

Erklärt die Evolution religiöses Verhalten?

The Evolution of Religion



Carel van Schaik
Anthropologisches Institut & Museum
Universität Zürich



Main Points

- I. It is useful to recognize 3 distinct aspects of religion
 - a) *religious experiences* (and thus beliefs)
 - b) *religious practices* (communication, ceremonies)
 - c) *religious organizations* (social dimension)
- II. The form of religion reflects the form of society
 - Monotheism came late because despotic societies came late
 - Monotheism was a solution to high inequality in anonymous societies
- III. Monotheism's success was facilitated by the design features of the God it postulated
 - needed because it is counter-intuitive

I. Religion's components

A definition:

Religion = Shared beliefs, practices and experiences regarding supernatural agents¹

Religious beliefs are generally *shared by a community*, and they *express the communal culture and values* through myth, doctrine, and ritual.

Components:

1. Individual religious experiences (→ beliefs): **religiosity** (*human universal*)
2. Expressed in behavior as **religious practices** (*dependent on religion*)
3. Collective phenomenon: **religious institutions/ religiousness** (*culturally highly variable*)

Religiosity

the biological foundation

- Religiosity = belief that supernatural powers exist
 - “Religious thoughts seem to be an emergent property of our standard cognitive capacities”¹

- Combination of two tendencies:
 1. *Systematic anthropomorphism: HADD = hyperactive agency detection device:*
 - *Humans are cause-inferring, purpose-seeking, story-telling animals*²
 - *Humans lack the ability to accept randomness*
 2. *Representation of absent kin or allies*
 - *as a byproduct produces representation of dead persons as agents*

Objects have 'agency': experiments

Box 2. Attribution of social meaning from visual motion

Subjects were shown a short movie of simple geometric shapes in motion (a still from the movie is shown in Fig. I). After seeing the movie, they were asked to describe what they saw. While normal subjects immediately ascribe social meaning to what they see, a subject with developmental amygdala damage (subject SM) failed to do so, interpreting the stimulus in purely geometric terms. The findings suggest that the amygdala may be critical in order to acquire the social knowledge by which normal individuals automatically assign social meaning to stimuli.

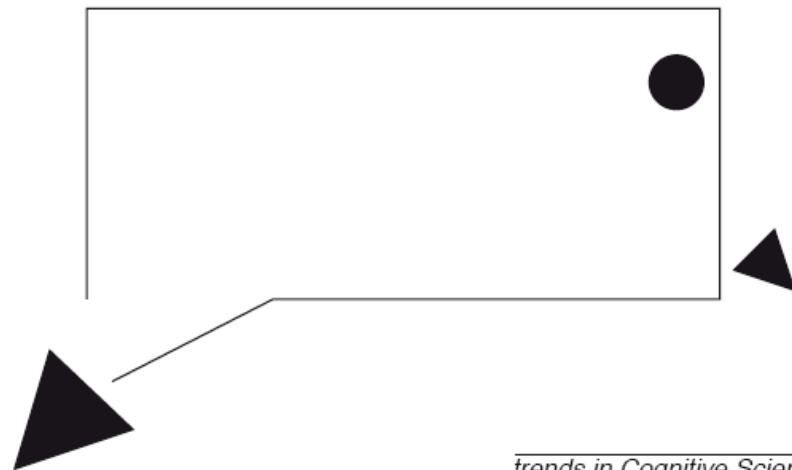


Fig. I. A still from the movie of simple geometric shapes in motion that was shown to the subjects (see text for description). (Redrawn from Ref. a.)

Normal control subject

'I saw a box, like a room, that had an opening to it. There was a large triangle chasing around a smaller triangle, and a circle...got into the box, or the room, and hid. And then the big triangle chased the little triangle around. Finally he went in, got inside the box to go after the circle, and the circle was scared of him...but manoeuvred its way around and was able to get out the opening, and they shut it on him. And the little circle and the little triangle were happy that they got that, the big one, caught. And they went off on their way, and the big triangle got upset and started breaking the box open.'

Subject SM

'OK, so, a rectangle, two triangles, and a small circle. Let's see, the triangle and the circle went inside the rectangle, and then the other triangle went in, and then the triangle and the circle went out and took off, left one triangle there. And then the two parts of the rectangle made like an upside-down V, and that was it.'

Reference

a Heberlein, A.S. *et al.* (1998) Impaired attribution of social meanings to abstract dynamic visual patterns following damage to the amygdala *Soc. Neurosci. Abstr.* 24, 1176

Ascribing agency: adaptation

- Agency (every object, dead or living, has intentions), a.k.a. *systematic anthropomorphism*
 - Each event is the consequence of an intentional action: if no agent is visible, you make one up!
 - so, if someone falls ill, it is the revenge of someone, who sent some evil spirit;
 - if the computer fails, you are being punished for an evil deed; etc.
 - Byproduct: susceptibility to supernatural experiences
- Adaptive?
 - Falsely ascribing agency or seeing pattern is less dangerous than falsely not doing so¹
 - Also commonly seen in animals
 - Dog growling at parasol lifted up by wind gust (Darwin), chasing cars

Human HADD illustrated



- *“A sign from God? Lightning strikes the basilica of St. Peter's dome earlier this evening during a storm that struck Rome on the same day Pope Benedict XVI announced his resignation”¹*

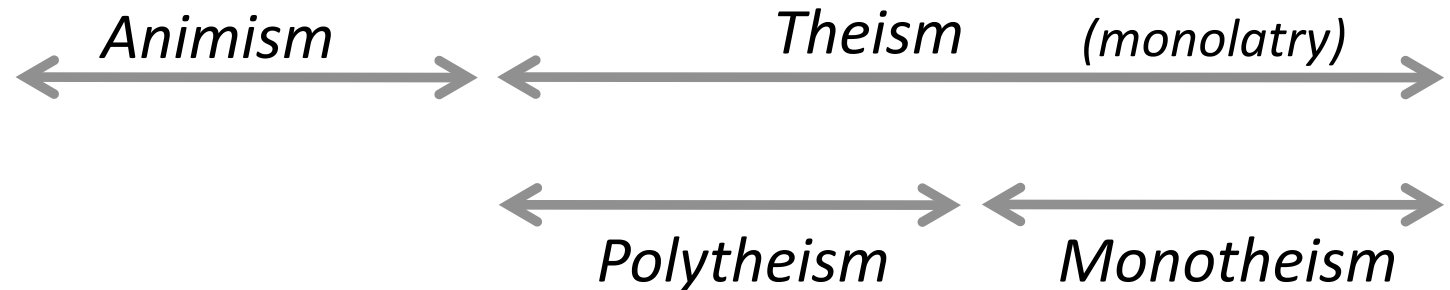
Representing absent individuals

- Life in *fission-fusion societies*:
 - camp compositions can vary
 - humans always stay in touch with kin in other camps, bands
 - humans are separated from fellow camp members on a daily basis
 - unlike in chimpanzees, currently absent allies can join later and take revenge or provide support (language!)
- This has favored the capacity to *represent absent people* (kin or allies)
 - cf. displacement property of language
 - facilitated by naming individuals
- Side-effect
 - this capacity can be used for *no-longer-existing* absent individuals, including *dead ancestors*, and secondarily *non-existing* individuals
 - *who, given our HADD, can be agents*

Supernatural beings: a classification

unattached forms of the soul

	<i>merely dead</i> <i>(often ancestor, sometimes animal or object)</i>	<i>powerful</i>	<i>all-powerful</i>
neutral - good	spirit	deity/ god	GOD
	(angel)	(archangel)	
neutral - evil	ghost	demon (evil spirit)	(Devil)



I. Religiosity

conclusions

1. Religiosity is biologically based: it is an adaptive, presumably innate predisposition of all humans
 2. Some form of 'animism' (belief in supernatural agents) is therefore basic to all religions
 3. But the nature of the supernatural agents, and the content of their messages, are subject to considerable cultural evolution → the great variety of religions
- *Religion has a uniform biological foundation and a culturally variable superstructure*

II. The form of society and the form of religion

- A. Our 'ancestral' state: the hunter-gatherer lifestyle
- B. Social evolution: from mobile hunter-gatherers to states
- C. *Religious evolution: from animism to monotheism (or other moralizing forms)*

II.A Once, we all lived like foragers

Hunter-gatherers (foragers)

lifestyle and social organization

- predominant lifestyle until ca 10'000 ago
 - gradually evolved over past 2 Ma
- mate bonds between men and women; strong male-male bonds
- sexual division of labor
 - men hunt; women gather
- egalitarian social system, with much collective action
 - small camps, cooperative hunting, food sharing, cooperative child rearing
 - *militant egalitarianism: no leaders, no social stratification*
- inclusion in sharing network, and thus survival, determined by **reputation**

Human Cooperation: foragers

Cooperation among Foragers:

- *Obligate sharing of all valuable foods*
- *Support for sick and injured*
- *Frequent collective action*
 - Making/ maintaining fires
 - Defending territory
- *Collective decisions:*
 - No leadership roles: extreme egalitarianism
 - Overzealous leaders are banned or even killed

*While apes are independent,
human foragers are interdependent*

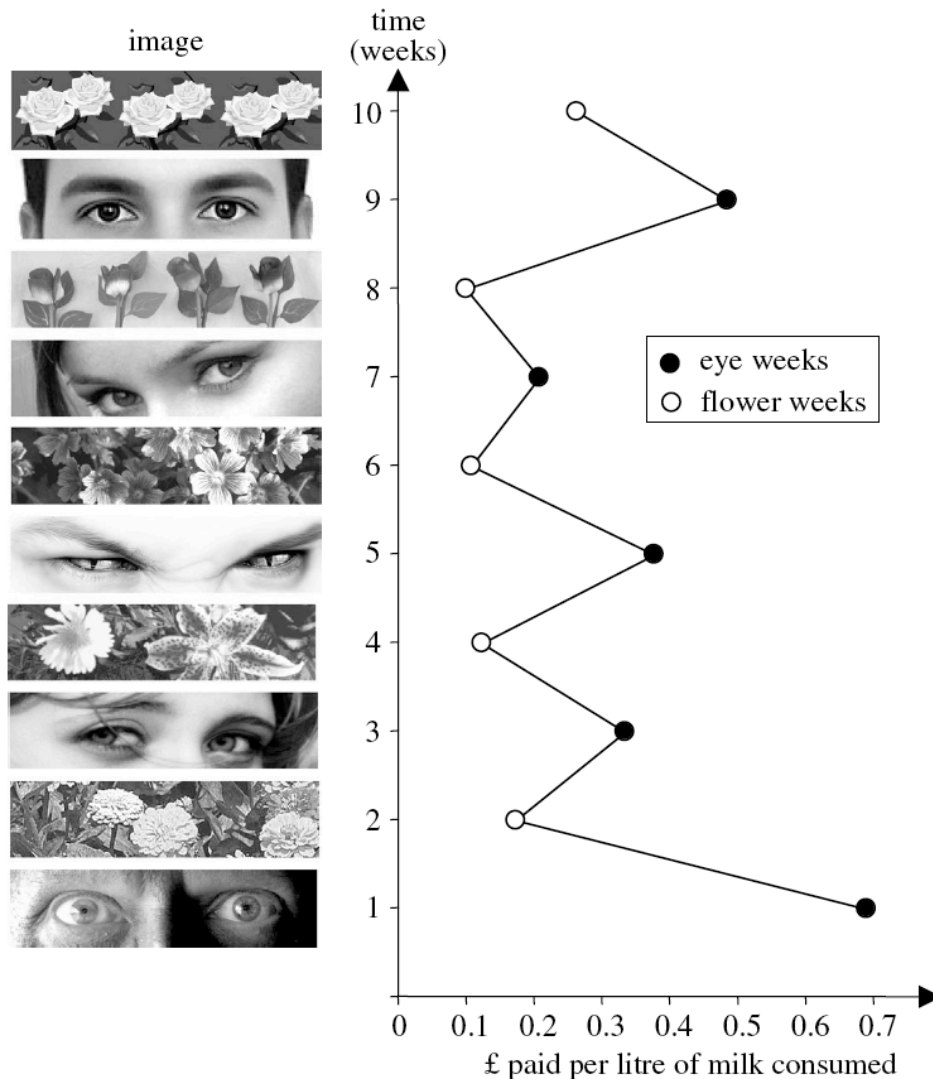
Key feature of human cooperation: *Interdependence*

Interdependence at three time scales:

- days
 - hunters (and sometimes foragers) may return empty-handed
- weeks-months
 - hunters (and sometimes foragers) may be sick or injured and rely on others
- years-decade
 - families with growing children do not produce enough and rely on younger and older camp members

*explains why individuals must support others without being solicited and are very concerned with their **reputation***

People act as if reputation matters *even today!*



- People are more compliant with social norms when they feel they are being watched!
- Effect of action on reputation is (*subconsciously!*) represented in the regulatory system
- ... *but compliance without the eyes is not zero*
 - *as in anonymous dictator games*

Evolution of morality

What is morality?

“doing what is right”

Two major dimensions:

1. essentially contains prosocial, even altruistic, elements:
 - not exclusively for ego or even for family
 - self-sacrifice, forgoing possible benefits
2. contains element of following the community's social norms
 - everyone is better off if these norms are followed

When did morality arise?

- It is unique to modern humans
 - Morality flows directly from religion
 - Morality is a cultural invention, based on rational argument:
 - Biology is completely irrelevant
 - Morality may even go against biology!

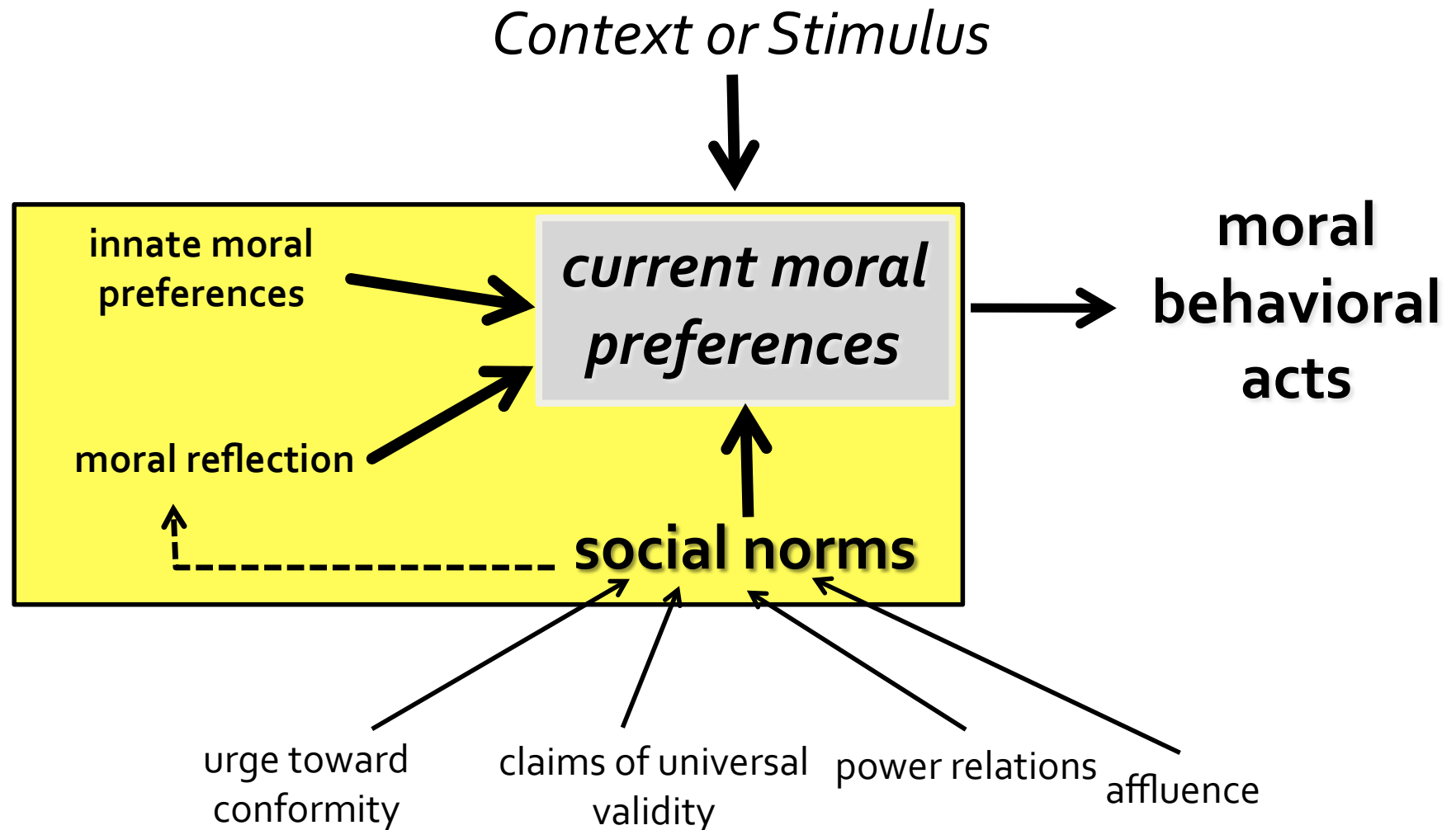
 - Or does it have biological roots?
 - Is there anything morality-like in pre-historic foragers, earlier hominins, living nonhuman primates, or other animals?
 - In that case biology is relevant: Morality as a biological adaptation!
 - perhaps also in other species (great apes, wolves)
- *Morality is the adaptive behavior that emerges from a set of emotions and predispositions to action (“preferences”) that evolved to support the unique form of human cooperation (esp. collective action and indirect reciprocity)*

Morality as an adaptation *linked to interdependence*

- Morality evolved in the hominin lineage as an individual behavioral adaptation to enable our *foraging lifestyle*
- Its function (necessitated by *interdependence*):
 - rein in selfish urges to exploit and displace others
 - gain and retain *a good reputation*
- Our moral emotions are the subjective (experienced) dimension of the proximate motivations controlling our forager-style cooperation
 - no need for cognitive (rational) motivations only
 - linked to social norms of the group

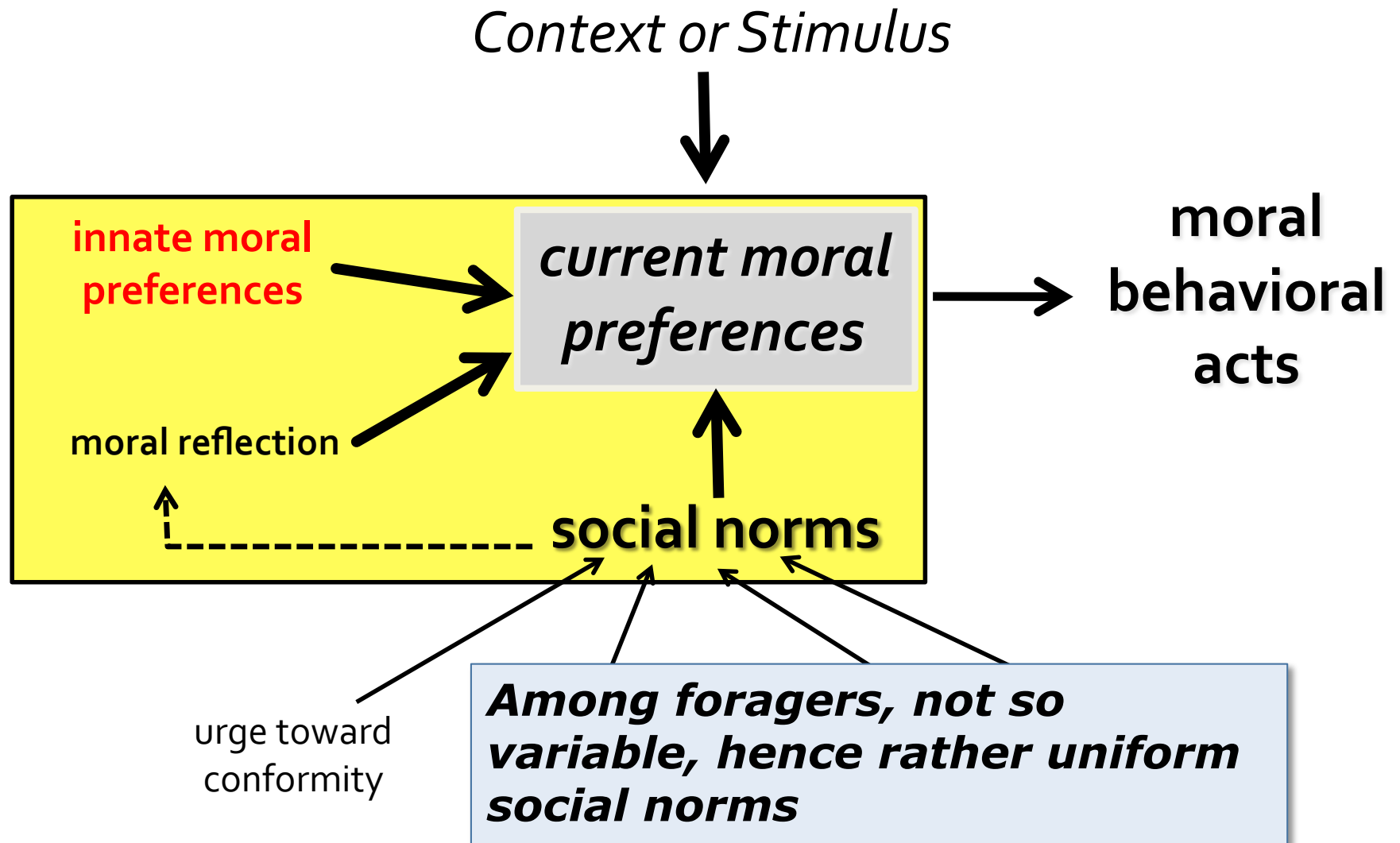
Moral behavior in humans

major cultural influences



Moral behavior in humans

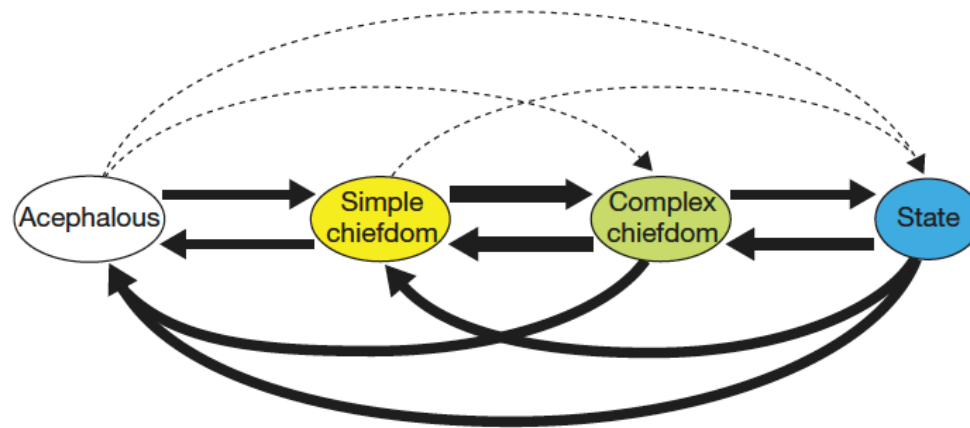
in foragers, little cultural variability



II.B Historical transitions

post-Neolithic

- Classic sequence postulated by anthropologists early on:
band → tribe → chiefdom → state



*Transitions linked to changes in **subsistence**: greater storable surpluses can support larger social units & specialization*

Southeast Asia & Pacific Islands

Currie et al. 2010

Transitions

post-Neolithic increase in inequality

- Foundation: egalitarianism
 - linked to interdependence, presence of lethal weapons
- Increased inequality is ecologically linked to:
 - *Sedentism* and *food storage* among foragers
 - loss of interdependence
 - Agriculture
 - especially in productive areas (or where women do all work)
- Increased inequality is measured as:
 - Increased social stratification (e.g. heritable titles)
 - Increased polygyny
- Increased inequality is accompanied by:
 - Larger size of settlements, social units
 - Patrilocality
 - Presence of kin-based elites
 - Reduced freedom of women to control their lives

Summary of inequality gradient *human societies*

	Mobile foragers* (bands)	Sedentary foragers (bands + tribes)	Agriculturalists/ pastoralists (chiefdoms)
Social stratification	none, egalitarian	present, some inequality	often stronger inequality
Mating system	mainly monogamy	variable polygyny	general polygyny
Male kin groups	rare	common	near-universal
Classes or elites	none	present	present, hereditary
Monopoly on force	no	no	yes, by elite

*- horticulturalists similar:
Kaplan et al. 2009

After Keeley 1988; Diamond 1997

States (civilization)

the final stage

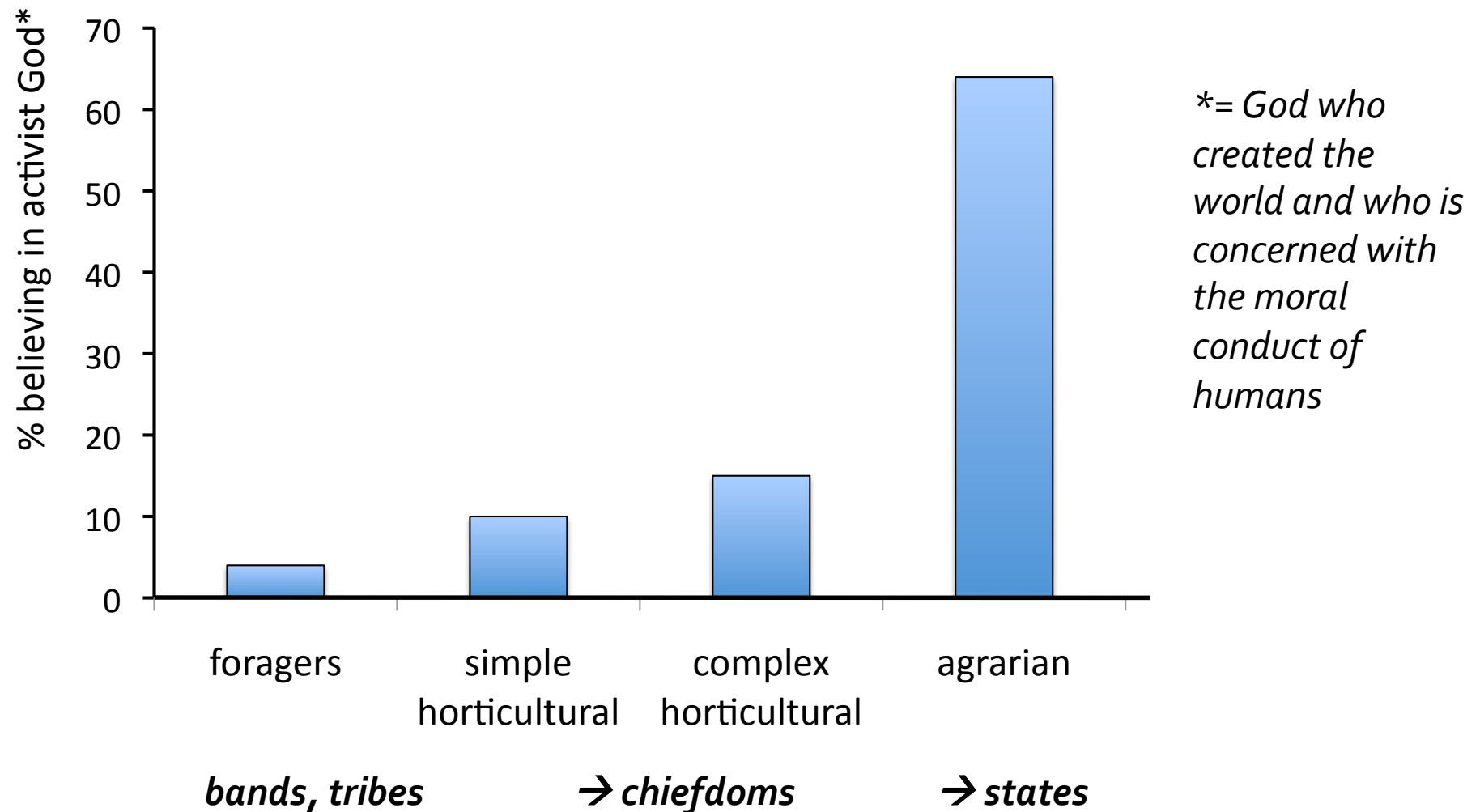
- Densely populated settlements: **cities**
 - large, anonymous, aggregations of people
- Made possible by efficient agriculture (animal power)
 - creating food and labor surplus (controlled by an elite)
- Specialization of labor
 - Engineers, craftsmen, artists, healers, priests
- Ethnically heterogeneous
 - Origin: alliances of multiple tribes
- *Social stratification*
 - Extreme inequality: a despotic elite
 - Extreme levels of polygyny among elite
 - Monopoly on violence by elite

II.C Transitions in religion

Ancestral state: foragers' "religion"

- Widespread belief in supernatural beings, namely:
 - (1) elemental spirits (clouds, moon, stones, rivers)
 - (2) movers /puppeteers (beings distinct from nature- usually human-like)
 - (3) organic spirits (usually predators, birds or large mammals)
 - (4) ancestral spirits (spirits of the deceased)
 - (5) high god (but only in minority of the societies: *creator*)
- Function: to explain the workings of the universe, like a proto-science
 - easily linked to displacement and importance of mutual support
 - easily linked to agency detection
 - no word for “religion” in hunter-gatherer languages: for them it is all part of nature, no clear separation between natural and supernatural
- Note:
 - ***no worshipping of gods***, because no activist gods; the spirits are treated like people
 - ***no moral dimension***: no preaching about stealing, adultery etc.

Distribution of Activist Creator link with subsistence



Society and Religion

- Animism in bands or tribal society: the spirits are also egalitarian, not terribly powerful
 - social exchange as with other people
 - Polytheism found in chiefdoms: multiple gods are more powerful, can be placated with gifts
 - social exchange as with chiefs
 - but chiefs must keep their people happy
 - First evidence of monotheism in states, where the ruler is all-powerful, and so is his God
 - social exchange now one-sided: subordinate to super-dominant
- *People can only imagine supernatural agents/ deities that are socially realistic*
 - *Monotheism, with single, all-powerful God, had to wait until states with despotic rulers had arisen*

Why did monotheism arise when it did?

Large-scale societies: too big for reputation to work, thus anonymous

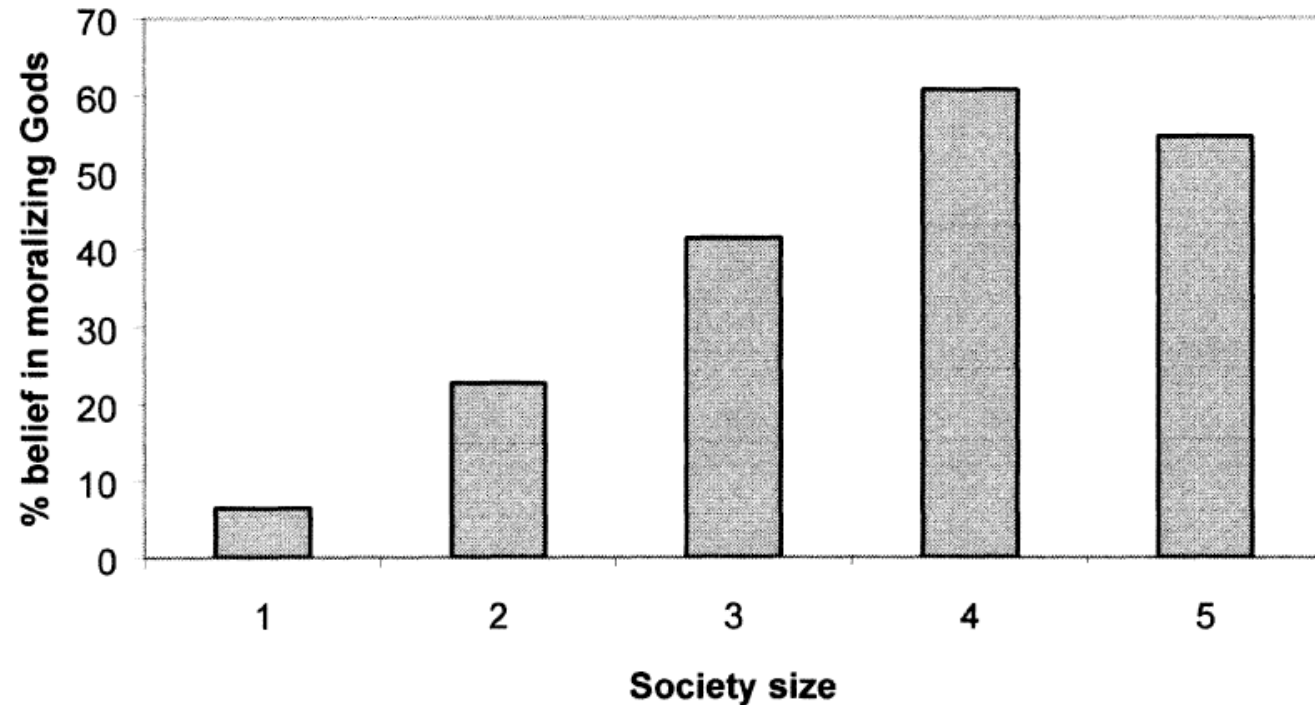
- social norms no longer upheld by reputation and dyadic shunning
- requires external means (police), and new internal means (religion)

Modern monotheistic religion:

1. creates forager-like trust among potential strangers:
 - God sees everything,
 - can punish bad deeds,
 - can reward good deeds,
 - can forgive sins (and thus restore reputation)
2. keeps groups of initial strangers together (shared religion is the new in-group)
 - using kinship-based language (“brothers and sisters in faith”)
3. tends to produce between-group enmity

Moralizing gods and anonymity

- Where reputational effects weak, gods must act as norm keepers
- Explains the trend toward monotheism in larger societies



Roes & Raymond 2003

Fig. 1. Society size and belief in moralising gods. The size of a society is estimated by the jurisdictional hierarchy beyond the local community, from 1 (no levels, i.e., no political authority beyond community) to 5 (four levels, e.g., large states). Data from the 1990 edition of the Ethnographic Atlas. A similar shape found with the EA 1967, EA 1999 and the SCCS. See Section 2.1.

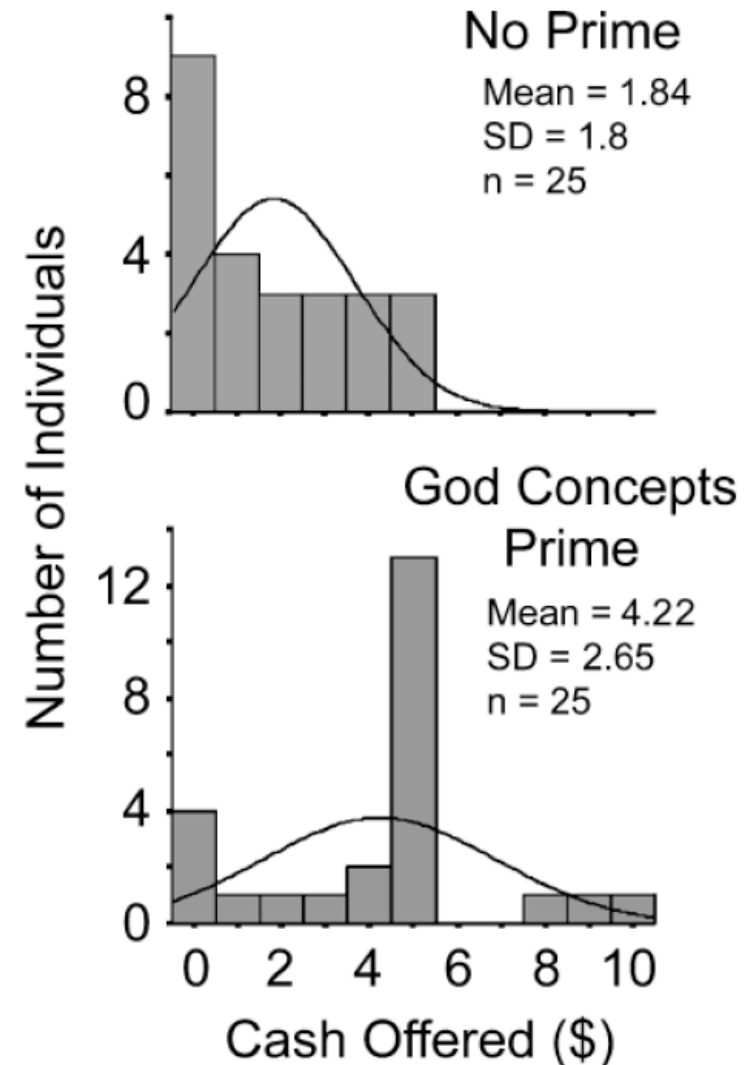
Social organization and religion

Summary

	Bands/ Tribes	Chiefdoms	States
Belief system	Animism = No Gods	Polytheism	(after delay often turning into) Monotheism
Moralizing gods?	No	No	Yes
Participants in ritual	All	Part-time priests	Specialized priests
Costly displays, incl. big temples and sacrifices	No	No	Yes

Monotheism promotes prosociality: *anonymous dictator game*

- *“the cultural spread of religious prosociality may have promoted stable levels of cooperation in large groups, where reputational and reciprocity incentives are insufficient.”*
- Large groups critical: it is about generosity toward strangers (but in-group).



Monotheism promotes prosociality

more examples

- Major cross-cultural variation in willingness to punish unfair offers in ultimatum game:
 - World religions: more fairness in economic games¹
- Third-party punishment game:
 - those who had donated before to religious organizations were far more willing than all others to punish (at some cost) those who had provided unfair offers²

II. Conclusion

The cultural evolution of monotheism

Monotheistic religion:

- *is a cultural variant* that arose after states had become established
- probably because all-powerful people had inspired its discoverers to imagine an all-powerful deity
- whose function was to secure and promote prosocial behavior in large, anonymous groups¹ and adherence to prosocial norms (including punishment of norm violators²)
- which is therefore (for first time in religion!) concerned with morality and justice!

1: Wilson 2002, Norenzayan & Shariff 2008, Atran & Henrich 2010;

2: McKay et al. 2011; Henrich et al. 2010

III. How could monotheism spread?

1. Monotheism is a radical departure from ancestral HADD
 - instead of everything having agency ('animated'), only God is (mostly)
 - more counter-intuitive than any other religion before it
 2. Predominant religions are interested in staying in power
 - ➔ New religion will have trouble to get established
-
- This they can do only if they are very persuasive!
 - ➔ Monotheism required special features to make it successful!

Design features of the single God

Immunization against refutation

Feature	Function
A strictly hierarchically organized, privileged class of well-trained intermediaries, who monopolize communication with the deity	Homogeneity of the divine message, thus reducing the risk of multiple, mutually inconsistent interpretations of God's will
Collective punishment of norm violators	Everyone has a stake in keeping all others in line
Miracles and signs of God's presence, ideally in history and verbally transmitted (& filtered by the priestly class)	Solidifying the belief in the all-powerful God
Make doubt on God's existence prohibitively expensive, by claiming that attempts to view God directly will lead to immediate death	Discouraging doubters
Complicated rituals with numerous arbitrary elements	Allowing any bad event to be attributed to failures to respect God

The functional impact of monotheism

- Monotheism, when established, reduces within-group inequality and enhances within-group solidarity¹
- This has multiple consequences:
 1. reduction of within-group violence²
 2. increased strength in warfare³
- Societies with monotheism were more successful than those without it
- Monotheism therefore probably spread through some form of cultural group selection¹

Summary & Conclusions



- Religion has a uniform biological foundation and a culturally variable superstructure
- The form religion takes reflects the social organization and thus subsistence base of a society
 - although there may be a delay (cultural process)
- Monotheism arose to restore hunter-gatherer-like morality in large, anonymous states
 - where the old social control (reputation!) mechanisms no longer operate
- Monotheism could establish and maintain itself because it had clever design features
 - making it immune to attempts at refutation