Social Networks

POLI 100F

Course Plan

- 8/1 – Course introduction, student polls
- 8/3 – Network analysis: basics
- 8/8 – Network analysis: static networks
- 8/10 – Network analysis: dynamic networks
- 8/15 – Social norms: evolution
- **8/17 – Social norms: diffusion**
- 8/22 – Social norms: planned change
- 8/24 – Political networks
- 8/29 – Political networks
- 8/31 – Network theory, review

Evaluation

- Here's how your **final grade** will be calculated:
- Problem Set #1 - 30% [due August 12 @ 11:59pm]
- Problem Set #2 - 30% [due August 19 @ 11:59pm]
- Research proposal - 40% [due September 2; no final exam]

- **Attendance** at lecture is not required, but it is recommended because you'll have the opportunity to ask questions. All lectures will be **recorded** and posted on the corresponding Canvas page.

Office hours

- I'll be holding **office hours** on Wednesdays from 9-11am. You can sign up at the course Canvas page ("Start Here").
  - If that time's inconvenient or if all the slots are full, we can set something up by appointment. Message me on Canvas or email me at mdraper@ucsd.edu.

Tomasello and Vaish - Origins of Human Cooperation and Morality

- Cooperation in chimpanzee bands: "cooperating in order to compete…the dominance of dominance."
  - To what extent do chimpanzees cooperate?
    - They help others at low cost to themselves.
    - They share food with others reciprocally.
      - "Attitudinal reciprocity," (positive affect), not "calculated reciprocity."
    - They form alliances with non-kin for foraging and group defense.
    - They occasionally hunt collaboratively.
    - They even take revenge on those who wrong them (negative reciprocity).
  - What do they not do?
    - Joint attention; second-person engagement, third-party enforcement; concern for reputation.

Tomasello and Vaish - Origins of Human Cooperation and Morality

- How is *homo sapiens* different?
  - Cooperative behavior, altruistic actions, third-party enforcement, "cooperative breeding," communication of information the recipient would be interested in, normative expectations.
- What kind of normative expectations?
  - Moral norms, social norms/conventions, and social institutions.
    - Institutions establish joint goals and individual social roles ("status functions").
- How did this happen?
  - First stage: "mutualistic collaboration" and "prosocially motivated interactions with specific other individuals," prompted by ecological change. "Individuals had to be good collaborators or else starve."
  - Second stage: "abstract, agent-neutral, norm-based morality."

Tomasello and Vaish - Origins of Human Cooperation and Morality

- This change led to the creation of what the authors call a "joint morality," where everyone wants to be chosen as a collaborative partner (to improve their own chances of survival), leading them to resist or redefine their own self-interest.
- In a situation where groups like this were competing against each other, "group life in general became one big interdependent collaboration for maintaining group survival."
- "This kind of group-mindedness, underlain by skills of collective intentionality, engendered truly impersonal, agent-neutral, objective social norms."

Tomasello and Vaish - Origins of Human Cooperation and Morality

- "From an evolutionary perspective, morality is a form of cooperation."
- Moral interactions are a subset of cooperative interactions.
  - "Arguably, the main function of morality is to regulate an individual's social interactions with others in the general direction of cooperation."
  - This means that moral interactions require *reshaping* or *redefining* self-interest.

Tomasello and Vaish - Origins of Human Cooperation and Morality

- How are human infants different from chimpanzees?
  - Fundamental and intrinsic drive to collaborate (even when unnecessary).
  - Prefer prosocial others to antisocial others.
  - Pay attention to context – help more if a collaborative context.
  - Imagining others' emotional states (comforting, but only when justified).
  - Equal division of the fruits of collaborative activities.
  - Progressive focus on relevant characteristics (desert, equity, need).
  - Third-party enforcement, agent neutral, disinterested.
  - Distinguish moral norms from conventional norms (Turiel 2006).
  - Anticipate others' judgment by applying norms preemptively to self.

Tomasello and Vaish - Origins of Human Cooperation and Morality

- The authors suggest a two-stage evolutionary account of human moral development.
  - In the first stage, "humans began to take a mutualistic rather than a purely individualistic approach to cooperative activity…such that they became deeply invested in not only their own but also their partners' welfare—they began to care about the joint nature of their cooperative activities—and they began to care about how they were perceived by others as partners."
  - In the second stage, "humans began to care not only about their personal interactions and histories with others but also about the more general functioning of the group, which meant keeping track of how individuals (including the self) contributed to or detracted from the group's well-being."

Tomasello and Vaish - Origins of Human Cooperation and Morality

- The authors suggest that the moral and social development of young children parallels our evolutionary history ("our ontogenetic account parallels our phylogenetic account").
  - "In their first step toward human morality, young children collaborate with and act prosocially toward other specific individuals.
  - In their second step, they begin to participate in the social norms and institutions of their culture. These two steps—an initial second-personal morality followed by a more norm-based morality—take infants into a full-fledged human morality."

Social Norms

- Objective, general, agent-neutral.
  - Social norms articulate "an objective standard of behavior that is **mutually known by all**."
  - The force of the norm is not individual opinion (guilt) but rather group opinion (shame).
    - Guilt may be a mechanism for preemptively applying the social norms to oneself so that other group members don't have to enforce the norm and impose shame.
  - The norm applies to everyone in the group (impartiality – agent neutral).

Social Norms

- "Social norms are thus mutually known group expectations and commitments, with respect to group-known standards, which all group members are expected to respect."
- Children as young as 3 years old can apply the moral norm against causing harm in an agent-neutral way (Turiel 2006).
  - They can distinguish between conventional rules and moral norms, and they enforce them in different ways.

Bowles and Gintis - A Cooperative Species (selections)

- Getting the question right: the authors ask not why cooperation occurs at all, but why it occurs in contexts where self-interest isn't obviously implicated.
- "First, people cooperate not only for self-interested reasons but also because they are **genuinely concerned** about the well-being of others, try to uphold social norms, and **value behaving ethically for its own sake"** [proximate motivations for cooperation].
- "Second, we came to have these "moral sentiments" because our ancestors lived in environments, both natural and socially constructed, in which **groups of individuals who were predisposed to cooperate and uphold ethical norms tended to survive and expand relative to other groups**, thereby allowing these prosocial motivations to proliferate" [distant evolutionary origins of cooperation].

Bowles and Gintis - A Cooperative Species (selections)

- First answer: we have "social preferences" in favor of cooperation. We care what others think about us, and we want to uphold our group's ethical norms.
- So people cooperate because we like to cooperate. Ok. Why do we like it?
  - The environment of our evolutionary prehistory may have required cooperative behavior (group hunting, cooperative breeding, etc.)
  - But even if there's a need for cooperation to survive, the division of the *gains from cooperation* may be contentious. How to prevent people getting cheated?
- First, human groups have devised ways to **protect their altruistic members** from exploitation by the self-interested.
- Second, humans adopted prolonged and elaborate systems of socialization that led individuals to **internalize the norms** that induce cooperation, so that **contributing to common projects and punishing defectors became objectives in their own right rather than constraints on behavior**

Bowles and Gintis - A Cooperative Species (selections)

- Third, **between-group competition** for resources and survival was and remains a decisive force in human evolutionary dynamics.
- In short, humans became the cooperative species that we are because cooperation was highly beneficial to the members of groups that practiced it, and we were able to construct social institutions that minimized the disadvantages of those with social preferences in competition with fellow group members, while heightening the group-level advantages associated with the high levels of cooperation that these social preferences allowed.
- This is a uniquely human story.
  - One extreme: hymenoptera and other social insects (and mole rats).
  - Other extreme: solitary hunters (most large predators).

Bowles and Gintis - A Cooperative Species (selections)

- The human difference: developmental plasticity.
- "the human cognitive, linguistic and physical capacities…allow us to formulate general norms of social conduct, to erect social institutions regulating this conduct, to communicate these rules and what they entail in particular situations, **to alert others to their violation and to organize coalitions to punish the violators**."
- "No less important is the psychological capacity to internalize norms, to experience such social emotions as shame and moral outrage, and to base group membership on such nonkin characteristics as ethnicity and language, which in turn facilitates costly conflicts among groups."
- Important: cooperation isn't always good. "In some settings, competition, the antithesis of cooperation, is the more effective means to a given end." Adam Smith's example: cooperation (price-fixing, cartels, etc.) undesirable, replaced by competition.

Bowles and Gintis - A Cooperative Species (selections)

- The mere desire to cooperate isn't enough:
  - Tragedy of the commons
  - Prisoners' dilemma
- Tension between self-interest and cooperation:
  - self-interest should normally dictate our behavior, but
  - cooperation is very common in the real world (Ostrom 1990).
- **Strong Reciprocity**: In experiments we commonly observe that people sacrifice their own payoffs in order to cooperate with others, to reward the cooperation of others, and to punish free-riding, even when they cannot expect to gain from acting this way. We call the preferences motivating this behavior **strong reciprocity**" [distinguished from ordinary reciprocity].

Bowles and Gintis - A Cooperative Species (selections)

	H	D
H	$b-c, b-c$	$-c, b$
D	$b, -c$	$0, 0$

Figure 3.1. A Prisoner's Dilemma: Single-period payoff to help (H) and don't help (D). We assume $b > c > 0$. Helping contributes b to the other player at a cost of c to the contributor.

Bowles and Gintis - A Cooperative Species (selections)

	Cooperate	Defect
Cooperate	2, 2	0, 3
Defect	3, 0	1, 1

Fig. 3: Prisoner's dilemma example

	Stag	Hare
Stag	4, 4	1, 3
Hare	3, 1	2, 2

Fig. 2: Stag hunt example

Bowles and Gintis - A Cooperative Species (selections)

Game	*Page*	*Reference*
Ultimatum	p. 19	Güth et al. (1962), Henrich (2000)
Prisoner's dilemma	p. 20	Dawes(1980), Axelrod (1984)
Gift exchange	p. 21	Akerlof (1982), Fehr et al. (1993)
Public goods	p. 22	Yamagishi (1986), Ostrom et al. (1992)
Public goods with punishment	p. 24	Fehr and Gächter (2000a,2002)
Third-party punishment	p. 31	Fehr and Fishbacher (2004)
Dictator	p. 32	Kahneman et al. (1986), List (2007)
Trust	p. 36	Berg et al. (1995), Burks et al. (2003)

Table 3.1. Experimental games.

- "[E]xperiments show that when those predisposed to cooperate can associate preferentially with like-minded people, cooperation is not difficult to sustain."
"When subjects could choose their partners, there was a strong tendency for subjects to play with others who approximately share their level of contribution."

Bowles and Gintis - A Cooperative Species (selections)

- "Altruistic punishment: when subjects are given a direct way of retaliating against free-riders rather than simply withholding their own cooperation, they use it in a way that helps sustain cooperation" [even without personal benefit].
- We have "an intrinsic motivation to punish shirkers", but no equivalent motivation to contribute altruistically [this punishment is retributive, not instrumental]. Punishment is usually "non-strategic."
  - "After the initial rounds in the standard public goods without punishment game, experimental subjects decline to contribute altruistically but once punishment is permitted they avidly engage in the altruistic activity of punishing low contributors."

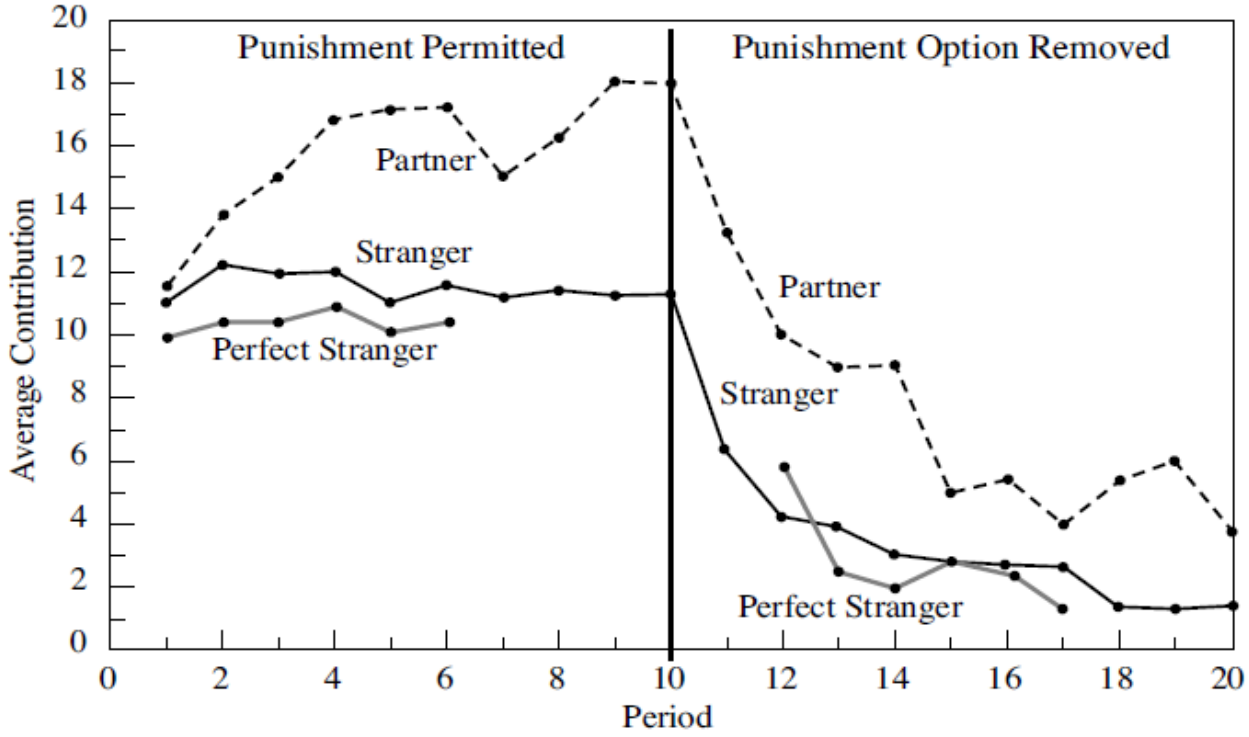
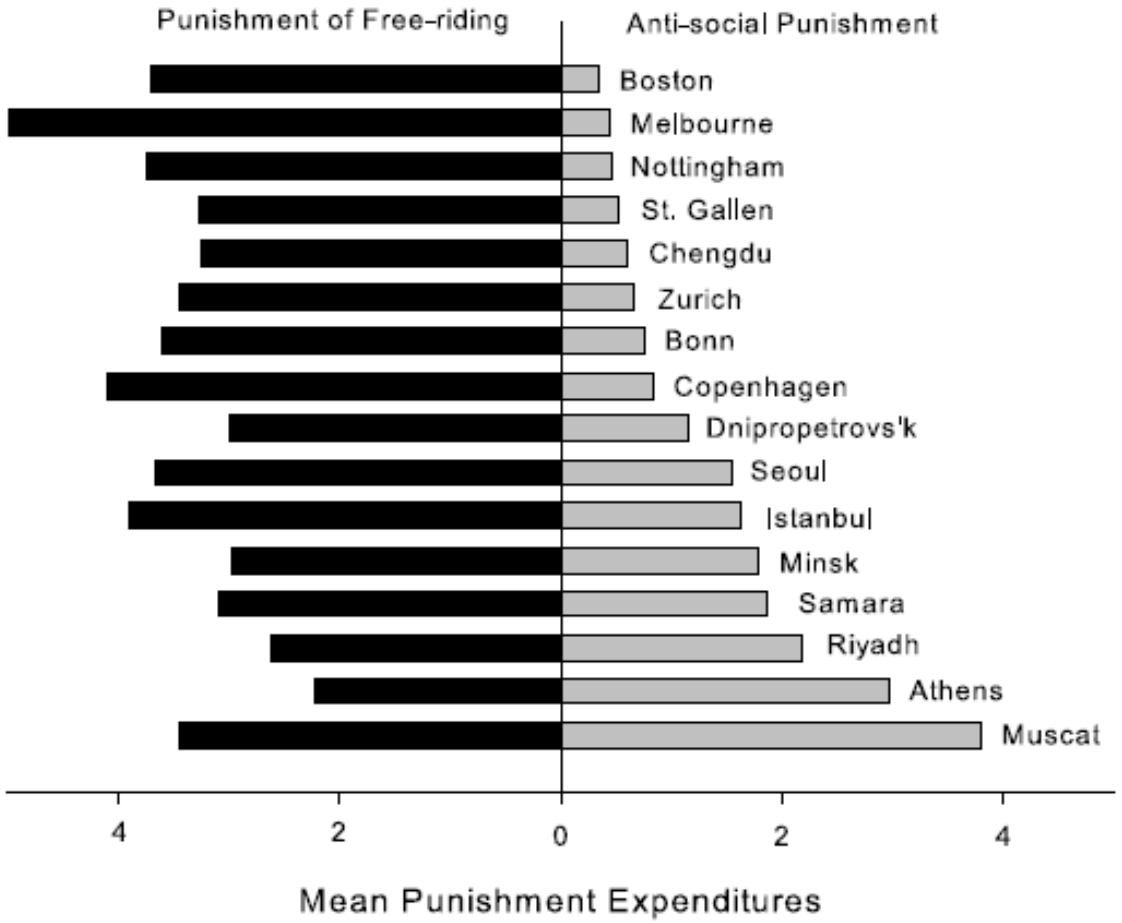


Figure 3.2. Public goods game with punishment, average contributions over time. Partner, Stranger, and Perfect Stranger treatments are shown when the punishment condition is played first (Fehr and Gächter 2000a). Results are similar when the punishment condition is played second.

Bowles and Gintis - A Cooperative Species (selections)

Bowles and Gintis - A Cooperative Species (selections)

- The authors conclude that "agents enjoy punishment."
- But sometimes the punishment gets out of hand, and impedes cooperation.
  - In some countries, experiments showed "vendetta-like retaliation against punishment" leading to costly arms-race dynamics of wasteful punishment expenditures. The authors call this "antisocial punishment."
  - For example, "punishment of free-riders, even if they were strangers, was legitimate in Boston, Melbourne, and Chengdu but it was not in Muscat and Athens."
  - The importance of punishment may be less about the actual impact of the punishment itself, and more about the "moral signal" conveyed by group consensus on punishment. Purely symbolic punishment is effective. Third parties observing symbolic punishment change their own behavior.



Bowles and Gintis - A Cooperative Species (selections)

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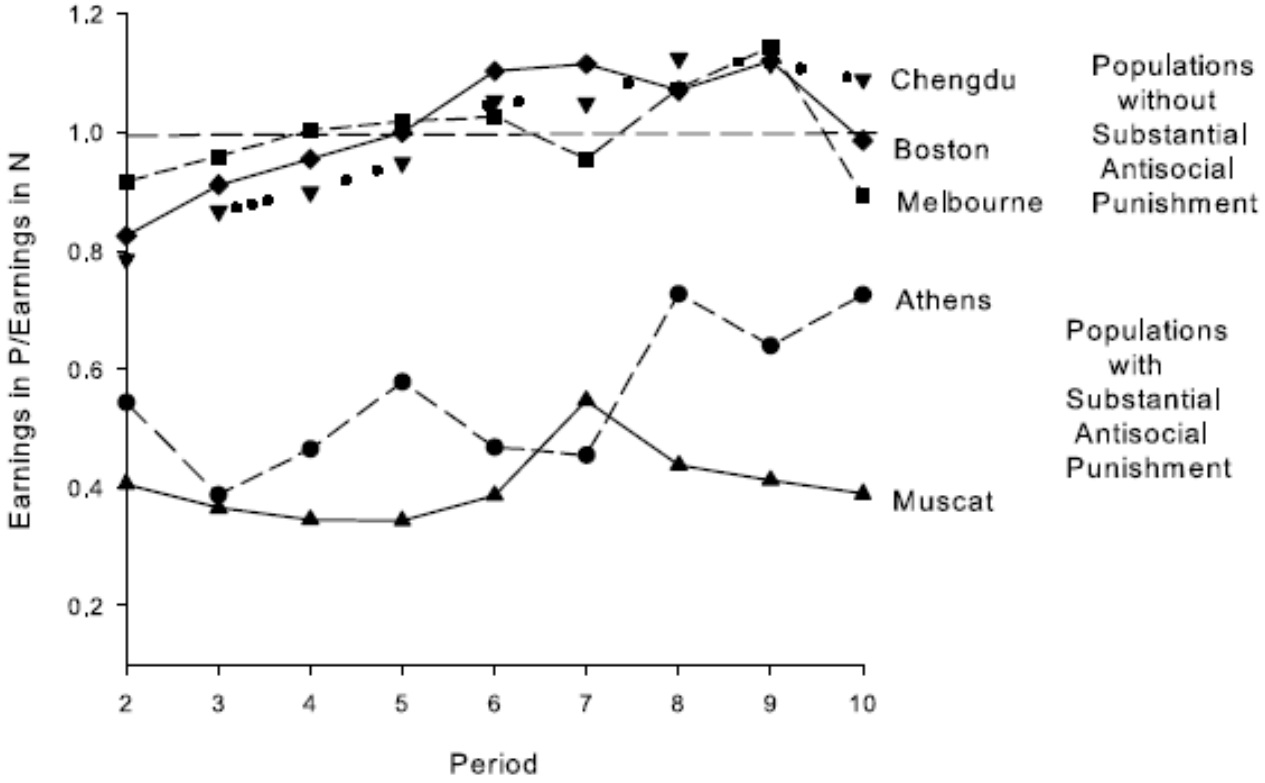
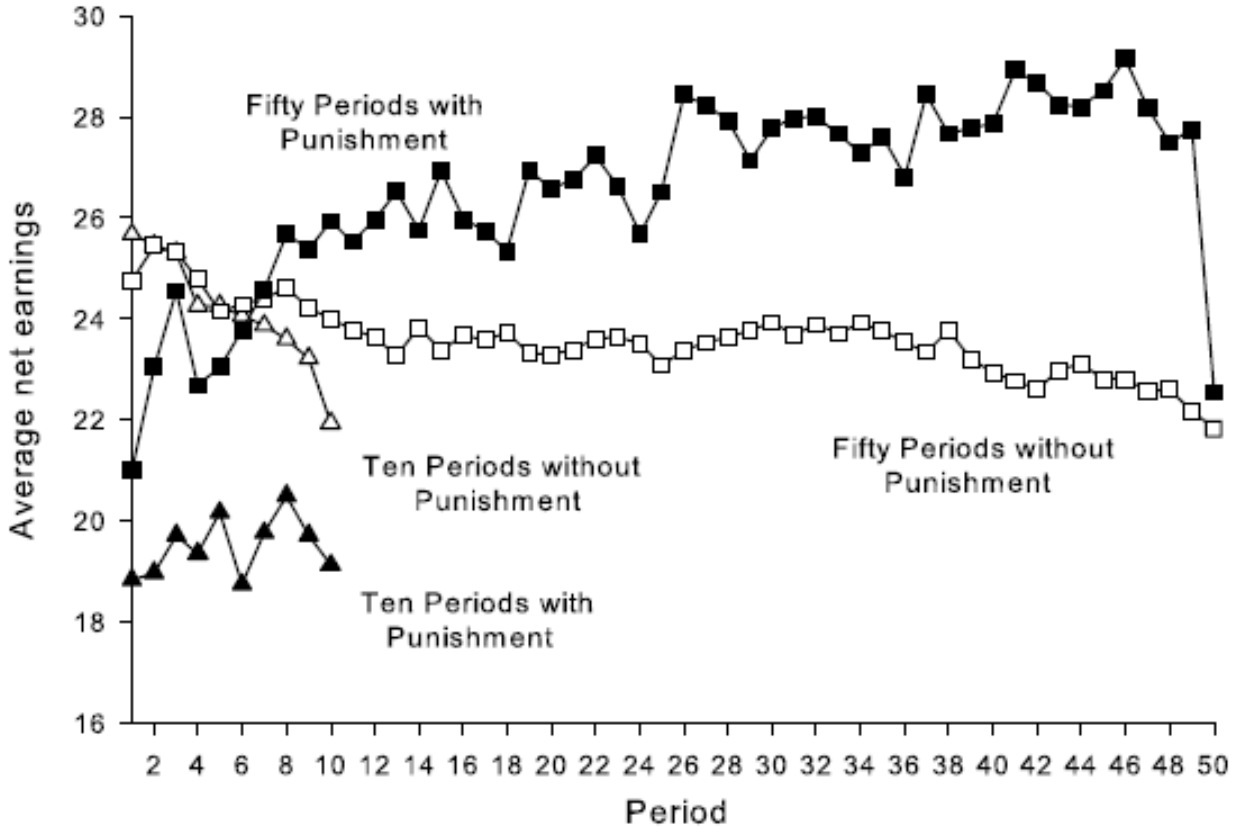


Bowles and Gintis - A Cooperative Species (selections)

- Experimental subjects tend to punish those who hurt others, as long as the action causing the harm violates a social norm.
- Interestingly, even those individuals not motivated to punish will engage in third-party punishment (mimicking the type) if they believe that this will induce peers to behave fairly to them.
  - "Punishment is thus not simply retaliation in response to personal damages but appears to reflect more general ethical norms" (32).

Bowles and Gintis - A Cooperative Species (selections)

- "In the laboratory, groups solved their free-rider problems by allowing low contributors alone to be punished. Apparently the determination of the punishment system by majority rule made the punishment not only an incentive but also a signal of group norms."
- "…in small-scale societies punishment can be highly effective even when it takes the form of ridicule or gossip and it inflicts no material costs on its targets. The importance of the moral signal conveyed by punishment rather than simply the material incentive that it provides is also suggested by experiments."



Bowles and Gintis - A Cooperative Species (selections)

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- "[T]he social preferences that become salient in a population depend critically on the manner in which a people's institutions and livelihood frame social interactions and shape the process of social learning."
  - Aumann: correlated equilibrium
  - "Among the Au and Gnau people in Papua New Guinea, ultimatum game offers of more than half the pie were common, Moreover, while even splits were commonly accepted, both higher and lower offers were rejected with about equal frequency. This behavior struck the economists on our team as odd, to say the least. But to the anthropologists it was not surprising in light of the widespread practice of competitive gift giving as a means of establishing status and subordinacy in these and many other New Guinea societies."

Bowles and Gintis - A Cooperative Species (selections)

- Social institutions serve as cues for appropriate behavior.
  - "[S]ocial structure affects behavior in ways other than those captured by the money payoffs of the game, in this case by suggesting appropriate behavior (the exchange game) or identifying some individuals as "deserving" (the test manipulation)."
  - "[T]hose who contributed a low amount and escaped criticism, but had witnessed the criticism of others who had contributed a similar amount, increased their contributions by even more than those directly criticized. Also, those who had contributed a large amount and were criticized reduced their contribution in subsequent rounds. Where low contributions escaped criticism entirely, contributions fell in subsequent rounds. "

Bowles and Gintis - A Cooperative Species (selections)

- Behavior is conditioned on group membership.
  - Klee vs. Kandinsky
  - Robber's Cave experiment
- "experimental subjects' allocations favor in-group members not because of altruistic sentiments toward those who are similar to themselves, but because they expected reciprocation from in-groupers and not from out-groupers."
- "[S]uccessful collective action among homogeneous ethic communities . . . is attributable to the existence of norms and institutions that facilitate the sanctioning of non contributors."
- "people think that cooperating is the right thing to do and enjoy doing it, and that they dislike unfair treatment and enjoy punishing those who violate norms of fairness."

R. I. Dunbar - Coevolution of neocortex size, group size and language in humans

- "…mean group size is directly related to relative neocortical volume in nonhuman primates."
  - "…there is a species-specific upper limit to group size that is set by purely cognitive constraints: animals cannot maintain the cohesion and integrity of groups larger than a size fixed by the information-processing capacity of their neocortex.
- "…the neocortical constraint seems to be on the number of relationships an animal can keep track of in a complex, continuously changing social world."

R. I. Dunbar - Coevolution of neocortex size, group size and language in humans

- “the relationship between group size and time devoted to grooming is a consequence of the intensity with which a small number of key "friendships" (the **primary network**) is serviced rather than the total number of individuals in the group.”
  - “The mean size of the primary network…is related to the mean group size for the species. This suggests that groups are built up by welding together sets of smaller primary networks.”
- “These primary networks function as coalitions whose main purpose is to buffer their members against harassment by the other members of the group. The larger the group, the more harassment and stress an individual faces and the more important these coalitions.”

R. I. Dunbar - Coevolution of neocortex size, group size and language in humans

- "A coalition's effectiveness (in the sense of its members' willingness to come to each other's aid) seems to be directly related to the amount of time its members spend grooming each other."
- "Equation (1) yields a **predicted group size for humans of 147.8**."

3.1. Group size in modern humans. The best-fit reduced major axis regression equation between neocortex ratio and mean group size for the sample of 36 primate genera shown in Figure 1 was found to be:

$$\log(N) = 0.093 + 3.389 \log (C_R) \quad (1)$$

($r^2 = 0.764$, $t_{34} = 10.35$, $p < 0.001$), where N is the mean group size and C_R is the ratio of neocortical volume to the volume of the rest of the brain (i.e., total brain volume minus neocortex; Dunbar 1992a). Use of both major axis and least-squares regression, as well as alternative indices of relative neocortical size, all yield equations that are of about this same magnitude.

R. I. Dunbar - Coevolution of neocortex size, group size and language in humans

- "The data in Table 1 suggest that group sizes fall into three quite distinct size classes: small living groups of 30- 50 individuals...a large population unit that typically numbers be-tween 500 and 2,500 individuals, and an intermediate level of grouping (either a more permanent village or a culturally defined clan or lineage group) that typically contains 100-200 people..."
- "Plotting these values on a graph produces what appears to be a **clear trimodal distribution** of group sizes, with no overlap between grouping levels (Fig. 2)."

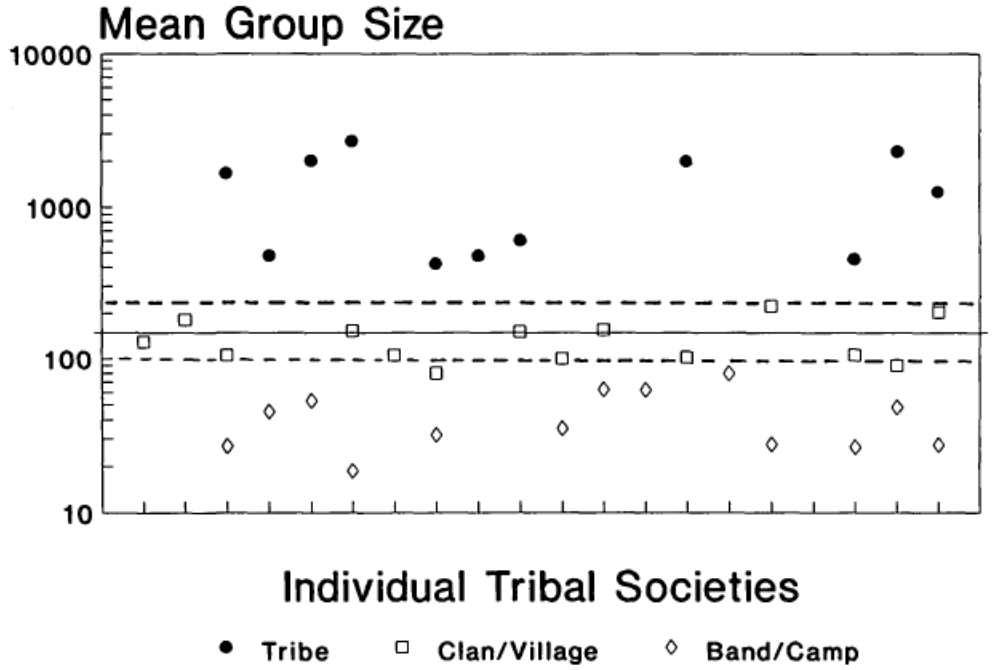

Figure 2. Distribution of group sizes for traditional societies. Individual societies are placed along the abscissa in arbitrary order. The group size predicted by equation (1) is indicated by the horizontal line; 95% confidence limits around this value are indicated by the dotted lines (*source:* Table 1).

R. I. Dunbar - Coevolution of neocortex size, group size and language in humans

- "the intermediate-level groupings are often defined more in terms of ritual functions…"
- "…what seems to characterize this level of grouping is that it constitutes a subset of the population that interacts on a sufficiently regular basis to have strong bonds based on direct personal knowledge."
- "My reading of the ethnographies suggests that knowledge of individuals outside this grouping is generally less secure and based more on gross categories (a "them" and "us" basis as opposed to identifying individuals by name)."

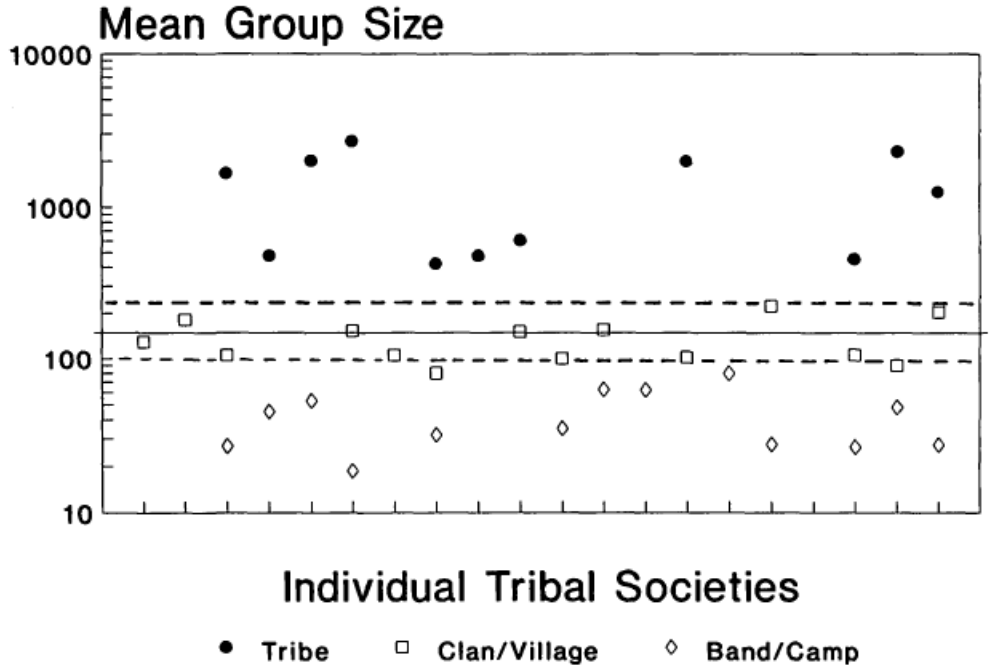

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Table 2. *Sizes of the smallest independent unit (a "company") in selected professional armies*

Period	National army	Size
16th century	Spain	100–300
	England	100
17th century	Sweden/Germany	106
	England: c. 1650	110
	c. 1670	80
20th century	USA: 1940	223
	1945	193
	1960	212
	Britain: 1940	124
	USSR: 1940	139
	France: 1940	185
	Italy: 1940	198
	Germany: 1940	185
	1943	147
	Japan: 1940	190

Source: MacDonald (1955).

- Examples: neolithic villages, units in armies, research specializations in the sciences, business organizations, fundamentalist communities,
- "Some empirical evidence: Killworth et al. 1984 "used a "reversed small world" protocol to determine the total network size (i.e., the total number of individuals known by name with whom a respondent has a degree of personal contact)."
- "Forty subjects were each given a dossier containing 500 fictitious (but realistic) target individuals living in different parts of the world and asked to name an individual among their own acquaintances who (either directly or via a chain of acquaintances of their own) would be able to pass a message to each of the targets."
- "The number of different acquaintances listed was assumed to be an index of the subject's total social network. The mean number of acquaintances selected was 134 (although the variance around this figure was considerable)."

R. I. Dunbar - Coevolution of neocortex size, group size and language in humans

Table 5. *Human interactional group sizes*

Type of group	Mean group size	Source
Freely interacting groups[a]	2.7	Coleman (1964)
Subcommittees (U.S. Congress)	7.1	James (1952)
State and city board committees	5.5	James (1952)
Business corporation boards	5.3	James (1952)
Restaurant reservations	3.8	Cohen (1971)

[a]Individuals recorded interacting in groups (solitary individuals excluded) at the public beach picnic area in Portland (Oregon) in censuses carried out by James (1953).

- "the average number of people directly involved in a conversation (as speaker or attentive listener) reached an asymptotic value of about 3.4 (one speaker plus 2.4 listeners) and that groups tended to partition into new conversational cliques at multiples of about four individuals (Fig. 4)."
- "…the need to increase group size at some point during the course of human evolution precipitated the evolution of language because a more efficient process was required for servicing these relationships than was possible with the conventional nonhuman primate bonding mechanism (i.e., social grooming)."

R. I. Dunbar - Coevolution of neocortex size, group size and language in humans

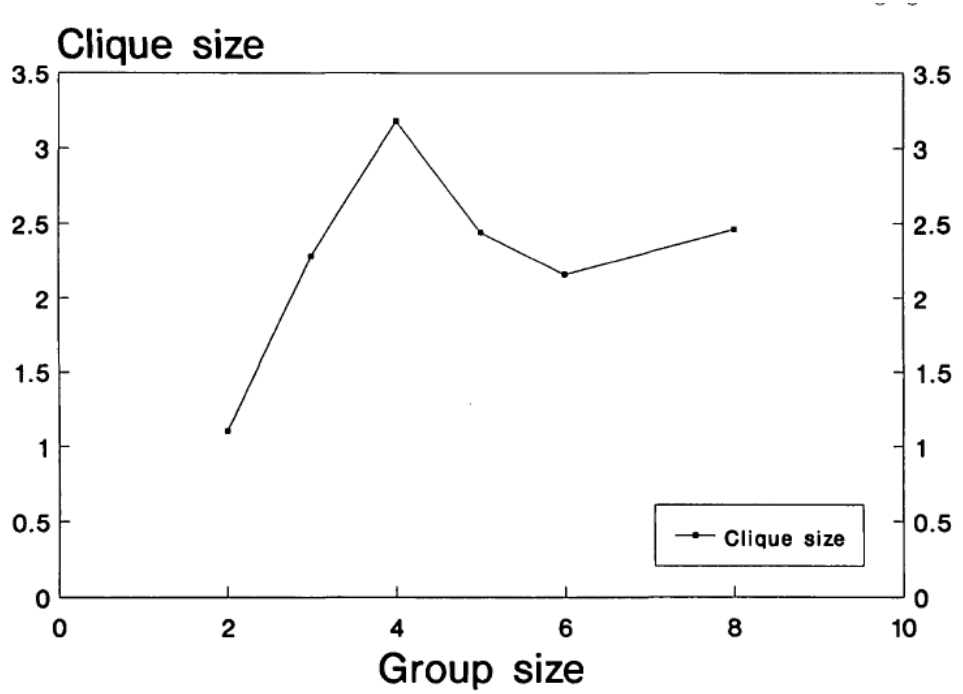

Figure 4. Mean size of conversational cliques (speaker plus attentive listeners) in groups of different size in a university refectory. The clique size census was taken at 15-min intervals (*source:* Dunbar & Duncan, in preparation).

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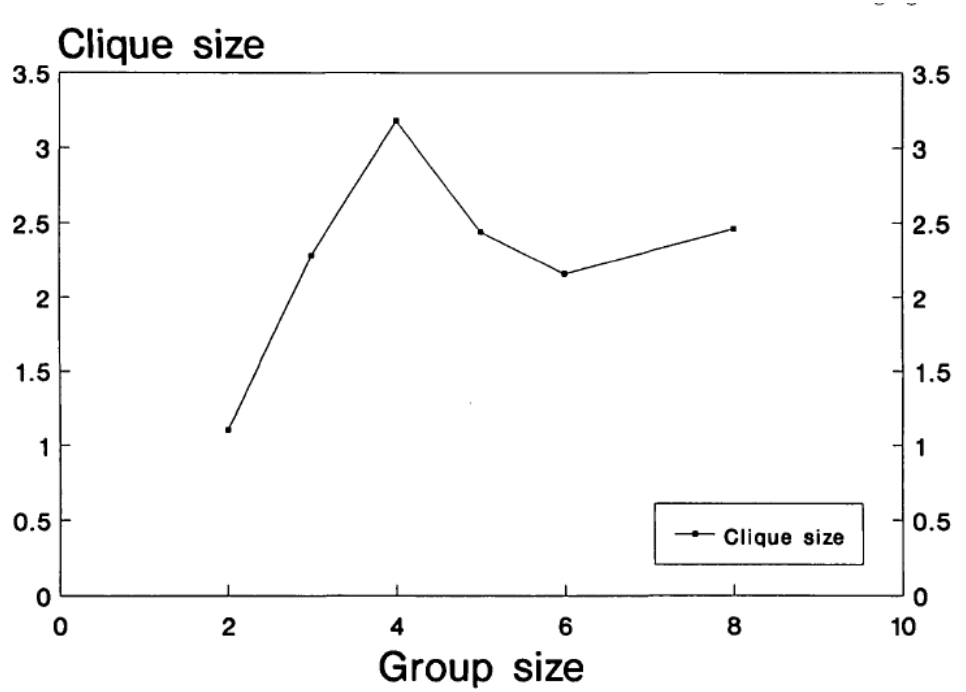

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- "[L]arger groupings...appear to be much less cohesive than groups that are smaller than the critical limit. Language seems to be a far from perfect medium for acquiring detailed social knowledge about other individuals: secondhand knowledge, it seems, is a poor substitute for the real thing
  - "...sociometric studies of "sympathy groups" suggest that we are only able to maintain very intense relationships with 10-12 other individuals at any one time"
- "…when we do want to establish very intense relationships, we tend to do so through the much more primitive medium of physical contact rather than through language."

Cristina Bicchieri - The Rules We Live By

- What is a norm? – "A norm can be formal or informal, personal or collective, descriptive of what most people do, or prescriptive of behavior."
  - Conventions (coordination game)
  - Descriptive norms (coordination game)
  - Social norms (mixed motive game)

Cristina Bicchieri - The Rules We Live By

- "Given the right kind of expectations, people will have conditional preferences for obeying a norm, meaning that preferences will be conditional on having expectations about other people's conformity. Such expectations and preferences will result in collective behaviors that further confirm the existence of the norm."
- Social norm – an informal rule supported (if at all) by informal social sanctions.
  - Distinct from legal regulation (external sanctions) and moral regulation (internal sanctions).

Cristina Bicchieri - The Rules We Live By

- “The games that social norms solve are called mixed-motive games. Such mixed-motive games are not games of coordination to start with, but **social norms…*transform* mixed-motive games into coordination ones**. This transformation, however, hinges on each individual expecting enough other people to follow the norm, too. If this expectation is violated, an individual will revert to playing the original game and to behaving 'selfishly.’”

Cristina Bicchieri - The Rules We Live By

- How do we choose our behavior?
  - Rational deliberation (costly, time-consuming) [The "deliberational" route].
  - Behavioral rules (habits, roles, norms) [The "heuristic" route]
- Social norms can be "cued" by particular situations, "and hence manipulated."
  - "…we may be able to induce pro-social behavior and maintain social order at low cost."
  - "…it may be possible to structure the environment in a way that produces desirable behavior."

Cristina Bicchieri - The Rules We Live By

- Moral norms seem to be different from social norms in that their enforcement is entirely internal. By **internalizing** the norm, we reduce the cognitive load of compliance.
  - "what makes something a social or a moral norm is our attitude toward it."
- "…public support might be voiced for a norm that is seldom adhered to in private."

Cristina Bicchieri - The Rules We Live By

- "By their very nature, moral norms demand…an unconditional commitment."
- "Under normal conditions, expectations of other people's conformity to a moral rule are not a good *reason* to obey it. Nor is it a good reason that others expect me to follow a moral rule. If I find their expectation reasonable, it is because I find the moral norm reasonable; so the reason to obey it must reside in the norm itself…"
- "What distinguishes norms of justice from other social norms is that many of us would have a conditional preference for abiding by such norms because we acknowledge that the normative expectations…are *legitimate*, and should therefore be satisfied."

Cristina Bicchieri - The Rules We Live By

- "…**public endorsement** of the norm may coexist with considerable **private deviance**."
- "…following a social norm may be **contrary to self-interest**, especially if we define it in purely material terms."
- "…it is plausible that one is guided by benevolence (or even altruism) in interacting with family and friends, but when interacting with strangers…[one is] guided by social norms."

Robert Cialdini – Descriptive Norms as Underappreciated Sources of Social Control

- "[Recent] findings indicate that adherence to insurance regulations was much better predicted by features of: (1) the belief systems of the affected individuals; and (2) the perceived belief systems of these individuals' friends and family than by the enforcement activities of a regulatory agency."
- "although regulatory enforcement efforts can make a difference in compliance with the rules, the difference is often dwarfed by the influence of personal and social network factors. This is the case for a pair of reasons. First, strong formal control efforts tend to produce feelings of resentment and reactance…leading to attempts to evade the agency's strictures. Second, when formal regulatory controls are strong, individuals come to believe that, if it is necessary to invoke stringent regulations, those regulations must exist in opposition to the preferences that "people like me" hold. These psychological mechanisms may account for the finding that, after government officials publicly increase the penalties for tax cheating, tax fraud goes up not down…"

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- [The recent] study clearly shows that, besides the influence of one's personal beliefs about complying with the law…the decision to comply was also significantly influenced by the expected evaluative reactions of friends and family (what they termed "Social Control"). This anticipated approval/disapproval factor has a more specific label in the social influence literature; it is called the injunctive social norm...
- **Injunctive social norms** refer, not to one's own view of what constitutes appropriate conduct but to one's perception of what others believe to be appropriate conduct. The norms are said to direct action by promising informal sanctions (mostly in the form of interpersonal approval/disapproval) for what is deemed by these others to be morally relevant behavior. Considerable research indicates that such moral evaluation strongly influences compliance decisions, even when the imagined others are not friends and family but are generalized society members; consequently, expectations regarding what most others approve/disapprove can be quite impactful...

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- In addition to perceptions of what most others approve (the injunctive social norm), there is a second social normative type (the descriptive social norm) that also directs behavior forcefully. **Descriptive social norms** refer to one's perception of what most others actually do. Although one's perception of what most others approve and of what most others actually do in any given situation are often related, they are conceptually and motivationally separate. Whereas injunctive social norms mobilize people into action via social evaluation, descriptive social norms move them to act via social information—in particular, social information about what is likely to be adaptive and effective conduct in the setting. Descriptive social norms send the message "If a lot of people are doing this, it's probably a wise thing to do," which serves to initiate norm-congruent behavior.

As part of a large scale survey of residential energy users, we inquired into respondents' views of their reasons for conserving energy at home as well as reports of their actual residential energy saving activities such as installing energy efficient appliances and light bulbs, adjusting thermostats, and turning off lights. When respondents were asked to rate the importance to them of several reasons for energy conservation—because it will help save the environments, because it will benefit society, because it will save me money, or because other people are doing it—they rated these motivations in the order just listed, with the actions of others (the descriptive social norm, Cialdini et al., 1990) clearly in last place. However, when we examined the relationship between participants' beliefs in these reasons and their stated attempts to save energy, we found the reverse: The belief that others were conserving correlated twice as highly with reported energy saving efforts than did any of the reasons that had been rated as more important personal motivators.

To assure that our findings weren't the result of the correlational nature of the survey methodology, a follow-up study employed an experimental design. Residents of a mid-size California community received persuasive appeals on door-hangers placed on their doorknobs once a week for four consecutive weeks. The appeals emphasized to residents that energy conservation efforts: (1) would help the environment; or (2) would benefit society; or (3) would save them money; or (4) were common (normative) in their neighborhood. Interviews with participants revealed that those who received the normative appeals rated them as least likely to motivate their conservation behavior. Yet, when we examined actual energy usage (by recording participants' electricity meter readings), the normative appeal proved most helpful, resulting in significantly more conservation than any of the other appeals (Schultz et al., in press).

The upshot of these studies is plain. When it comes to estimating the causes of their conduct, people seem especially blind to the large relative role of descriptive norms. They don't just fail to get this relative role right; they tend to get it precisely wrong.

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What would be the implications of the Petrified Forest and hotel recycling studies for government officials with the responsibility of reducing insurance regulation noncompliance in the situation examined by Böckenholt and van der Heijden? The first would be to avoid sending the message that such noncompliance is rampant. A second would be to determine, perhaps by using a mixture-IRR approach, the true percentage of noncompliance with insurance regulations. If that percentage proved to be significantly less than 50% (as appears to be the case in the Böckenholt and van der Heijden data wherein only 29% of the sample reported any compliance violations), the officials could honestly send the message in communication campaigns that the majority of the insured population adheres to the rules; moreover, they could add the injunctive message that "If even a few persons violate the trust between the agency and the insured, this dishonesty can lead to greater surveillance and regulatory costs that will fall unfairly on the entire group." However, if among some other population sample the noncompliance percentage proved to be above 50%, then only the injunctive portion of the message should be sent to that population.

In sum, when communicating with the public regarding rule violation, it is important for public service communicators to avoid trying to reduce the incidence of the problem by describing it as regrettably frequent. Often, the violation is not widespread at all. It only comes to seem that way by virtue of a vivid and impassioned presentation of the problem. Instead, it would be better to honestly inform the audience of the harm resulting from even a small amount of the undesirable conduct. Furthermore, when most people are behaving responsibly, public service communicators would be remiss if they failed to publicize that fact, as the information should both validate and stimulate the desired action.

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Dan Sperber – The Epidemiology of Beliefs

- "I would like to bring together two sets of speculations: anthropological speculations on cultural representations and psychological speculations on the cognitive organization of beliefs, and to put forward, on the basis of these speculations, fragments of a possible answer to the question: **how do beliefs become cultural**?"
- "[W]e should distinguish two kinds of representations: internal, or *mental representations* - for example, memories, which are patterns in the brain and which represent something for .the owner of that brain - and external, or *public representations* - for example, utterances, which are material phenomena in the environment of people and which represent something for people who perceive and interpret them."

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- “public representations have meaning only through being associated with mental representations.”
- “Similarity across people makes it possible to abstract from individual differences and to describe 'the language' or 'the culture' of a community, 'the meaning' of a public representation, or to talk of, say, 'the belief' that witches ride on broomsticks as a single representation, independently of its public expressions or mental instantiations. What is then described is an abstraction.”
- “When we talk of cultural representations - beliefs in witches, rules for the service of wines, the common law, or Marxist ideology - we refer to representations which are widely shared in a human group. To explain cultural representations, then, is to explain why some representations are widely shared.”

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- "An explanation of cultural representations, therefore, should come as part of a general explanation of the distribution of representations among humans - as part, that is, of an epidemiology of representations."
- "Whatever their differences and their merits, past approaches share a crucial defect: they take the basic process of cultural transmission to be one of replication, and consider alterations in transmission as accidents."
- "A process of communication is basically one of transformation. The degree of transformation may vary between two extremes: duplication and total loss of information. Only those representations which are repeatedly communicated *and* minimally transformed in the process will end up belonging to the culture."

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- "Many of the propositions to which we are disposed to assent are not represented at all in our mind - a well-known point - and many of the propositions we are disposed not only to assent to but also to express and, in some cases, to act in accordance with are not, or not simply, stored in a data base or belief box - a more controversial point."
- Ex: "You have long believed that there are more pink flamingos on Earth than on the Moon, but no mental representation of yours had, until now, described that state of affairs. We may well have an infinity of such unrepresented beliefs, and a large proportion of these are widely shared..."

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- 'It is reasonable, however, to assume that what makes them unrepresented beliefs is that they are inferable from other beliefs which *are* mentally represented."
- "…hooking the belief box up to an inferential device introduces a factor of rationality in the construction of beliefs... you get a tendency to enlarge areas of consistency."
- Two kinds of beliefs: "**Intuitive beliefs…**paint a kind of common-sense picture of the world. Their limits are those of common sense: they are fairly superficial, more descriptive than explanatory, and rather rigidly held."
- …**reflective beliefs** do not form a well-defined category. What they have in common is their mode of occurrence: they come embedded in intuitive beliefs (or, since there can be multiple embeddings, in other reflective beliefs).

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- "Well-understood reflective beliefs, such as the scientific beliefs of scientists, include an explicit account of rational grounds to hold them."
- "Half-understood or mysterious reflective beliefs are much more frequent and culturally important than scientific ones. Because they are only half-understood and therefore open to reinterpretation, their consistency or inconsistency with other beliefs, intuitive or reflective, is never self-evident, and does not provide a robust criterion for acceptance or rejection. Their content, because of its indeterminacy, cannot be sufficiently evidenced or argued for to warrant their rational acceptance. But that does not make these beliefs irrational: they are rationally held if there are rational grounds to trust the source of the belief (e.g. the parent, the teacher, or the scientist)."

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- "[So] there are two classes of beliefs and they achieve rationality in different ways. Intuitive beliefs owe their rationality to essentially innate. hence universal perceptual and inferential mechanisms; as a result, they do not vary dramatically, and are essentially mutually consistent or reconcilable across cultures. Those beliefs which vary across cultures to the extent of seeming irrational from another culture's point of view are typically reflective beliefs with a content that is partly mysterious to the believers themselves. Such beliefs are rationally held, not in virtue of their content but in virtue of their source."
- "Whereas widespread intuitive beliefs owe their distribution both to common perceptual experiences and to communication, widespread reflective beliefs owe theirs almost exclusively to communication. The distribution of reflective beliefs takes place, so to speak, in the open: reflective beliefs are not only consciously held; they are also often deliberately spread."

Precisely because the distribution of reflective beliefs is a highly visible social process, it should be obvious that different types of reflective beliefs reach a cultural level of distribution in very different ways. To illustrate this, let us consider very briefly three examples: a myth in a non-literate society, the belief that all men are born equal, and Gödel's proof.

A myth is an orally transmitted story which is taken to represent actual events, including 'supernatural' events incompatible with intuitive beliefs. Therefore, for a myth to be accepted without inconsistency, it has to be insulated from intuitive beliefs: that is, held as a reflective belief. A myth is a cultural representation; this means that the story is told (given public versions) often enough to cause a large enough proportion of a human group to know it (have mental versions of it). For this, two conditions must be met. First the story must be easily enough and accurately enough remembered on the basis of oral inputs alone. Some themes and some narrative structures seem in this respect to do much better cross-culturally than others. The changing cultural background affects memorability, too, so that the content of a myth tends to drift over time so as to maintain maximal memorability.

Second, there must be enough incentives to actually recall and tell the story on enough occasions to cause it to be transmitted. These incentives may be institutional (e.g. ritual occasions where telling the story is mandatory); but the surest incentive comes from the attractiveness of the story for the audience and the success the story-teller can therefore expect. Interestingly, though not too surprisingly, the very same themes and structures which help one remember a story seem to make it particularly attractive.

If the psychological conditions of memorability and attractiveness are met, the story is likely to be well distributed; but in order for it to be a myth, rather than, say, a mere tale recognized and enjoyed as

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such, it must be given credence. What rational grounds do people have to accept such a story as true? Their confidence in those who tell it to them: typically, their confidence in elders whom they have many good reasons to trust and who themselves claim no other authority than that derived from *their* elders. The originator of the chain might be a religious innovator who claimed divine authority for a distinctly different version of older myths. Reference to elders provides a self-perpetuating authority structure for a story which already has a self-perpetuating transmission structure. Still, the authority structure is more fragile than the transmission structure, and many myths loose their credibility, though neither their memorability nor their attractiveness, and end up as tales.

The belief that all men are born equal is a typically reflective belief: it is not produced by perception or by unconscious inference from perception. Rather, except for a few philosophers who originated the belief, all those who have held it came to it through communication. Such a belief does not put any significant weight on memory, but it does present a challenge for understanding, and indeed it is understood differently by different people. As already suggested, the fact that it lends itself to several interpretations probably contributed to its cultural success.

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The human cognitive organization is such that we cannot understand such a belief and not hold it. To some significant extent, and with obvious qualifications, this is the case with all successful theories in the modern natural sciences. Their cognitive robustness compensates, so to speak, for their abstruseness in explaining their cultural success. The fact that successful scientific theories impose themselves on most of those who understand them is manifest to people who don't understand them. This leads, quite rationally, to lay persons believing that these theories are true and expressing as beliefs whatever they can quote or paraphrase from them. Thus Gödel's proof, and scientific theories generally, become cultural beliefs of a different tenor, accepted on different grounds by the scientists themselves and by the community at large.

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- "We might contrast our three examples in the following way, The distribution of a myth is determined strongly by cognitive factors, and weakly by ecological factors; the distribution of political beliefs is determined weakly by cognitive factors, and strongly by ecological factors; and the distribution of scientific. belief:. is determined strongly by both cognitive and ecological factors."

Dan Sperber – Selection and Attraction in Cultural Evolution

- "Suppose we set ourselves the goal of developing mechanistic and naturalistic causal explanations of cultural phenomena…Of particular interest are causal chains from mental representations to public productions to mental representations and so on, where the causal descendants of a representation resemble it in content. The smallest ordinary such causal chain is an act of successful communication."
- "Typically, the public productions that are involved in communication are ***public representations*** such as linguistic utterances. Public representations are artefacts the function of which is to ensure a similarity of content between one of their mental causes in the communicator and one of their mental effects in the audience."

Dan Sperber – Selection and Attraction in Cultural Evolution

- "Communication is one of the two main mechanisms of transmission, imitation being the other. Transmission is a process that may be intentional or unintentional. co-operative or non-co-operative, and which brings about a similarity of content between a mental representation in one individual and its causal descendant in another individual."
- "Most mental representations are never transmitted. Most transmissions are a one-time local affair. However, it may happen that the recipient of an act of transmission becomes a transmitter in turn, and the next recipient also, and so on, thus producing a long chain of transmission and a strain of mental representations (together with public representations in cases of communication) linked both causally and by similarity of content."
- "Fast-moving rumors and slow-moving traditions are paradigmatic examples of such cultural causal chains."

Dan Sperber – Selection and Attraction in Cultural Evolution

- "…there is a severe flaw in attempting to develop a naturalistic explanation of cultural evolution on the basis of the Darwinian model of selection...My two basic points over the years, and in preceding chapters of his book, have been (1) that representations don't in general replicate in the process of transmission, they transform; and (2) that they transform as a result of a constructive cognitive process. Replication, when it truly occurs, is best seen as a limiting case of zero transformation."
- "the number of artefuctual replicas of a would-be cultural item is only a poor, indirect indicator of its genuine cultural success. Waste-paper baskets and their electronic counterparts are filled with massively replicated but unread junk, while some scientific articles read by only a few specialists have changed our cultural world. The cultural importance of a public production is to be measured not by the number of copies in the environment but by their impact on people's minds."

Dan Sperber – Selection and Attraction in Cultural Evolution

- "In general, if you are serious in describing bits of culture - individual texts, pots, songs or individual abilities to produce them - as replications of earlier bits, then you should be willing to ask about any given token cultural item: of which previous token is it a direct replica? In most cases, however, you will be forced to conclude that each token is a replica not of one parent token, nor (as in sexual reproduction) of two parent tokens, nor of any fixed number of parent tokens, but of an indefinite number of tokens some of which have played a much greater 'parental' tole than others. You might want, then, to envisage that this process of synthetic replication of a variable number of models is carried out **by a natural equivalent of a morphing programme**…"

Dan Sperber – Selection and Attraction in Cultural Evolution

- “Just as in a morphing programme, different inputs can be given different weights: you can have your cat-man more like a cat or more like a man, and Jill's skill and her pots may be more like Joan's than like Jane's, though still owing to both Joan's and Jane's skills and pots. The model that comes to mind now is less immediately reminiscent of the Darwinian notion of selection than of the notion of **'influence**' much used in the history of ideas and in social psychology. In the case of selection, genes either succeed or fail to replicate, and sexual organisms either succeed or fail to contribute half 'the genes of a new organism. Thus relationships of descent strictly 'determine genic similarity (ignoring mutations). Influence, by contrast, is a matter of degree.”

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- "there is much greater slack between descent and similarity in the case of cultural transmission than there is in the biological case. Most cultural descendants are transformations, not replicas. Transformation implies resemblance: the smaller the degree of transformation, the greater the degree of resemblance. But resemblance among cultural items is greater than one would be led to expect by observing actual degrees of transformation in cultural transmission. Resemblance among cultural items is to be explained to some important extent by the fact that transformations tend to be biased in the direction of attractor positions in the space of possibilities."

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- "To say that there is an attractor is just to say that, in a given space of possibilities, transformation probabilities form a certain pattern: they tend to be biased so as to favour transformations in the direction of some specific point, and therefore cluster at and around that point."
- "Once public productions massively converge towards some cultural attractor, they may foster the emergence of nearby competing attractors. This is illustrated in a dramatic way by the rapid turnover of fashions, which quickly lose their power because of their very success."

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- "The neo-Darwinian model and the ideas of replication and selection seemed to offer an explanation of the existence and evolution of relatively stable cultural contents. How come, if replication is not the norm, that among all the mental representations and public productions that inhabit a human population and its common environment, it is so easy to discern stable cultural types, such as common views on Bill Clinton, tellings of 'Little Red Riding Hood', English utterances, and also handshakes, funerals and pick-up trucks?"
- "For two reasons: first, because, through interpretative mechanisms the mastery of which is part of our social competence, we tend to exaggerate the similarity of cultural tokens and the distinctiveness of types; and second, because, in forming mental representations and public productions, to some extent all humans, and to a greater extent all members of the same population at anyone time, are attracted in the same directions."