



## THE HIDDEN RULES OF PROFESSIONAL LIFE: A DISCREET GAME THEORY-BASED STUDY

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### Abstract:

This study examines how the behavioral foundations of professional life trust, cooperation, retaliation, forgiveness, and long-term strategy emerge from repeated strategic interactions. Inspired by Robert Axelrod's 1980 Prisoner's Dilemma tournament, a classroom experiment was conducted wherein students played 55 rounds of the Iterated Prisoner's Dilemma using ten pre-defined strategies such as Always Cooperate, Tit for Tat, Conditional Retaliator, and High-Defect Random patterns. The scoring matrix mirrored workplace trade-offs between collaboration and short-term self-interest. Findings indicate that strategies balancing cooperation with principled retaliation achieved higher cumulative scores, while exploitative or highly inconsistent strategies underperformed. These results parallel the realities of professional conduct and demonstrate that long-term professional success is grounded in consistency, fairness, and strategic reciprocity.

**Keywords:** Forgiveness, Tit for Tat, Discreet Game

## 1. INTRODUCTION

Professional life is shaped by ongoing decisions: whether to trust, cooperate, compete, forgive, or retaliate. These decisions impact relationships, reputation, and long-term outcomes. Game theory, especially the Prisoner's Dilemma, provides a powerful framework for understanding these dilemmas. In 1980, Robert Axelrod invited leading game theorists to submit computer-coded strategies for an Iterated Prisoner's Dilemma tournament. The programs interacted repeatedly, choosing whether to cooperate or defect based on prior behaviour. Surprisingly, the winning strategy was not aggressive or complex, but **Tit for Tat** a simple approach that begins with cooperation, reciprocates cooperation, and retaliates only when necessary.

This study utilizes Axelrod's foundational insights to examine how school students, employing structured strategies, behave in an iterated setting and what such behaviors reveal about effective professional conduct.

## 2. LITERATURE CONTEXT: AXELROD'S TOURNAMENT AND STRATEGY BEHAVIOUR

Robert Axelrod's influential paper, "Effective Choice in the Prisoner's Dilemma," serves as a critical examination and resolution to the question of effective strategy in a wide range of environments in the **Iterated Prisoner's Dilemma (PD)**. Axelrod first identifies that established scholarly approaches spanning experimental psychology, applied political/economic modeling, and abstract game theory offer inadequate guidance for effective, long-term play. Experimental studies are limited by using **inexperienced players**, while applied models suffer from the **slow pace and uncontrollable variables** of real-world interactions. Furthermore, abstract theory often avoids the core dilemma by

analyzing modified versions of the game. This gap necessitated a new approach to identify reliable strategic principles.

To resolve this, Axelrod conducted a groundbreaking **computer tournament**, inviting experts from diverse fields to submit programmed decision rules to compete in the iterated PD. The simple strategy, **TIT FOR TAT** (cooperating initially and then mirroring the opponent's previous move), emerged victorious, a surprising result given the complexity of other submissions. This highlighted the power of simplicity and reciprocity in fostering a constructive outcome. The analysis of the tournament's results revealed three key characteristics shared by the most successful rules, forming the practical core of Axelrod's contribution.

These successful strategies demonstrated **niceness** (they were never the first to defect), which established a cooperative base that maximized mutual gains. They also exhibited **forgiveness**, meaning they did not lock into endless cycles of punishment after an opponent's defection, thereby allowing the relationship to return quickly to cooperation. Finally, they employed a form of **wary optimism** about the opponent's responsiveness. The paper concludes that an individualistic actor, even in a competitive setting, best serves its own interests by adopting a strategy that promotes cooperation through simplicity, reciprocity, and a willingness to forgive, fundamentally challenging the prevailing, overly aggressive expert approaches.

Axelrod's conclusion was that context matters:

- No strategy wins against every opponent
  - Success depends on reading the environment and responding appropriately
- This mirrors professional life, where rigid, one-size-fits-all behaviour is rarely effective.

### 3. RESEARCH OBJECTIVES

1. To analyze the performance of structured strategies in repeated cooperation scenarios.
2. To compare student outcomes with Axelrod's game-theoretic findings.
3. To interpret strategy performance as lessons about professional behaviour.
4. To identify which behavioral patterns build long-term advantage and which undermine relationships.

### 4. METHODOLOGY

#### ▪ Participants

School students participated in a structured simulation mirroring Axelrod's experimental design.

#### ▪ Game Structure

Each pair played **55 rounds** of the Iterated Prisoner's Dilemma using this standard payoff matrix:

| Player / Opponent | Cooperate | Defect |
|-------------------|-----------|--------|
| Cooperate         | 3, 3      | 0, 6   |
| Defect            | 6, 0      | 0, 0   |

This matrix represents workplace-like choices:

- Mutual cooperation yields stable benefit
- Exploitation yields short-term gain but long-term risk
- Mutual defection leads to stagnation

## 5. STRATEGIES USED

Students used the following predefined strategies (Axelrod-inspired yet expanded): Participants were instructed to strictly follow the strategy assigned to them, without deviating or making decisions outside the defined behavioral rules.

| Strategy Code | Original Strategy                                | Character Name          | Behaviour Essence   |
|---------------|--|-------------------------|---|
| A             | Always Cooperate                                 | The Saint               | Always trusting, consistently cooperative                           |
| B             | Always Defect                                    | Known Devil             | Predictably aggressive; never cooperates                            |
| C             | Tit for Tat                                      | Mirror Mind             | Reciprocates exactly what it receives, fair and balanced            |
| D             | Defect After Three Opponent Defections           | Mr. Baseball            | Tolerates two mistakes; retaliates on the “third strike.”           |
| E             | Random (2 Defects, 1 Cooperate Pattern)          | The Wolf                | Plays unpredictably; follows chance more than logic                 |
| F             | Two Cooperate – One Defect Cycle                 | The Opportunist         | Mostly cooperative but exploits periodically                        |
| G             | Defect After Two Consecutive Opponent Defections | The Watchman            | Alert and observant; responds only after repeated provocation       |
| H             | Permanent Retaliator                             | The Grudge Holder       | Never forgives a single defection; retaliates forever               |
| I             | High-Defect Random Pattern                       | The Systematic Defector | Structured yet largely self-serving and exploitative                |
| J             | Conditional Exploiter                            | The Advantage Seeker    | Takes advantage until countered; mixes calculation with opportunism |

These mirror real-life professional behaviour ranging from highly cooperative to highly exploitative.

### ▪ Data Collection and Scoring

Each of the 55 rounds per pair was recorded, generating a complete scorecard. Final cumulative totals were calculated for each strategy

## 6. TOTAL SCORES

### Findings and Analysis

The final scores reveal a clear pattern: strategies that balanced cooperation with sensible boundaries consistently outperformed those that relied on aggression, inconsistency, or opportunism.

| Strategy             |           |             |             |             |          |                 |              |                   |                     |                  | Total | Percent |
|----------------------|-----------|-------------|-------------|-------------|----------|-----------------|--------------|-------------------|---------------------|------------------|-------|---------|
| Mr. Baseball         | 150       | 0           | 150         | 150         | 93       | 186             | 150          | 150               | 45                  | 147              | 1221  | 40.70%  |
| The Watchman         | 150       | 0           | 150         | 150         | 96       | 102             | 150          | 150               | 45                  | 147              | 1140  | 38%     |
| The Grudge Holder    | 150       | 0           | 150         | 150         | 96       | 198             | 150          | 150               | 48                  | 6                | 1098  | 36.60%  |
| The Saint            | 150       | 0           | 150         | 150         | 48       | 102             | 150          | 150               | 24                  | 147              | 1071  | 35.70%  |
| Mirror Mind          | 150       | 0           | 150         | 150         | 96       | 150             | 150          | 150               | 48                  | 6                | 1050  | 35%     |
| The Opportunist      | 198       | 0           | 150         | 36          | 96       | 102             | 198          | 12                | 30                  | 99               | 921   | 30.70%  |
| The Advantage Seeker | 153       | 6           | 12          | 153         | 96       | 201             | 153          | 6                 | 45                  | 0                | 825   | 27.50%  |
| Systematic Defector  | 276       | 0           | 66          | 21          | 90       | 186             | 21           | 6                 | 24                  | 9                | 699   | 23.30%  |
| The Wolf             | 252       | 0           | 102         | 21          | 48       | 204             | 12           | 6                 | 42                  | 6                | 693   | 23.10%  |
| Known Devil          | 300       | 0           | 6           | 18          | 96       | 204             | 12           | 6                 | 48                  | 0                | 690   | 23%     |
|                      | The Saint | Known Devil | Mirror Mind | Mr Baseball | The wolf | The Opportunist | The Watchman | The Grudge Holder | Systematic Defector | Advantage Seeker |       |         |

## 7. FINDINGS AND ANALYSIS

The final scores reveal a clear pattern: strategies that balanced cooperation with sensible boundaries consistently outperformed those that relied on aggression, inconsistency, or opportunism. The results offer strong parallels to everyday professional behaviour.

**The highest scoring strategy was D (1221)**, which cooperates by default but responds firmly after repeated provocation. This mirrors employees and leaders who are patient, fair, and tolerant yet not afraid to step in when lines are crossed. Such individuals tend to build trust while still ensuring they are not taken for granted.

**G and H followed closely (1140 and 1098).**

- Strategy G represents professionals who “observe first, respond second,” giving others the benefit of the doubt but stepping in decisively when negative behaviour becomes a pattern.
- Strategy H resembles individuals who maintain strict boundaries. They may appear rigid, but their consistency makes them predictable partners in long-term collaboration.

**Strategies A and C (1071 and 1050)**, the most cooperative approaches also performed strongly. These reflect the colleagues who always begin with trust, communicate openly, and maintain fairness. Their success shows that transparent and dependable behaviour still pays off, even when others may occasionally deviate.

Mid-range performers like **F and J (921 and 825)** shows mixed outcomes. Their behaviour resemble professionals who mostly collaborate but occasionally seek advantage. This inconsistency affects their long-term credibility.

The lowest-scoring strategies E, I, and B (693, 699, 690) represent the more unpredictable, short-term-oriented, or highly self-serving behaviors. These approaches mirror individuals who are erratic in their

decisions or prioritize immediate gains. While they may see short-term benefits, they struggle to maintain cooperative relationships and ultimately lose out in cumulative performance.

## 8. HIDDEN RULES OF PROFESSIONAL LIFE

- **Rule 1: Cooperation is a Long-Term Investment**  
Strategies A and C show that reliability creates sustained partnerships.
- **Rule 2: Boundaries Build Respect**  
Strategies D and G highlight the value of proportionate, thoughtful retaliation.
- **Rule 3: Short-Term Exploits Lead to Long-Term Losses**  
Strategies B and I demonstrate that aggression weakens relationships.
- **Rule 4: Forgiveness Restores Partnerships**  
Tit for Tat's immediate forgiveness mirrors emotional intelligence at work.
- **Rule 5: Context Matters - Adaptability Is Key**  
No strategy wins universally; professionals must read situations and respond appropriately.
- **Rule 6: No Single Strategy Fits All Situations**  
As Axelrod concluded, context shapes the best response.  
Professional life requires situational awareness, adaptability, and emotional intelligence.

## 9. BEHAVIORAL SPECTRUM OF STRATEGIES

The strategies in this experiment fall along a broad behavioral spectrum. At one end are the approaches that are consistently cooperative and relationship-focused. These strategies reflect individuals who choose trust, fairness, and openness in most interactions. At the other end are strategies that prioritize self-protection, short-term gain, or aggressive responses, often at the cost of long-term relationships.

To illustrate this, the results can be arranged on a simple scale where Rank 1 represents the most cooperative behaviour and Rank 10 represents the most self-serving behaviour. This allows us to see how each strategy aligns with real professional tendencies, ranging from highly supportive and partnership-oriented to highly defensive and competitive.

### Total Performance Score Summary

| Strategy Code | Character Name          | Total Score |
|---------------|-------------------------|-------------|
| (D)           | Mr. Baseball            | 1221        |
| (G)           | The Watchman            | 1140        |
| (H)           | The Grudge Holder       | 1098        |
| (A)           | The Saint               | 1071        |
| (C)           | Mirror Mind             | 1050        |
| (F)           | The Opportunist         | 921         |
| (J)           | The Advantage Seeker    | 825         |
| (I)           | The Systematic Defector | 699         |
| (E)           | The Wolf                | 693         |
| (B)           | Known Devil             | 690         |

### Behavioral Ranking Scorecard

| Strategy Code | Character Name          | Total Score | Behaviour Rank |
|---------------|-------------------------|-------------|----------------|
| (A)           | The Saint               | 1071        | 1              |
| <b>(D)</b>    | <b>Mr. Baseball</b>     | <b>1221</b> | <b>2</b>       |
| (C)           | Mirror Mind             | 1050        | 3              |
| (H)           | The Grudge Holder       | 1098        | 4              |
| (G)           | The Watchman            | 1140        | 5              |
| (F)           | The Opportunist         | 921         | 6              |
| (J)           | The Advantage Seeker    | 825         | 7              |
| (E)           | The Wolf                | 693         | 8              |
| (I)           | The Systematic Defector | 699         | 9              |
| (B)           | Known Devil             | 690         | 10             |

This spectrum helps clarify that professional behaviour is not binary. People operate across a wide range of patterns. Some lead with trust. Some balance cooperation with strong boundaries. Others prioritize their own advantage. The experiment shows how these different approaches perform when repeated over time, just as they do in workplace relationships. It is clearly seen that the winner of our simulation stands at rank 2 in the spectrum.

## 10. CONCLUSION

The experiment validates Axelrod's insights: the most effective behaviors are those that blend cooperation with principled boundaries. Long-term professional success depends on:

- Reliability
- Fairness
- Reciprocity
- Restraint in retaliation
- Ability to adapt to others' behaviour

Rather than seeking a universal "best" behaviour, professionals must understand their environment, read others' intentions, and respond strategically. The study reinforces that ethical, cooperative, and situationally-aware behaviour forms the core of a successful professional life.

### **Practical Implications for Professional Conduct**

- Build credibility through consistent cooperation
- Set boundaries but avoid unnecessary conflict
- Think long-term rather than chasing short-term wins
- Use forgiveness strategically to repair relationships
- Adapt your style depending on the situation and counterpart

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## VISUAL DOCUMENTATION OF THE EXPERIMENT



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