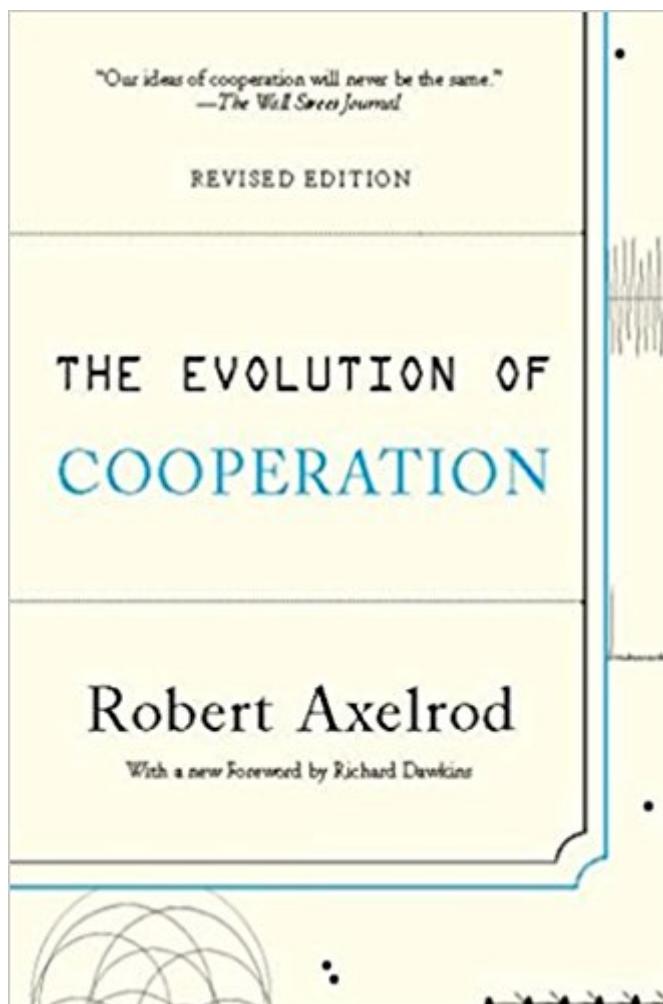


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# The Evolution Of Cooperation: Revised Edition



## Synopsis

The Evolution of Cooperation provides valuable insights into the age-old question of whether unforced cooperation is ever possible. Widely praised and much-discussed, this classic book explores how cooperation can emerge in a world of self-seeking egoists-whether superpowers, businesses, or individuals-when there is no central authority to police their actions. The problem of cooperation is central to many different fields. Robert Axelrod recounts the famous computer tournaments in which the "cooperative" program Tit for Tat recorded its stunning victories, explains its application to a broad spectrum of subjects, and suggests how readers can both apply cooperative principles to their own lives and teach cooperative principles to others.

## Book Information

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## Customer Reviews

As the title indicates this book explores the topic of cooperation, particularly how it can emerge in a decentralized population that seeks individual maximization of self-interest. The book is split into two main sections. The first discusses cooperation through game-theory analysis of computer tournaments played. This includes the various strategies used, and the ones that enjoyed the most success. The second discusses the implications of the findings from the first section, and real-world applications in the fields of biology, politics, sociology etc. While the first section is somewhat dry

and abstract, the second section anchors the concepts and is very applicable and practical. Below are key excerpts from the book that I found particularly insightful:

1- "The analysis of the data from these tournaments reveals four properties which tend to make a decision rule successful: avoidance of unnecessary conflict by cooperating as long as the other player does, provocability, in the face of an uncalled for defection by the other, forgiveness after responding to a provocation, and clarity of behavior so that the other player can adapt to your pattern of action."

2- "What accounts for TIT FOR TAT's robust success is its combination of being nice, retaliatory, forgiving, and clear. Its niceness prevents it from getting into unnecessary trouble. Its retaliation discourages the other side from persisting whenever defection is tried. Its forgiveness helps restore mutual cooperation. And its clarity makes it intelligible to the other player, thereby eliciting long-term cooperation."

3- "Thus cooperation can emerge even in a world of unconditional defection. The development cannot take place if it is tried only by scattered individuals who have no chance to interact with each other. But cooperation can emerge from small clusters of discriminating individuals, as long as these individuals have even a small proportion of their interactions with each other."

4- "The live-and-let-live system that emerged in the bitter trench warfare of World War I demonstrates that friendship is hardly necessary for cooperation based upon reciprocity to get started. Under suitable circumstances, cooperation can develop even between antagonists."

5- How to Choose Effectively: "The advice takes the form of four simple suggestions for how to do well in a durable iterated Prisoner's Dilemma: 1) Don't be envious. 2) Don't be the first to defect. 3) Reciprocate both cooperation and defection. 4) Don't be too clever."

6- "...not being nice may look promising at first, but in the long run it can destroy the very environment it needs for its own success."

7- "Keeping one's intentions hidden is useful in a zero-sum game (e.g. Chess) where any inefficiency in the other players behavior will be to your benefit. But in a non-zero-sum setting it does not always pay to be so clever."

8- "So to promote cooperation through modification of the payoffs...it is only necessary to make the long-term incentive for mutual cooperation greater than the short-term incentive for defection."

9- "The ability to recognize the other player from past interactions, is necessary to sustain cooperation. Without these abilities, a player could not use any form of reciprocity and hence could not encourage the other to cooperate."

10- "The ability to recognize defection when it occurs is not the only requirement for successful cooperation to emerge, but it is certainly an important one."

11- "This kind of stereotyping has two unfortunate consequences...the obvious consequence is that everyone is doing worse than necessary because mutual cooperation between the groups could have raised everyone's score...while both groups suffer from lack of mutual cooperation, the members of the minority group suffer more."

12- "The trick is to set the stringency of the standard

high enough to get most of the social benefits of regulation, and not so high as to prevent the evolution of a stable pattern of voluntary compliance from almost all of the companies."<sup>13</sup> "In an organizational or business setting, the best way to secure this accountability would be to keep track not only of the person's success in that position, but also the state in which the position was left to the next occupant."<sup>14</sup> "The core of the problem on how to achieve rewards from cooperation is that trial and error in learning is slow and painful. The conditions may all be favorable for long-run developments, but we may not have the time to wait for blind processes to move us slowly toward mutually rewarding strategies based upon reciprocity. Perhaps if we understand the process better, we can use our foresight to speed up the evolution of cooperation."

It's perhaps one of the most fascinating quirks of psychological research that one of the most ground breaking findings in human psychology was achieved by means of a computer tournament. That tournament was sponsored by Robert Axelrod of the University of Michigan who developed a computer environment that would different game programs against each other to determine which survival strategy was best adapted to survival. For those believers of life, nasty, brutish and short, the findings were nothing short of astonishing: specifically that when actors were involved in situations where they would be repeatedly interacting with each other, survival was best enhanced by cooperation. Otherwise known as "the golden rule" of doing unto others as you would have done unto you, a computer program known as Tit for Tat outperformed all other competitors by first seeking cooperation and then narrowly mirroring the actions of its counterparts. In other words, if Tit for Tat met a competitor it would first seek cooperation. If the competitor cooperated, Tit for Tat would thereafter cooperate. If the competitor defected, Tit for Tat would itself immediately defect but thereafter again seek cooperation by cooperating whenever the competitor thereafter chose to cooperate. Since the publication of the original article detailing Axelrod's findings twenty five years ago, the study of cooperation or reciprocal ultraltruism has found applications not only in human behavior but also in genetics and evolution itself. Inside every cell of your body are anywhere ranging to around 1000 mitochondria. If the test for different life forms are organisms which have their own DNA, mitochondria qualify. Yet, they have always been a part of human biology. And they have been their own life domain for the better part of two billion (or more) years. Mitochondria's ability to productively work with their host cells is an example of both genetic and biological reciprocal ultraltruism. Like any ground breaking work, like Newton's Principia or Darwin's Origin of Species, I was attracted to this work so I could better witness the original flash of genius. And like with Newton's Principia and Darwin's Origin of Species I was not disappointed but found many

instances in which the original researchers had advanced speculations that frankly would remain fertile areas for further research. In the case of this book, I would include Axelrod's discussion of how to better take advantage of the benefits of reciprocal ultruism and also how systems can be more reciprocal ultruism friendly. Interestingly, the places where reciprocal ultruism has tragically broken down are places that would easily be predicted by the over arching theory. For students of genetics, biology and even behavior I can't recommend this book highly enough. In fact, in addition to this book I would also recommend the following: *Origins of Virtue* by Matt Ridley which discusses the genetic aspects of reciprocal ultruism; *Prisoner's Dilemma* by William Poundstone which discusses game theory as a branch of theoretical mathematics; *Selfish Gene* by Richard Dawkins which is just fun; and *Oneness* by Jeffrey Moses which provides verbatim quotes of the golden rule and other doxology by means of direct quotes from the world's leading religions. There's nothing like seeing material which so exactly corresponds to theoretical predictions to give you a sense of the explanatory power of the theory(ies) involved.

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