

Darwinian Morality

Why aren't all the atheists raping and pillaging?

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Morality without God?

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-- Dennis Prager and Joseph Telushkin, “The Nine Questions People Ask About Judaism”

Morality Without God?

- “I cannot see how to refute the arguments for the subjectivity of ethical values, but I find myself incapable of believing that all that is wrong with wanton cruelty is that I don’t like it.”

-- Bertrand Russell, 1960

Morality With God?

- Which God?

"When you encounter the unbelievers, strike off their heads, until ye have made a great slaughter among them..." -- The Q'uran, sura 47:4

"Put away your sword, for those who live by the sword shall die by the sword" -- Matthew 26:52

- How can we decide which god's morality to follow without a standard that transcends God?

Is it moral because God says so, or does God say so because it is moral?

- This question was first raised by Socrates (via Plato, *Euthyphro*, 380BC)
- If God says so because it is moral then morality transcends God
- If it's moral because God says so, then what makes morality “good”?
 - Is it moral to kill unbelievers because Allah says so?
 - What if God said it was OK to kill innocent children?

Moral Intuition

- Scripture requires interpretation

“And he that blasphemeth the name of the Lord, he shall surely be put to death...” -- Leviticus 24:16

Should we therefore institute the death penalty for blasphemy?

Moral Intuition

“Thou shalt not make unto thee any graven image, or any likeness of any thing that is in heaven above, or that is in the earth beneath, or that is in the waters beneath the earth”

-- Exodus 20:4

Are photographs immoral? What about statues of the Virgin?

Moral Intuition

- People have a *moral intuition* about right and wrong. (So do some animals.)
- This moral intuition has aspects that are *universal* across all religions and cultures
 - Universal evils
 - Harming innocents, lying, stealing
 - Universal virtues
 - Justice (including *punishment for transgressions*), honesty, charity

Where does moral intuition come from?

- Two possibilities:

1. It came from God

“...in the day ye eat [the fruit of tree of the knowledge of good and evil] then your eyes shall be opened, and ye shall be as gods knowing good and evil.” -- Genesis 3:5

2. It evolved ... but how?

The Prisoner's Dilemma

- The Prisoner's Dilemma is a game:
 - Two players
 - Two possible moves: cooperate or defect
 - Scores awarded according to the following table:

	P2 Cooperate	P2 Defect
P1 Cooperate	Both players get 3 points	P1 gets 0 P2 gets 5
P1 Defect	P1 gets 5 P2 gets 0	Both players get 1 point

Preliminary Observations on the Prisoner's Dilemma

- The Prisoner's Dilemma is a simple model of social interaction
- It is *not* a zero-sum game, but...
- Whatever your opponent chooses to do on any given move, you *always* do better *for yourself* by defecting than by cooperating
- Intuitively then, the rational Darwinian strategy is to always defect.

One-shot vs. Iterated P.D.

- Defection is indeed the best strategy for a single round of P.D
- The same is true for multiple rounds if the number of rounds is known in advance.

■ *BUT...*

If the number of rounds is not known in advance then *there is no one best strategy!*

Iteration changes everything...

- Recall that in the single-round P.D. you always do better by defecting no matter what your opponent does. *This is not true for iterated P.D.!*
- *If your opponent is using a strategy of (say) tit-for-tat (cooperate on the first move, then do whatever the opponent did on the previous move) or permanent retaliation (cooperate until the first defection, then defect for all subsequent moves) then your best strategy is to always cooperate!*

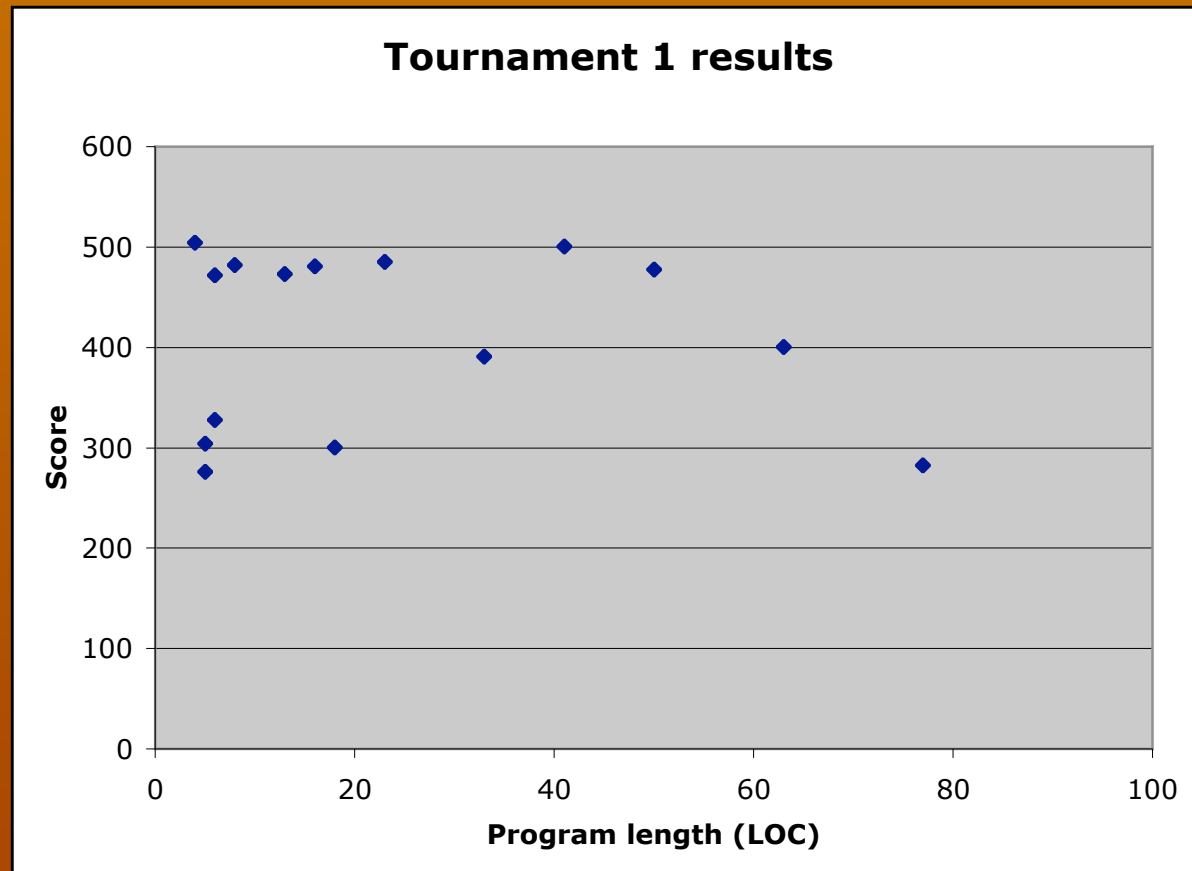
Exploring the Iterated Prisoner's Dilemma (IPD)

- Two possibilities:
 - Have people play the game
 - Use computer simulations
- Advantages of computer simulation
 - Faster
 - Allow dispassionate exploration of *effective strategies* for playing IPD

First Computer IPD Tournament (Axelrod 1980)

- 14 entries from five disciplines
 - Psychology
 - Sociology
 - Economics
 - Political science
 - Mathematics
- Tournament was round-robin with cumulative scoring

Tournament Results



Tournament Results

- Programs ranged from 4-77 lines of code
- No correlation between score and...
 - Program size
 - Discipline
- The winner was TIT-FOR-TAT
 - Cooperate on the first move, then do whatever your opponent did on the previous move
 - This was the shortest program

Niceness

- Seven other programs did almost as well as TIT-FOR-TAT. What do they have in common?
- *Niceness* — none of the eight “winning” programs was ever the first to defect
- None of the “losing” programs was “nice”

Kingmakers

- Two “nice” rules will always play all-C against each other, so relative rankings among nice rules are determined by how they do against non-nice rules
- Two of the non-nice rules determined the rankings among the nice rules
- Both of these “kingmakers” were complex rules based on statistical analysis

Forgiveness

- At least three other rules would have won if they had been entered:
 - TIT-FOR-TWO-TATS
 - Revised DOWNING
 - LOOKAHEAD
- All these rules (and TIT-FOR-TAT) are *forgiving*, that is, they do not defect more than their opponent
- The worst of the “nice” rules was the least “forgiving”

Second Computer IPD Tournament

- All contestants in the second tournament were given the results of the first tournament
- Sixty-two entries from six countries
- TIT-FOR-TAT won again!
 - Revised DOWNING, which would have won the first tournament, did not win the second!
- “Niceness” won again.
 - Of the top fifteen rules, all but one were nice.
 - Of the bottom fifteen rules, all but one were not nice.

Other features of top-ranked rules

- Top rules were *easily provoked*, that is, they did not allow many defections before defecting themselves
 - Non-provokable rules were exploited by rules designed to ferret out rules that were “too nice”
- Top rules were *forgiving*, that is, they did not continue to defect after their opponent started to cooperate

Dynamic Environments

- The outcome of the first two tournaments were influenced by psychology
 - Rules generated by humans who knew that other rules would be generated by humans (and, in the second round, who knew the outcome of the first round)
- To eliminate psychological effects, a third “tournament” was conducted where successful rules “reproduce”
 - This causes the “environment” to change. (Remember, there is no best rule in an absolute sense.)

Dynamic Environments

- Results:
 - All but 9 rules went “extinct” almost immediately
 - Of those, three went extinct later on. These three tended to exploit rules that were “too nice”, but when their “prey” died off, so did they.
 - Tit-for-tat won (of course)

Simulated Evolution

- Of course, these rules were still “designed”. They did not evolve.
- But evolution can be simulated
- Rules can be represented as simple lookup tables, so they can be randomly generated, “mutated”, and even “sexually bred” with each other.

Simulated Evolution

- Results: Tit-for-tat (or something very similar) evolved — but only about 75% of the time.
- The other 25% of the time, rules evolved that were substantially more complex *and better* than tit-for-tat!
- Conclusion #1: evolution does not imply “anything goes” morality. “Anything goes” *does not* reproduce well!

Selfish Genes

- Elements of Darwinian Evolution:
 - Reproduction
 - Variation
 - Natural selection
- But *what* is being reproduced/varied/selected?
 - Individuals?
 - Species?
 - Families?
 - Communities?
 - Genes?

Selfish Genes

- Behavior that apparently violates Darwinian principles might be simply a result of a misplaced focus of attention.
- What is bad (in the short term) for me as an individual might be good (in the long term) for my species, my family, or my genes.

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Morality without God!

- Prager and Telushkin *are mistaken*.
- Moral behavior is *behavior that reproduces well!*
- To be more precise, genes that produce brains with moral intuitions (or instincts) reproduce better than genes that produce brains without them.

Is it moral because God says so, or does God say so because it is moral?

- Genes that produce mechanisms to enforce moral behavior (i.e. religion) reproduce better than genes that do not!
- Darwinian theory (as informed by Axelrod and Dawkins) predicts the evolution of religion (in an environment that contains creatures with sufficiently large brains)
- Recent result: “fairness center” identified in the brain

Conclusion

- Morality without God (or gods) is not possible, but not because God is a *prerequisite* for morality, but because God is a *necessary consequence* of the mechanism that produces morality!

References

- Robert Axelrod, *The Evolution of Cooperation* and *The Complexity of Cooperation*.
- Richard Dawkins, *The Selfish Gene*.
- Douglas Hofstadter, *Metamagical Themas*.
- Dominique de Quervain, et al. The Neural Basis of Altruistic Punishment. *Science* 305 (5688) pp. 1254-1258 (August 27, 2004).