Altruism, Religion and Irrationality

Emergence of Cultural Cooperation Dominating Innate Altruism Under Intermittent Evolutionary Pressure

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Simple *per se*, yet complicated, multifaceted phenomenon

- Various types
  - Genuine altruism as will to help others at real own cost
  - Warm-glow: More than *do* good, want to *feel* good
  - Reciprocal cooperation: I give *for* you return

- At least 2-3 competing or complementing explanations
  - Group selection
  - Kin selection
  - (Reciprocal: life’s a multi-shot game)

We model Altruistic Cooperation

- Group selection
- Personal cost to altruistic individual
- Increasing group’s overall fitness
Altruism – simple *per se*, yet complicated, multifaceted phenomenon

- Imprint
  - Innate, Genetic
  - Cultural


We consider two Altruism Imprints

(i) Innate, Genetic
(ii) Cultural, enforced by faith
"Religion" in this study

Any belief in divinity that promises justice/reward/punishment beyond death, for which there is not much hard evidence that it really exists.

It is not central for the study whether all famous religions fall into this category – to avoid confusion please mind that it could theoretically be that some today’s religion has got it right.
Religion formidable in bringing people together as a group – for worship, ... , war

Among central aspects of religions helping poor

US: outlier in west in terms of religion – and of donations, mainly to religious causes

Historically, religions regularly used as means not only to inclusion of group members but also of exclusion (‘pagans’, crusades..)
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We model Faith

- Increasing cooperation within group, but
- Some evolutionary cost to individuals and their groups.
Religion and deprivation: an extraordinary correlation

Marx: idea of religion as opium to compensate for material deprivation

Critical voices: religion not extinct when people get rich

Empirically:

- On one hand mixed: getting rich doesn’t always reduce religiosity
  - simple indexes of ‘richness’ miss important factors. High GDP not always mean basic material and social needs met for bulk of people

- Paul (2009), focus on material and social functionality of countries
  - extremely high neg. corr. between social material progress and faith: 0.7
  - US case (very rich, influencing GDP based statistics with high religiousness), revealing: disfunct welfare state with very large penetration of material and social problems in the society. Strong outlier also in religiousness.

- Norris & Inglehart (2004)
  - Beyond GDP many indicators for social well-being/direness (mortality rates, life expectancy, AIDS, water access, …) all very significant: worse off⇒more faith
Self-Serving bias (self-righteousness)

Very well documented, common psychological trait

- Overestimation of own skills
- Increased perceptibility for arguments supporting own position
- Premature discreditation of discomforting information
- ...
- Short: pride; confidence; makes us treat preferably info that comforts our position

Omnipresent

- most people judge themselves as being above-average in xyz
- voters tend to vote for policies that promise to better their positions. Not out of egoism – narrowly selfishly ones wouldn’t vote. People tend to believe in the virtues of the policies that promise to favour them.
- inhabitants of bank-secrecy countries think bank secrecy morally worthy; others think shameful...
- ...
Self-Serving bias

Evolutionary role

- Individual benefits of convincing others of one’s skills and righteousness

But

- Evolutionary need to overestimate *oneself* own skills less deep (Leary 2004; Haidt 2012); extra costs:
  - *Individually*: Thinking I can jump 3 m makes me fall down cliff
  - Maybe much more importantly – less obvious – implied *social* cost: Partisans’ attrition wars because everyone believes so strongly in his stance

=> Good liar/bluffer should be better off than self-deceiver
Evidence for or against religion doesn’t change when one’s own material or social condition changes.

Observation: perceptions do change. Strong covariation between individual and social developments and believes.

Plausibly, Marx and many right – to some degree: Comfort seeking may be an explanatory for some people’s faith. Simplest covariations: better off beyond GDP = less within traditional belief system.
Self-serving bias and religion

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We model Self-serving bias

- Some evolutionary cost to individuals and their groups.
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⇒ based on these assumptions, we find religiosity increasing in dire times as comfort beyond the current harsh life is sought for.

Material deprivation and turmoil highest in times with high extra group pressure (or harsh environmental conditions).
Some criticize as insufficient. However:

- Main condition, *many, small* sized groups over *long time* foraging, seems clearly given, e.g. Richerson (2003):
  Late Pleistocene: tens of thousands of generations and more than quarter of million foraging bands; groups with even initially rare occurrences of good cooperators expected longer-run success.

- Evidence against often limited. Full account beyond this work but quick glance on arguments suggests no perfect evidence
  - e.g. Richerson et al. argue in history typically part of the women survived attacks
  - But, assuming even most women to be captured rather than killed, would *reduce ‘selectivity’ of process by less than factor 2*. Assuming extant children to be partly killed maybe even by even much smaller factor.

  ! Contrast !: Uncertainty about processes rather orders of magnitude than factor 1.5 or 2...(authors themselves cite numerous tribal war zones with potentially substantial losses for defeated)
Some criticize as insufficient. However:

- O’Connor (2006): kin selection better explanator for cooperation e.g. in insects, but not necessarily as good for humans where cooperation often across non-closest-kin; various other key arguments brought forward against group selection not necessarily apply to human (cultural) cooperation.

- We find such cultural cooperation may dominate innate altruism. The Richerson et al. survival argument becomes largely irrelevant as even with subordinated survivors, cultural traits largely overridden.

Psychology of science: confusion *is vs should*?

- Haidt (2012): Edward Wilson, applying *theory of* natural selection to humans, broadly judged *racist* simply because the public and many scientists falsely deducted that Wilson’s natural selection implied that the strongest *should* survive, so that sociobiology had largely been discredited even among scientists for a long time. Kin selection more ‘benign’ alternative in this respect – itself doesn’t mean more likely.
Haidt (2012) also considers the main arguments brought forward against group selection and explains that contrary to most other species, the specific evolution of human lifes in the past may well have been such that group selection was a main driver for the development of human altruism, as an exception compared to evolutionary drivers of most other species. He explains how the main arguments brought forward by opponents, notably Williams (1966) and Dawkins (1976), do not directly extend from other species to humans, and he portrays a whole set of reasons why group selection seems to have been key in our case.
Dynamic Evolutionary Model I/II

Dynamic stochastic numerical model with intra-group model for individual reproductive success and inter-group conflicts.

Setting e.g. $20 \times 20 \times 20$

- 20 individuals per group
- $20 \times 20$ groups in square matrix

Individual reproductive success

- stochastic offspring
- genetic mutations: gradual changes of innate altruism, and of self-serving bias
- adaptation of faith to personal bias level and conflict level
- mean [relative to group] based on individual cost for altruistic aid, self-serving bias, and cult
Intra-group pressure

- conflict with some of neighbors either constantly or occasionally
- stochastic outcome: $x$ wins over adjacent group $y$ with probability increasing in $x$’s altruism level relative to $y$’s, but decreases in level of cost from cult and self-serving bias.
- winners genes spread at cost of defeated groups. Replacement to any degree $(0, 1]$
RESULTS
Purely Genetic Altruism: continu. or interm. pressure

Intermittent Pressure: Genetic Altruism

Genetic Altruism

Overall Altruism

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Continuous Pressure: Religion and Irrationality

![Graph showing the relationship between continuous pressure, genetic altruism, religious altruism, overall altruism, and irrationality over time.](image)

- **Genetic Altruism**
- **Religious Altruism**
- **Overall Altruism**
- **Irrationality**

**Axes:**
- **Y-axis:** Values range from 0 to 0.9.
- **X-axis:** Time in 1,000 generations.

**Legend:**
- Pink: Genetic Altruism
- Cyan: Religious Altruism
- Blue: Overall Altruism
- Red: Irrationality

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Intermittent Pressure: Costly Religion w/o Irrationality

Intermittent Pressure: Genetic & Religious Altruism

![Graph showing Genetic Altruism, Religious Altruism, and Overall Altruism over time (1000 generations)].

- Genetic Altruism
- Religious Altruism
- Overall Altruism

Time [1000 Generations]

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Intermittant Pressure: Costly Irrationality w/o Religion

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Results & Interpretation

Dominance:

- Under continuous pressure, innate altruism dominates
- Intermittant pressure:
  - Costly bias alone regressive
  - Faith with (costly) cult alone regressive; innate altruism dominant
  - Bias & Faith together dominant; innate altruism crowded out

Level:

- Despite extra costs of both traits: Overall potential for (implicit) altruism higher when bias and cultural altruism can replace innate altruism

Interpretation:

- Reason: Self-serving bias and religion reduce relative cost of ‘pressure-weighted’ altruism.
Conclusions

1. Innate (more inert) vs cultural (more malleable) altruism modelled
2. Innate altruism could be more efficient as it could avoid costs associated to upholding cultural heritage
3. Two costly traits together (bias and faith) can dominate a more efficient trait (innate altruism) in complex environments
4. Simulations in simplified environments may miss out in explaining complex traits that are on first sight not directly linked to the specific features of complex reality
5. So, time and space heterogeneity can be key to understanding complex traits
Caveats

- Analytical **closed-form** solutions for model?
- **Group selection** really central? Many indices suggest yes after all, but ..
- **Humans and ‘Altruism’??** How much have I donated to world’s poor last year – how much to the poor among my countrymen? Few times few $ ?! Rather warm glow?! What’s this in evolutionary terms??
- **Causation or correlation** between material and social success? Analysis beyond GDP strongly suggests dire times = more faith, but Paul (2009) also suggests causation could be reverse.
- Beyond question about theoretical validity – **empirical evidences** for mechanism difficult to get
Robustness

- So far received results naturally for various functional configurations. But two difficulties:
  - finding realistic parameterisations of the various functional mappings (difficulty extraordinary)
  - miniaturization: given ‘real’ parameters, adapt such that simulating limited # of groups and generations approx. representative

- Group conflict reducing (rather than extincting) genetic proliferation of dominated group

- When self-serving bias given, tandem with religion persists: theoretically even without decimation of dominated groups, as cultural layer may be imposed by winning groups

- Heterogenous natural environmental pressure rather than from competing groups
bibliography


Williams, 1966, Adaptation and Natural Selection, Princeton University Press
Thanks for your attention.

Comments welcome at florian.habermacher@unisg.ch