a player can be measured relative to each other, the two definitive conditions can be assessed and measured. The brothers might seek plates and Laban might seek riches, but as long as we know how the brothers rate plates relative to family inheritance and that Laban clearly prefers taking everything to accepting the brothers' offer of "precious things," then we can hope to draw conclusions about whether their mutual conflict proceeds as we would expect, given what the Prisoner's Dilemma tells us about human behavior.

Even if we accept that the payoffs to one or another party can qualitatively differ, should the players not be receiving payoffs that have equivalent value (that is, should they not be quantitatively matched)? Is it problematic, for instance, that in the mutual cooperation scenario of figure 6 Nephi seems poised (given his divine mandate) to derive more

---

the Book of Mormon is clearly established in the very first chapter, where we read of a plot among the Jews at Jerusalem to put Lehi out of the way. It was no excited street-rabble or quick impulse of a city mob that threatened his life; certain parties 'sought his life' . . . with purpose and design . . . and his awareness of the danger gave Lehi time to plan and execute an escape. . . . [In the view of these people,] Lehi was a dangerous and irresponsible troublemaker and, in view of the international situation, treasonable and subversive to the bargain."

67. Axelrod, *Evolution of Cooperation*, 17. Axelrod illustrates this point as follows: "For example, a journalist might get rewarded with another inside story, while the cooperating bureaucrat might be rewarded with a chance to have a policy argument presented in a favorable light." Axelrod, *Evolution of Cooperation*, 17.

value from the plates than Laban would from the riches (in a way reminiscent of the asymmetric payoffs of the Flood-Dresher experiment)? Axelrod's thoughts on this point are important enough that they bear extended quotation:

> The payoffs certainly do not have to be symmetric. It is a convenience to think of the interaction as exactly equivalent from the perspective of the two players, but this is not necessary. One does not have to assume, for example, that the reward for mutual cooperation, or of any of the other three payoff parameters, have the same magnitude for both players. . . . [One] does not even have to assume that they are measured in comparable units. The only thing that has to be assumed is that, for each player, the four payoffs are ordered as required for the definition of the Prisoner's Dilemma.[68]

As the original Flood experiment demonstrates, asymmetric payments can affect the incentives and outcomes of the parties to a Prisoner's Dilemma, and we will shortly see how such asymmetry plays out more generally in Book of Mormon history.

So players can receive different payments, and those payments can give one player more value (even much more value) than another player, but should we still hesitate to label an action "defection" that in the Book of Mormon fulfills (or is responsive to) the will of God? A seed of an answer to this question is bound up in Axelrod's thought that "cooperation need not be considered desirable from the point of view of the rest of the world," citing bribery as an example.[69] The negative pregnant[70] of this statement is the notion that defection is not *per se* undesirable when viewed through the lens of a Book of Mormon author. One example of this appears in figure 6, where the brothers could have obtained the plates without rendering their possessions to Laban (Laman's initial plan), thus simultaneously fulfilling the will of God as expressed by their father Lehi and defecting vis-à-vis Laban. We will see other examples where a party is said to defect despite acting in furtherance of the expressed divine will, and this should not be problematic.

------

68. Axelrod, *Evolution of Cooperation*, 17. See note 35 for a discussion of the way in which one would have to modify the conventional Axelrod formulas to accommodate asymmetric payments.

69. Axelrod, Evolution of Co-operation, 17–18.

70. A negative pregnant is "a denial of an allegation in which a person actually admits more than he/she denies by denying only a part of the alleged fact." The Free Dictionary, http://legal-dictionary.thefreedictionary.com/Negative+pregnant.

Second Challenge. Can the core assumption of self-interest/utility maximization that underpins game theory (including the Prisoner's Dilemma) contradict or even undermine the Christian ethos of care for others that resides at the heart of the Book of Mormon? The answer here is that self-interest, properly understood, is not mutually exclusive with reciprocal regard, friendship, or love. Siblings, spouses, and friends may care for one another deeply, but this does not make the potential for conflict between them disappear.[71] A Book of Mormon prophet may express profound concern for the welfare of another nation and still admit or even pursue the possibility of war with that nation (see, for example, Enos 1:13–14, 20–24, explored in greater detail below). Axelrod précises this issue tidily in explaining that "the assumption of self-interest is really just an assumption that concern for others does not completely solve the problem of when to cooperate with them and when not to."[72] In the Book of Mormon context, we might add that a desire to fulfill the will of God does not completely solve the problem of when to cooperate with others and when not to.

In sum, applying the Prisoner's Dilemma to a study of the Book of Mormon and its histories could offer unique insights. This effort should be rigorously controlled by careful fact gathering in the text with an eye to measure the incentives of an author against the way that he describes conflicts. Further control comes from applying the conditions that define the Prisoner's Dilemma. As these concerns are addressed, a more interesting question presents itself: if we apply the Prisoner's Dilemma to the Book of Mormon, what might we learn?

Patterns of Conflict in the Book of Mormon

Although the Book of Mormon covers in its Nephite histories a millennial span that includes the rise and fall of large nations, it begins with the story of one man and his family as they leave their home to travel across deserts in search of a promised land. The prophet Lehi and his wife, Sariah, have four sons as the story begins: Laman, Lemuel, Sam, and Nephi (1 Ne. 2:5; 5:1). Although Lemuel and Sam were not mentioned in the Laban discussion above, they were present on the excursion, and so we have had some introduction to the sons (Jacob and Joseph, two further sons, are born while Lehi and Sariah live in the desert, as described in 1 Ne. 18:7). Laman

71. Axelrod, *Evolution of Cooperation,* 6–7.
72. Axelrod, *Evolution of Cooperation,* 7.

and Lemuel are known in the Book of Mormon primarily as bad-tempered foils to Nephi's righteous character and can-do personality. A recurring motif throughout 1 Nephi and the opening chapters of 2 Nephi (all written by Nephi) features Lehi asking his sons to perform some task (such as the Laban errand) or Nephi encouraging his brothers to take part in a divinely appointed charge; according to the usual pattern, Nephi earnestly pushes ahead while his brothers either (1) grudgingly comply or (2) openly rebel by following their own agenda and, in some instances, inflicting bodily harm on Nephi when he stands in the way of that agenda.

If we were to count Laman and Lemuel's complaint-laden compliance as obedience to the relevant request, the potential interactions within Lehi's family could be summarized as follows:

		Nephi	
		Cooperate	Defect
Laman and Lemuel	Cooperate	Nephi is obedient (*R*); Laman and Lemuel are obedient (*R*)	Laman and Lemuel are obedient (*S*); Nephi retaliates (*T*)
	Defect	Laman and Lemuel follow own agenda/beat Nephi (*T*); Nephi is obedient (*S*)	Laman and Lemuel follow own agenda/ beat Nephi (*P*); Nephi retaliates (*P*)

FIGURE 7.

Does this ongoing tension present a Prisoner's Dilemma? As in the Nephi-Laban example, the payoffs here are not the same, so we must do a party-by-party analysis.

For Laman and Lemuel, the record suggests that following their own agenda (even at the cost of beating Nephi to have the ability to do so) clearly takes top priority. If Nephi is willing to work while they loaf, that is ideal. However, their reactions to the rare instances in 1 Nephi where Nephi (or God) retaliates against them indicate that if they are going to receive punishment, Laman and Lemuel would rather cooperate than continue to push back (see, for example, 1 Ne. 17:52–55; 18:15, 20). From Laman and Lemuel's perspective, therefore, it seems reasonable to argue that:

> Following own agenda while Nephi shoulders the hard work (*T*) > Rendering obedience while Nephi shares the labor (*R*) > Following own agenda while suffering Nephi's (or God's) ire (*P*) > Rendering obedience while suffering Nephi's (or God's) ire (*S*)

The second condition also seems colorable, since we could argue that sharing the labor with Nephi is better from Laman and Lemuel's

perspective than the average of *T* and *S*. So we seem to have the foundation of a Prisoner's Dilemma.

Nephi's actions are harder to parse, because his narrative presents a relentless desire to fulfill God's will. The *T* that exerts such pull for Laman and Lemuel does not seem to attract Nephi at all, which throws the *T* > *R* > *P* > *S* hierarchy into question—few readers of the Book of Mormon can imagine Nephi wanting to lash out at his brothers while they diligently keep their heads down on the task at hand. While Nephi's narrative is replete with occasions where he urges family members to loyal tractability (1 Ne. 2:16–18; 3:7, 21; 4:1–3; 7:8–12; 16:22; 17:23–47), we can locate at least one example where Nephi arguably strikes out against his brothers at a time when they are cooperating.

This instance of Nephi opting for *T* happens in the famous "shocking" incident that takes place during his shipbuilding. The incident requires some background: After eight years of desert drifting and hardship, Nephi and his broader family arrive in a land of "much fruit and also wild honey" situated on a seashore next to "many waters" (1 Ne. 17:5). Nephi records that the weary travelers were "exceedingly rejoiced" to reach this choice spot (17:6). After some time in this place, Nephi receives a command from God to build a ship that will take Lehi's entire family to a "promised land" (17:7–14). When Nephi encourages his brothers to join him in shipbuilding, Laman and Lemuel deride Nephi's enterprise and refuse to take part (17:15–18). First move: Nephi, *S*; Laman and Lemuel, *T*.

Laman and Lemuel soon notice that their refusal to take part has deeply upset Nephi, and they take the opportunity to use the perceived absurdity of Nephi's shipbuilding to further underscore grievances from their time in the wilderness dating back to the departure from Jerusalem (17:19–22). In response, Nephi recounts at length the dealings of God with Moses and the children of Israel in the wilderness at Sinai, causing Laman and Lemuel to approach Nephi to "lay their hands upon [him] . . . to throw [him] into the depths of the sea" (17:23–48). Seeing that his situation is precarious, Nephi warns his brothers not to touch him, for he is "filled with the power of God . . . and whoso shall lay his hands upon me shall wither even as a dried reed . . . for God shall smite him," going on to say "many things" to them about God's power (17:48–52). Nephi records that after his speech to them, Laman and Lemuel were "confounded and could not contend against me; neither durst they lay their hands upon me nor touch me . . . even for the space of many days" (17:52).

This second incident is less about building a ship and more about working out their perceived differences. Although Laman and Lemuel come close to attacking Nephi, they back down and leave him alone for the "space of many days" (17:52). Viewing these events together, we might say that the second move in this particular back-and-forth is: Nephi, *R*; Laman and Lemuel, *R*.

Nephi then receives a command from God: "Stretch forth thine hand again unto thy brethren, and they shall not wither before thee, but I will shock them, saith the Lord, and this will I do, that they may know that I am the Lord their God" (17:53). Despite the fact that Laman and Lemuel pose no imminent threat (having, in Nephi's words, left him alone for "many days") and chose not to attack him previously, Nephi goes to Laman and Lemuel, lifts his hand to them, and "the Lord did shake them, even according to the word which he had spoken" (17:54). Third move: Nephi, *T*; Laman and Lemuel, *S*. From this point, Nephi and his brothers all proceed to build a ship together (1 Ne. 18:1–5) (fourth move: Nephi, *R;* Laman and Lemuel, *R*).

A Book of Mormon reader would not typically class Nephi's decision to shock Laman and Lemuel as choosing a temptation payoff (*T*) (maybe as encouraging a mutually beneficial outcome, *R*), but Nephi does inflict bodily pain on Laman and Lemuel when they had previously chosen not to go through with an attack on him. Nephi being Nephi, his motivation for pursuing *T* is not a "selfish" desire but rather an urge to follow God's will and try to promote obedience once and for all. As argued above, this should not prevent us from applying the *T* label or recognizing that Nephi defects vis-à-vis his brothers. To paraphrase Axelrod, Nephi's desire to fulfill God's will does not resolve the issue of when he should cooperate with Laman and Lemuel and when he should not.

Even so, this one incident does not provide enough evidence to substantiate a claim that Nephi would have preferred *T* to *R*. It is clear, however, that Nephi would have preferred *T* or *R* to both *P* and *S*, so a possible hierarchy for Nephi would be: $T \geq R > P > S$. While this hierarchy is close (if not perfect), there can be no doubt that Axelrod's second condition would be satisfied in Nephi's case:

$$R > \frac{(T+S)}{2}$$

Although the fit is not impeccable, the Book of Mormon text supplies evidence that the conflicts among Lehi's sons follow a Prisoner's Dilemma format. The level of exegesis in the "shocking" incident is not possible for each interaction between Nephi and his brothers, but their course of interaction can be briefly summarized as follows:

Event	Nephi	Laman and Lemuel
First attempt to get the brass plates (1 Ne. 3:1–13)	Cooperate (*R*)	Cooperate (*R*)
Second attempt to get the brass plates (1 Ne. 3:14–26)	Cooperate (*R*)	Cooperate (*R*)
Third attempt to get the brass plates (1 Ne. 3:27–4:26)	Cooperate (*S*)	Defect (*T*)
Return to Jerusalem to get Ishmael and his family (1 Ne. 7:1–5)	Cooperate (*R*)	Cooperate (*R*)
Return to the wilderness from Jerusalem with Ishmael and his family (initial attempt) (1 Ne. 7:6–16)	Cooperate (*S*)	Defect (*T*)
Return to the wilderness from Jerusalem with Ishmael and his family (subsequent attempt) (1 Ne. 7:17–22)	Cooperate (*R*)	Cooperate (*R*)
Nephi shares insights from his vision of the tree of life (1 Ne. 15:21–16:5)	Cooperate (*R*)	Cooperate (*R*)
Invitation to build the ship (1 Ne. 17:8–18)	Cooperate (*S*)	Defect (*T*)
Postinvitation back-and-forth (1 Ne. 17:18–52)	Cooperate (*R*)	Cooperate (*R*)
Postinvitation "shock" incident (1 Ne. 17:53–55)	Defect (*T*)	Cooperate (*S*)
Ship building (1 Ne. 18:1–5)	Cooperate (*R*)	Cooperate (*R*)
Sailing: merriment and Nephi bound (1 Ne. 18:9–11)	Cooperate (*S*)	Defect (*T*)
Sailing: Nephi bound, Liahona stops working and storms arise (1 Ne. 18:12–14)	Defect (*P*) (note that here it is God who "defects," not Nephi directly)	Defect (*P*)
Sailing: Nephi loosed, Liahona works, storms cease (1 Ne. 18:15–22)	Cooperate (*R*) (here again it is God who "cooperates," not Nephi directly)	Cooperate (*R*)
Split into two nations upon Lehi's death (2 Ne. 5:1–6, 12, 14)	Defect (*P*) (Nephi and his people depart, taking key parts of Lehi's estate)	Defect (*P*) (Laman and Lemuel seek to kill Nephi once and for all)

Setting out all of the potential conflicts between Nephi and his brothers in this manner shows that Laman and Lemuel cooperate more often than they defect (although the selection of incidents is by no means scientific,

it suggests a 60 percent rate of cooperation that, by coincidence, is a dead match for the rate of mutual cooperation in the Flood-Dresher study with AA and JW). While the bellicose pair in fact cooperate often, they also defect more often than one might expect where the scope for future interaction between two parties is long. If, as Axelrod suggests, a long "shadow of the future" should have a positive correlation with cooperative behavior, why do Laman and Lemuel defect so often?

One explanation for their behavior might be that they are simply bad and want to get away with whatever they can. In the Axelrod tournament, by way of analogy, one entrant submitted a strategy that Axelrod dubbed "All D" because his rule was to defect without exception.[73] Though tempting to view Laman and Lemuel in a similar light, the text shows them cooperating often during the family's eight-year desert trek and subsequent sea voyage and settling in the promised land. More importantly, the text shows that the brothers have multiple moments of genuine remorse and desire to improve. After rebelling in the wilderness with Ishmael's family—seeking to return to Jerusalem—Laman and Lemuel eventually choose to "bow down before [Nephi] and . . . plead . . . that [he] would forgive them" (1 Ne. 7:20). When Nephi relates his vision of the tree of life, Laman and Lemuel "humble themselves before the Lord," desiring to do right (16:5). And again, after the "shocking" incident, Laman and Lemuel bow down to Nephi (17:55). Although their contrition frequently follows some form of conflict, they show contrition all the same and so the "pure evil" explanation does not wash.

An alternative explanation for Laman and Lemuel's behavior is that the benefit they derive from obedience (R) is less than the benefit that Nephi derives. As in the Flood-Dresher experiment, the Book of Mormon gives evidence of asymmetric payoffs to the interacting parties. Although all of Lehi's sons go to Jerusalem to get the plates (and Laman goes first to Laban), all sons return for Ishmael and his family, all sons hunt for food, all sons build the ship, and all sons ultimately suffer eight years of wilderness hardship, the outcomes for all sons are not equal. In a family where a key part of the father's profession is to prophesy and preach, Laman and Lemuel (the eldest) fail to show much aptitude for the family trade while Nephi (among the youngest) shows huge promise.

When Lehi urges his eldest to be "firm and steadfast . . . in keeping the commandments of the Lord" during their desert travels, Laman and Lemuel complain that they cannot understand why it was necessary to

---

73. Axelrod, *Evolution of Cooperation*, 63.

leave Jerusalem in the first place (1 Ne. 2:9–14). When Lehi shares with all family members his vision of a tree filled with marvelous fruit, he says that the dream gives him reason to "rejoice . . . because of Nephi and . . . Sam" but to "fear exceedingly" for Laman and Lemuel (1 Ne. 8:2–12). Following Lehi's account, Laman and Lemuel "disput[e] one with another concerning the things which [Lehi] had spoken" (1 Ne. 15:2). Besides difficulty in parsing their father's intentions and proclamations, Laman and Lemuel fail to bail their family out of a food crisis (1 Ne. 16:15–32), fail to lead in the shipbuilding (1 Ne. 17:17–55), and, according to the record, precipitate a crisis at sea (1 Ne. 18:8–22).

Nephi, by contrast, receives praise from the beginning as someone "favored of the Lord" (1 Ne. 3:6, where Nephi reports his father's words). It is Nephi who succeeds in obtaining Laban's plates (1 Ne. 4:6–24), cracks the spiritual code of his father's complex dream (1 Ne. 15:6–36), feeds the family during a time when hunting has become nearly impossible (1 Ne. 16:15–32), and leads the shipbuilding (1 Ne. 17:7–55). Coming from a culture where the eldest traditionally enjoy priority and unique blessings (see, for example, Esau and Jacob in Genesis 27), Nephi by his actions turns tradition on its head and finds more than one occasion to remind his brothers that he is younger (1 Ne. 7:8, 17:55).

Shortly before his death, Lehi formalizes Nephi's privileged status, doing so in a way that leaves Laman and Lemuel in a curious quandary. Lehi gives Laman, the eldest, "a blessing, yea, even my first blessing," but solely on the condition that Laman, Lemuel, and the other brothers and brothers-in-law must "hearken unto the voice of Nephi" (2 Ne. 1:28).[74] If Laman and Lemuel fail to observe the condition, the "first blessing" reverts to Nephi and stays with him (2 Ne. 1:29). And so even if Laman obtains his birthright, it is a birthright in name only, subject always to Nephi's oversight.

---

74. The text of 2 Nephi 1:28 reads, "And now *my son*, Laman, *and also* Lemuel and Sam, *and also* my sons who are the sons of Ishmael, behold, if ye will hearken unto the voice of Nephi ye shall not perish. And if ye will hearken unto him I leave unto you a blessing, yea, even my first blessing" (italics added). A close reading shows that Lehi's primary addressee here is Laman, his eldest. 2 Nephi 4:3 expressly states that Laman is the "firstborn." As Lehi's firstborn, the mentioned "first blessing" would belong to him subject to the condition. Alongside Laman, Lehi also addresses Lemuel, Sam, and the sons of Ishmael, urging them all to do the same thing as Laman, namely listen to Nephi. The sons of Ishmael fall under Lehi's patriarchal jurisdiction owing to the earlier death of Ishmael in the wilderness (1 Ne. 16:34).

Laman and Lemuel are stung by the insult contained in Lehi's blessing and its condition (2 Ne. 5:3). Adding injury to this insult, Lehi blesses Laman and Lemuel's children and successors that they will eventually find redemption, but not before enduring a "curse" and "destruction" (2 Ne. 4:3–9). These parting words and Lehi's death prove to be the breaking point of the family's pattern of conflict. Nephi tries to fulfill his assigned role as the leader of all parties (2 Ne. 4:13–14), but his efforts lead to an immediate power struggle with Laman and Lemuel, who soon declare: "Our younger brother thinks to rule over us; and we have had much trial because of him; wherefore, now let us slay him, that we may not be afflicted more because of his words. For behold, we will not have him to be our ruler; for it belongs unto us, who are the elder brethren, to rule over this people" (2 Ne. 5:3). Faced with an ongoing conflict where Nephi would have the upper hand, Laman and Lemuel seek to eliminate Nephi altogether.

Laman and Lemuel's relationship with Nephi calls to mind the asymmetric Flood-Dresher experiment with AA and JW. In Laman and Lemuel's complaint that Nephi "thinks to rule over us; and . . . we will not have him to be our ruler," we hear echoes of AA's frequent protest that JW "will not share."[75] In Laman and Lemuel's repeated beatings of Nephi and their ultimate plan to kill him, we can again hear AA's declaration: "I'll try once more to share—by taking."[76] Frustrated by perceived or actual inequality in outcomes, AA and Laman and Lemuel resort to vigilantism (not unlike the self-help to which Joseph's brothers resort in Genesis 37, another example of asymmetric outcomes that led to resentment).

Likewise, Nephi shares JW's incredulity in dealing with a counterparty who seems intent on scoring points at his expense. Where JW remarks that AA "isn't [bright] but maybe he'll wise up,"[77] Nephi comments (more tactfully) that Laman and Lemuel "knew not the dealings of that God who had created them" and prays that they might come to know better (1 Ne. 2:12, 18). Where JW expresses constant frustration that AA is a "shiftless individual—opportunist, knave" who "learns slow,"[78] Nephi scolds Laman and Lemuel for being "swift to do iniquity but slow to remember the Lord your God" (1 Ne. 17:45). JW could

---

75. Flood, "Some Experimental Games," 39.
76. Flood, "Some Experimental Games," 40.
77. Flood, "Some Experimental Games," 41.
78. Flood, "Some Experimental Games," 42.

have been speaking for both himself and Nephi when he sums up his perception of AA: "He *requires* great virtue but doesn't have it himself. . . . He can't stand success."[79]

And so although the unequal results do not excuse or justify Laman and Lemuel's behavior, the asymmetry does provide some insight into why they act as they do. Amid all these compelling parallels, we must note that while AA's outcomes are stipulated *ex ante* and he has no input or say as to their disproportion, Laman and Lemuel have power over time to influence the outcomes that they receive. AA struggles helpless against a fixed universe of results, but Laman and Lemuel have constant invitations from both their father and Nephi to step up and claim their rightful place as leaders.

While Laman and Lemuel (and Nephi) must bear a material share of responsibility for their respective situations, the conflicts inherited by their children and further descendants increasingly resemble the fixed outcomes faced by AA and JW. The violent split between Laman and Lemuel and their followers on the one hand, who swear to kill Nephi (2 Ne. 5:4), and Nephi and his followers on the other (including Sam, Jacob, and Joseph) produces two critical effects: (1) the shadow for future interaction between the two groups shortens radically and (2) inequality between the two groups widens dramatically.

As for future interaction, Nephi takes his people, who come to be known as "the people of Nephi," or "Nephites" (Jacob 1:14), and flees "into the wilderness . . . journey[ing] in the wilderness for the space of many days" (2 Ne. 5:5–9). Now in two different places, the Nephites and the people of Laman (or "Lamanites") develop independently and at a distance from one another, having ruptured over a fierce difference of opinion.

Drastic inequality develops immediately between the two groups. Nephi relates that when they depart into the wilderness, they take with them "the plates of brass; and also the ball, or compass, which was prepared for my father by the hand of the Lord . . . [and] the sword of Laban" (2 Ne. 5:12, 14). These items are the crown jewels of the family's shared travels, and their significance cannot be overstated. We know that the brothers travel together to Jerusalem to get the plates and obtain them at great personal risk. Laban's sword comes from the same excursion. The compass that leads them through the wilderness holds such deep importance that the Nephites subsequently pass it down from king to king as

---

79. Flood, "Some Experimental Games," 42.

part of the rites of passage along with the plates and sword (Mosiah 1:16). While Nephi has legitimate claim to the items (having personally slain Laban by Laban's sword, obtained the plates, and exercised the faith necessary to make the compass work), Laman and Lemuel as the eldest also have had strong claim to the items (and would certainly have had sturdy incentive to forget the nuances of their acquisition and prior use).

Nephi's unilateral settlement of the most prized items from his late father's estate lays the foundation for a lasting narrative of grievances and division between the two nations. Nearly five hundred years later when (Nephite) Ammon and (Lamanite) Lamoni happen upon Lamoni's father, a Lamanite king, the father's immediate response is, "Whither art thou going with this Nephite, who is one of the children of a liar? . . . [T]hese Nephites . . . are sons of a liar. Behold, he robbed our fathers; and now his children are also come among us that they may, by their cunning and their lyings, deceive us, that they again may rob us of our property" (Alma 20:10, 13). The Lamanites apparently never forget that the Nephites had taken away what they view as their rightful inheritance.

The prized items (plates, sword, and compass) allow the Nephites to maintain more sophisticated standards of construction (2 Ne. 5:15–16), weapons manufacture (2 Ne. 5:14), and education (2 Ne. 5:29–34), leading to wealth and prosperity (2 Ne. 5:17, 27). Whereas Nephites build temples like Solomon's (based on descriptions in the brass plates, 2 Ne. 5:16), clothe themselves well (Jacob 2:17–22), and learn to farm land and raise livestock effectively (Enos 1:21), the Lamanites live in tents, wander "about in the wilderness with a short skin girdle about their loins," and feed on "beasts of prey" (Enos 1:20).

Further, the ascendance of Nephite culture and the deprivation experienced by Lamanites give rise to two distinct narratives. In the Nephite worldview, the Nephites are "industrious" (2 Ne. 5:17), "fair and delightsome" (2 Ne. 5:21), wealthy (Jacob 1:16), and hopeful that the Lamanites will return to "the knowledge of the truth" about God (Jacob 7:24; Enos 1:13–19). In that same view, the Lamanites are, by contrast, "an idle people, full of mischief and subtlety" (2 Ne. 5:24), possessed of "an eternal hatred against [the Nephites]" (Jacob 7:24), and a "wild, and ferocious, and a blood-thirsty people, full of idolatry and filthiness" (Enos 1:20; see also Jacob 3:5, Jarom 1:6). These descriptions reflect (even more closely than Nephi's view of Laman and Lemuel) JW's judgments that AA is "a shady character," "shiftless," "crazy," and unintelligent.[80]

---

80. Flood, "Some Experimental Games," 41–42.

Because Nephites are literate and only their records remain, we catch mere snippets of the Lamanite narrative. For much of the Book of Mormon, until Ammon provides an eyewitness account of the Lamanite worldview not based on hearsay, we read only staid accounts of Lamanites hating Nephites and wanting to shed their blood (a narrative that applies as much in the Nephite consciousness when Laman and Lemuel are alive as it does hundreds of years later). The Ammon account, recounted after hundreds of years of conflict, shows a Lamanite self-narrative that remains surprisingly rooted in the original events that transpire at the split of the two nations. Nephites are "liars," who are "cunning" and wish to deceive in order to continually rob Lamanites of their property (Alma 20:10, 13; see also Mosiah 10:11–17). It is not lost on the Lamanites that the Nephites possess more learning (since they are "cunning") and more wealth, but that wealth continues to be viewed in terms of Nephi's robbery of the family inheritance. In the Lamanite worldview, we can see AA's torment reiterated: *They will not share.*

A simple summary of the Prisoner's Dilemma between the two nations can be modeled as follows:

		Nephites	
		Cooperate	Defect
Lamanites	Cooperate	Lamanites maintain mutual peace (*R*) Nephites maintain mutual peace (*R*)	Lamanites maintain unilateral peace (*S*) Nephites make unilateral war (*T*)
	Defect	Lamanites make unilateral war (*T*) Nephites maintain unilateral peace (*S*)	Lamanites make mutual war (*P*) Nephites make mutual war (*P*)

FIGURE 8.

In each of these cases, the asymmetric outcomes favor the Nephites except where the Nephites are on the receiving end of a sucker's payoff (*S*). As we have learned, these outcomes must meet Axelrod's two conditions truly to represent a Prisoner's Dilemma.

For either side, taking the spoils of war with no resistance from the other side (*T*) would have seemed the best possible outcome (for the Nephites, perhaps as the preface to a Lamanite return to paths of rectitude; for the Lamanites, as payback). Mutual peace (*R*) is preferable to mutual war (*P*) for economic, social, and other reasons, and both *R* and *T* stand superior to being utterly ravaged (*S*). The outcomes do seem to follow a *T* > *R* > *P* > *S* hierarchy.

As for the second Axelrod condition, it is hard to say whether, in each case, the product of mutual peace is worth more to one or the other side than the average gains of taking all spoils and receiving a sucker's payoff. For Nephites, this is almost certainly the case. In times of mutual peace (R), the Nephites enjoy their ornate temples, work hard in their fields, and improve themselves in learning.

In the same circumstances, Lamanites live from day to day, hunting what they can and providing as well as possible. The Book of Mormon suggests that the Lamanites have fewer gainful activities to fill their time, which makes war more attractive because score-settling T could be the best chance for a good outcome.[81] Speaking to the role of T in the second condition (which says that the reward for mutual cooperation should be greater than the average of the temptation payoff and the sucker's payoff), Axelrod explains that the second condition is so important because the two sides to a conflict should not be able to "get out of their dilemma by taking turns exploiting each other. This assumption means that an even chance of exploitation and being exploited [should not be] as good an outcome for a player as mutual cooperation."[82] Because of the asymmetry in Nephite-Lamanite payoffs, however, it could be said that the Lamanites prefer the "even chance of exploitation and being exploited," since the reward of mutual cooperation is not much of a reward. In a society where mutual peace (R) yields washed-out takings, the Lamanites naturally find their equilibrium point.

Although the Nephites profess a longing to reconcile differences with the Lamanites, no Nephite makes any effective effort to realize this desire in a period that spans hundreds of years. Jacob relates that "many means were devised to reclaim and restore the Lamanites to the knowledge of the truth" (Jacob 7:24). Sadly, the record provides little detail on the nature of these labors, but Jacob laments that "it all was vain, for

---

81. When the Nephites are prepared, mutual war (P-P) does not often play well for the Lamanites; however, when the Lamanites are able to catch the Nephites off-guard, as they do in attacking the remnant of the people of King Noah, the temptation payoff (T) often yields rich dividends. An example of the efficacy of T for the Lamanites appears in Mosiah 24, where the Lamanites have unilaterally attacked and overcome the people of King Noah. In this setting, the king of the Lamanites engages a Nephite named Amulon to teach his people the ways and language of the people of Nephi, which causes this pocket of Lamanites to "increase in riches, . . . to trade one with another and wax great, and . . . to be a cunning and a wise people, as to the wisdom of the world" (Mosiah 24:7).

82. Axelrod, *Evolution of Cooperation*, 10.

[the Lamanites] delighted in wars and bloodshed, and they had an eternal hatred against us, their brethren. And they sought by the power of their arms to destroy us continually" (Jacob 7:24). This Nephite belief in eternal Lamanite hatred and continual war appears so often that we as readers are left to wonder whether the Nephites could truly accept peace from adversaries perceived to be so unscrupulously evil.

Fueled by their deeply ingrained contrary narratives, the two nations descend into a vicious circle. The Nephites become richer, more educated, more sophisticated, and enjoy ever higher standards of living, while the Lamanites appear to subsist at lower levels. While the Nephites look down on the Lamanites for their apparent dirtiness and lack of industry (despite declarations of concern for Lamanite souls), Lamanites hate Nephites for their wealth and alleged guile. The inequality combined with mutual distrust and enmity pushes the nations apart, which leads to wars, which fuel further misunderstandings, which lead to more wars (see, for example, Jarom 1:13–14; Omni 1:2–3, 10, 23–24; W of M 1:13–14; Mosiah 1:13–14; 10:11–17; Alma 16:2).[83] The shadow of the future for the two nations is so short as to be practically nil.

Ammon as a Book of Mormon Standard: Lengthening the Shadow of the Future, Eliminating Asymmetry and Territorial Invasion

This state of affairs continues for the better part of five hundred years, from the time when the nations split, sometime between 588 and 570 BC, until the time when Ammon enters the kingdom of Lamoni, in

---

83. In this context, the interactions between Lamanites and Nephites that occur at the demise of King Noah should be briefly noted. Noah is an ineffective monarch who is ultimately burned to death by his own priests, appearing in chapters 11 to 19 of the book of Mosiah. Weak after years of poor rule, two separate offshoots of Noah's Nephite people are overtaken and occupied by Lamanites. In the midst of seemingly endless Nephite-Lamanite wars, we see an episode where Lamanites occupy Nephite land and exact heavy (50 percent) taxes from Nephites (Mosiah 19:22) and place heavy burdens on them (Mosiah 24:9, 14). A number of controversies and standoffs occur between the Lamanite and Nephite groups, with the end effect that both groups of Nephites devise plans to escape from Lamanite occupation and return to live in the Nephite capital of Zarahemla. Far from signaling a dawn of Nephite-Lamanite cooperation, these episodes illustrate both the lengths to which Nephites will go to distance themselves from Lamanites (22:10–16; 24:21–25) and the propensity of certain Nephites to exploit the Nephite-Lamanite conflict to their personal advantage (as did Amulon, 24:1–8).

approximately 90 BC. The Book of Mormon describes Ammon, along with his brothers Aaron, Omner, and Himni, as a son of the Nephite King Mosiah (Mosiah 27:34). After a rebellious youth, the princes experience a miraculous conversion and determine to go preach to the Lamanites (Mosiah 28:1–9; Alma 17:1–8).[84]

Ammon (who is described in Alma 17:18 as "chief" among his brothers) strikes out alone on his mission to the "land of Ishmael," a Lamanite enclave (Alma 17:19). Arriving with a peaceful mission, Ammon finds himself immediately seized, bound, and brought before the king of the land, a man named Lamoni. The text tells us that Lamanite law and custom gave royal prerogative when Nephites were captured, leaving it "to the pleasure of the king to slay them, or to retain them in captivity, or to cast them into prison, or to cast them out of his land" (Alma 17:20). In response to his cooperative approach, Ammon faces potential outcomes that read like defection mad libs. First move: Ammon, *S,* Lamanites, *T,* and we are not surprised to see the Lamanites defect in arresting Ammon as part of their perpetual war against the Nephites. Cultural and historical considerations aside, the Lamanites choose an equilibrium point strategy with no incentive to do otherwise.

With Ammon set before him, Lamoni asks "if it were [Ammon's] desire to dwell in the land among the Lamanites, or among his people" (Alma 17:22). Lamoni could have expected only a negative answer to this question—the Book of Mormon gives no prior example of a Nephite who voluntarily goes to live among Lamanites—suggesting that he asks it merely to bait Ammon and help him determine which of the short straws Ammon is about to draw.

Ammon responds: "Yea, I desire to dwell among this people for a time; yea, and perhaps until the day I die" (Alma 17:23). Beyond simple cooperation, Ammon's statement concurrently expresses ground rules for future engagement. Where Lamoni thought he was dealing with a typical one-shot (or short-term) conflict (in which the equilibrium point demands mutual defection), Ammon has just told him that their future dealings are potentially indefinite. In Axelrod's terms, Ammon has just

---

84. The narrator of this portion of the Book of Mormon (the penultimate Book of Mormon prophet, Mormon) frames the mission to the Lamanites in terms of familiar inequality tropes, recording that the sons of Mosiah were brave to face "a wild and a hardened and a ferocious people; a people who delighted in murdering the Nephites, and robbing and plundering them; . . . yet they sought to obtain these things by murdering and plundering, that they might not labor for them with their own hands" (Alma 17:14).

lengthened the shadow of the future, and we might expect accordingly that his Lamanite hosts will be more amenable to cooperative peace.

Lamoni's immediate response is fairly delirious: "Lamoni was much pleased with Ammon, and caused that his bands should be loosed; and he would that Ammon should take one of his daughters to wife" (Alma 17:24). The Lamanite king could have executed, imprisoned, or exiled Ammon, all of which the text suggests were in his power. Ammon is a Nephite, with all that symbolizes and entails, and Lamoni is a Lamanite. The inequality and grievances between the two nations have not changed, but Ammon's cooperative affirmation changes Lamoni's incentives. If the Nephite desires to interact with Lamoni and his people on an ongoing basis and Lamoni also desires ongoing interaction due to Ammon's sincere cooperation, then conventional opportunities to defect no longer make sense. Lamoni breaks tradition and offers to make Ammon one of the family rather than eliminate him (a mirror reversal of the state of affairs at the time the nations split when Laman and Lemuel want to end family relations by killing Nephi).

Ammon declines Lamoni's generous offer, asking to take up employment as one of Lamoni's servants instead and become a shepherd and stableman for the king (Alma 17:25). What follows is one of the Book of Mormon's most famous passages wherein Ammon defends Lamoni's flocks from marauding Lamanites who are enemies of the crown, slaying some by slingshot and slicing off the arms of others by sword (Alma 17:26–38). Having guarded the king's property, Ammon goes right back to watering royal flocks and attending to the stable (Alma 17:39; 18:9). Ammon's loyalty and diligence make such an impression on Lamoni that (after a period of utter speechlessness) he asks Ammon by what power he performs his great acts (Alma 18:14–21). Ammon tells the king that his power comes from God and proceeds to preach the entire message that he came to share, leading Lamoni and many in his kingdom to convert to Ammon's message and adopt his cooperative approach (Alma 18:22–19:36).

With Lamoni converted, Ammon and Lamoni set out to free Ammon's brother Aaron (who is also arrested by Lamanites, albeit with a less successful outcome than Ammon), and on the way they have their telling encounter with Lamoni's father (Alma 20:8–13). After his initial outrage, Lamoni's father draws his sword on Lamoni and, outmatched by Ammon, is thrust to the ground and told that his life is forfeit unless he cedes complete autonomy to Lamoni to run his kingdom without oversight (Alma 20:14–25). When Lamoni's father sees what Lamoni earlier saw—namely that Ammon has genuine regard for Lamanites and

desires long-term interaction with them—he also wishes to understand Ammon's motivation and is ultimately converted along with thousands in his kingdom (Alma 20:26–27; 22:1–26; 23:1–5).

Taking a step back to consider Ammon, we see a Nephite prince (son of the man who is the primary caretaker of the plates, sword, and compass) who leaves his homeland to dwell among a historical enemy, works in the employ of that enemy to fulfill relatively menial tasks, and (having made a friend of the enemy) defends the king's property against potential threats. Like the TFT (tit-for-tat) strategy that won Axelrod's tournaments, Ammon's cooperative strategy is nice (Ammon is not the first to defect) where the Lamanites are aggressive, forgiving (Ammon holds no grudge in relation to Lamanite defection/arrest and promptly cooperates when the Lamanites want to cooperate) where the Lamanites show an initial reluctance to forget past Nephite wrongs, and clear (the text shows that Lamoni and Lamoni's father recognize Ammon's intent to cooperate) where the Lamanites are initially unpredictable.

Unlike TFT, Ammon's strategy in regard to Lamoni and his people is not immediately retaliatory or provokable, which is to say that Ammon is not quick to react to defection. Ammon's cooperative response is in fact stronger than TFT—not a "tit-for-tat" strategy but a "tit-for-two-tats" or "tit-for-multiple-tats" strategy (TFMT). The result of this modification is that Ammon's strategy is inherently more risky, since the Lamanites could be more likely to defect if they think there is no likelihood that Ammon will retaliate. Ammon's facility with the slingshot and sword, while not aimed at Lamoni or his people directly (at least not those with fealty to the crown), might arguably have some deterrent effect that helps Ammon appear provokable without his actually being provokable. And it is notable that in relation to Lamoni's father, Ammon does follow a TFT strategy almost to the letter.

As already noted, Ammon significantly lengthens the shadow of future interaction between himself and his Lamanite interlocutors. In response, as Axelrod predicts, the Lamanites begin to cooperate with Ammon, and a cycle of peaceful mutual cooperation (R) emerges from what had previously been an unbreakable cycle of warring mutual defection (P). This process of adoptive change from one cycle to another and the study of how various Prisoner's Dilemma strategies might collectively fare against one another are points that Axelrod explores in his study of what he calls "territorial systems."[85]

---

85. Axelrod, *Evolution of Cooperation*, 160.

A territorial system is a community of individuals using the same strategy who are grouped together as neighbors, and the system is stable if foreign strategies cannot "invade" it. "A strategy," explains Axelrod, "can invade another if it can get a higher score than the population average in that environment."[86] Axelrod goes on:

> In other words, a single individual using a new strategy can invade a population of natives if the newcomer does better with a native than a native does with another native. If no strategy can invade the population of natives, then the native strategy is said to be collectively stable.
>
> To extend these concepts to territorial systems, suppose that a single individual using a new strategy is introduced into one of the neighborhoods of a population where everyone else is using a native strategy. One can say that the new strategy *territorially invades* the native strategy if every location in the territory will eventually convert to the new strategy. Then one can say that native strategy is *territorially stable* if no strategy can territorially invade it.[87]

Applying this to the Nephite-Lamanite context, we know that Nephite-Nephite interaction is stable enough to support significant commerce and that Nephites are led by kings who encourage them to "walk in the ways of truth and soberness; . . . to love one another, and to serve one another" (Mosiah 4:15). The Lamanite-Lamanite interaction that we see through Ammon shows Lamanites who steal property from fellow Lamanites and fear execution from their king in return for failure to fulfill duties properly (Alma 17:27–29). Where Ammon has a clear TFMT or TFT strategy, the Lamanite strategy in regard to other Lamanites is more ambiguous.

Ammon's entry into Lamanite lands followed by subsequent mass conversion to his way of thinking and acting seems to provide an example of what Axelrod might refer to as "territorial invasion." To use Axelrod's formulation, Ammon is "a single individual using a new strategy . . . introduced into one of the neighborhoods of a population where everyone else is using a native strategy."[88] In guarding the king's flocks better than other servants (and then continuing on quietly with other tasks) and guarding Lamoni against his father's wrath, Ammon fares better with Lamanite natives than Lamanites do with one another. The strategy that Lamanites follow with one another lacks collective stability

86. Axelrod, *Evolution of Cooperation*, 160.
87. Axelrod, *Evolution of Cooperation*, 160.
88. Axelrod, *Evolution of Cooperation*, 160.

perhaps because it is unpredictable. As the Lamanites recognize the clarity of what Ammon has to offer, they "convert to the new strategy" en masse.

It is worth noting that the account of Ammon's "territorial invasion" provides a concrete example of a phenomenon that Axelrod explains only in theory. Axelrod gives practical, non-tournament-based examples to illustrate the "shadow of the future" (such as the live-and-let-live system of trench warfare during World War I)[89] and other Prisoner's Dilemma–related principles, but his examples for territorial systems and the ability of an individual to invade such systems stick closely to theoretically modeled and tournament-based results.[90]

Moreover, beyond lengthening the shadow of the future for Lamanite interaction and territorially invading Lamanite culture, Ammon also takes the first step toward eradicating the asymmetry of the outcomes experienced between the two nations. In a "Nixon to China" spirit, only a Nephite prince could symbolically debase himself for the Lamanites in a way that would set the conditions for equalizing the payoffs received by both nations. Soon after the mass Lamanite conversions, the equalization of payoffs becomes a practical as well as a symbolic reality.

Following their "territorial invasion" that began with Ammon and the subsequent mass conversion, the converted Lamanites, who fittingly come to be known as the people of Ammon, or "Ammonites," forswear all violence and bury their weapons (Alma 27:26, 57:6; 24:1–18). Unarmed, the Ammonites suffer punishing slaughter from neighboring, unconverted Lamanites who had been "stirred up" by former Nephites, and their act of supreme cooperation in the face of brutal defection (practicing what they have now accepted as their strategy) paradoxically causes more mass conversion and territorial invasion among unconverted Lamanites who participate in or at least witness the slaughter (Alma 24:19–27). To protect the nation that has converted to their strategy, the Nephites resolve to provide for the common defense of the Ammonites and give them land to inhabit in a region named Jershon by the sea (Alma 27:22–30).

And so we see a striking equalization of the payoffs to both nations that goes so far as to tip the scales in favor of the converted Lamanites.

---

89. Axelrod, *Evolution of Cooperation*, 73–87.
90. Axelrod, *Evolution of Cooperation*, 160–68.

Where previously the Nephites had superior weapons, commerce, and education, while the Lamanites lived from day to day, the Nephites now give the Ammonites a seafront land of "inheritance" and vow to protect them against their enemies. To defend the new political order, the Nephites are quickly drawn into "a tremendous battle [with the non-Ammonite Lamanites]; yea, even such an one as never had been known among all the people in the land from the time Lehi left Jerusalem" (Alma 28:2). The battle causes "tremendous slaughter among the people of Nephi . . . [and] great mourning and lamentation" (Alma 28:3–4). Far from a symbolic gesture, the Nephites paid for their Ammonite defense pact with blood and sacrifice. Surprisingly, the Book of Mormon does not describe any political blowback from the Nephites against the Ammonites for the Nephite suffering. Nephite cooperation was robust enough to withstand significant stresses even when Nephite cooperative gestures worked to discount the value (to the Nephites) of peace with the Ammonites.

With outcomes to the two nations now symmetrical (or even skewed in favor of the Ammonites), the Nephites and Ammonites live together in peace for decades. Where as Lamanites they had been "an idle people, full of mischief and subtlety" (2 Ne. 5:24), "wild, and ferocious, . . . full of idolatry and filthiness" (Enos 1:20), the Ammonites are now viewed by the Nephites as "a zealous and beloved people, a highly favored people of the Lord" (Alma 27:30). Where AA and JW are locked together in an asymmetric struggle with no way to amend the outcomes, Ammon's mission followed by Nephite reciprocation allows payoffs to align and the nations to cease warring based on perceived unequal treatment. The Nephite-Lamanite cycle that had been unremittingly vicious becomes (in relation to a subset of Lamanites) just as perpetually virtuous when ongoing interaction between the two nations becomes a matter of generosity and life-and-death necessity.

As an important aside, we should recognize that the method of payoff equalization that the Nephites practice with the Ammonites works so well that they resort to the same strategy when contention arises decades later with another faction. In 29 to 30 AD, the Nephites are dealing with Mafia-like bands of robbers who seriously disrupt their political and economic order. The Nephites are able to broker peace with some of these robbers, and the Book of Mormon relates that the Nephites "granted unto those robbers who had entered into a covenant to keep the peace of the land, who were desirous to remain Lamanites,

lands, according to their numbers, that they might have, with their labors, wherewith to subsist upon; and thus they did establish peace in all the land" (3 Ne. 6:3). Faced with constant defection from warring robbers, the Nephites seek to equalize payments to their counterparty, appreciating from their Ammonite experience that offering land (giving the enemy somewhere to labor and "wherewith to subsist upon") can be a powerful tool in equalizing payoffs and bringing peace.

Book of Mormon history continues for some five hundred years following the Ammonite experience, but the patterns of conflict and the lessons learned can be explained by the same principles we have already explored. We are not surprised that incursions by the anarchist Gadianton robbers occur at a time when "the people began to be distinguished by ranks, according to their riches and their chances for learning; yea, some were ignorant because of their poverty, and others did receive great learning because of their riches. . . . And the people were divided one against another; and they did separate from one another into tribes" (3 Ne. 6:12, 7:2). Once Jesus Christ appears and imparts wisdom and grace directly to Nephites and Lamanites alike, we are again not surprised to hear that nearly two hundred years of peace ensue in conditions where the people "had all things in common among them; therefore there were not rich and poor, bond and free, but they were all made free, and partakers of the heavenly gift" (4 Ne. 1:3). And as the Nephites and Lamanites begin their final, nauseating decline, we see "exceeding riches" and vanity making a last appearance as various tribes go their separate ways to close scope for future interaction once and for all (1:43). The human conditions for long shadows of interaction and symmetrical payoffs (and the opposite thereof) yield surprisingly consistent outcomes in the Book of Mormon text.

Conclusion

If the lessons learned from applying the Prisoner's Dilemma to the Book of Mormon had to be summed up in three lines, the lines might read: *The shadow of the future is important. Territorial invasion is interesting. Equalization of payoffs is indispensable.* Axelrod's research amply demonstrates the first two of these three postulates (even if the Book of Mormon provides a compelling practical example of the second), but the Book of Mormon uniquely illustrates that where two groups are locked in a Prisoner's Dilemma conflict with asymmetric payoffs, the payoffs must be balanced and aligned for the groups to have a hope of consistently achieving mutually beneficial outcomes.

Often human judgment can get in the way of vital equalization. Like Nephites, we can see others as unclean. Like JW, we can view an interlocutor as crazy or unintelligent. Stuck underfoot, we may say like AA or a Lamanite that an oppressor is unwilling to share ill-gotten gains. Whatever the excuses or reasons, Ammon shows that those with privilege must be willing to roll up sleeves and get hands dirty to make relations clean, while Lamoni and his people show that those at a relative disadvantage must lift themselves up. The Book of Mormon suggests that parents, politicians, religious interlocutors, social opponents, and others must seriously consider whether their conflicts might stem (at least in part) from a payoff imbalance and, if so, how to remedy the imbalance to aid cooperation. Once parties are linked arm in arm and locked eye to eye, they can find a common path that stretches out to the horizon.

In a final estimation, the Prisoner's Dilemma and its application in the Book of Mormon provide another way of looking at the Book of Mormon's core messages of atonement, redemption, and the gospel of Jesus Christ. Knowledge of Jesus Christ and Christian teachings might motivate the Nephites to foster concern for the Lamanites and their condition, but only after Ammon takes action to equalize payoffs to the Lamanites and lengthen the scope for future interaction do the Lamanites become amenable to Christian teachings. Just as Nephites teach that the suffering of Jesus Christ would make atonement between the imperfect actions of men and the laws of God (2 Ne. 2:5–10), so too Nephites eventually learn that their belief in that divine Atonement should spur efforts to make practical atonement for unequal payoffs experienced by their long-lost brethren. As the prophet Alma suggests, the works of good men and women can create space for a "preparatory redemption" in this world that hints at an ultimate redemption that will hopefully follow in the next world (Alma 13:3).

The Book of Mormon appears to have Prisoner's Dilemma patterns and conflicts running from its earliest to its latest pages. In a book variously decried as "chloroform in print,"[91] "a prosy detail of imaginary

---

91. Alan Wolfe, "Chloroform in Print: Does the Book of Mormon Get a Bad Rap?" *Slate* (May 17, 2010), http://www.slate.com/articles/arts/books/2010/05/chloroform_in_print.html. This quote is attributed to Mark Twain (Samuel Clemens).

history,"[92] and "so compulsively Biblical that all the action seems to take place underwater,"[93] we find intricate stories that illustrate and illuminate some of the Prisoner's Dilemma's harder-to-grasp applications. While the Prisoner's Dilemma does appear in many contexts—in life as in literature, in fact as in fiction—it is nonetheless remarkable that a nineteenth-century work contains it so fully and so consistently.

---

92. Adam Gopnik, "I, Nephi: Mormonism and Its Meanings," *The New Yorker* (August 13, 2012), http://www.newyorker.com/arts/critics/atlarge/2012/08/13/120813crat_atlarge_gopnik. This is also a quote attributed to Twain.
93. Gopnik, "I, Nephi." This is Adam Gopnik's view.