

# Declining Moral Standards and The Role of Law

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## Abstract

This paper examines how moral rules form in the process of social learning in order to analyze the relationship between legal rules and moral rules. Members of society learn morality from the *observed* behavior of other members. Their incentive to act morally is influenced by their expectation of other members' moral behavior. The moral standards of a society are built on the outcomes of such interactions over time. I show that moral standards can quickly deteriorate even if the majority of the members have a strong moral sense individually. When insufficient moral sanctions for wrongful actions are observed, the members form a belief that the society's moral standards are lower than what they had expected. Such a belief encourages more wrongful actions and results in less incentive for the members to act morally. As the moral standards decline, moral rules may not be able to regulate behavior. Legal sanctions can prevent such a decline as they offer an objective and time-invariant level of expectation for the enforcement of rules. Hence, morality is less likely to degenerate in the presence of legal rules. I discuss how strong morality can enhance the effectiveness of law enforcement, in turn.

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# 1 Introduction

Morality is learned from social interactions. Shavell (2002) writes

*[t]he establishment of moral rules [...] comes about in part through a complex process of socialization, learning, and inculcation. When a child is raised by his or her parents, plays with peers, attends school, and the like, the child absorbs many lessons and turns out to feel guilty about certain behaviors and virtuous about others. Along with these lessons the child learns to reproach bad behavior and compliment the good. (p. 231)*

Unlike law, moral rules are intrinsically implicit and subjective because each person's moral values, which constitute society's rules, are individual and private information. For example, our guilt about stealing is what we feel *individually*, though we learn it from education or experiences with other people. How bad it feels differs by person, and only we know how bad we feel about stealing. More importantly, we do not know exactly how other people feel about stealing. Thus, we do not know exactly how seriously people in general would like to punish stealing if we were to steal something. Our expectation of the social enforcement of moral rules is based on our *belief* of the social standards, i.e., the collective values of other people's morality. We infer other people's moral standards from their *actions*. We expect that we will be punished severely if other people have strong principle against stealing. If they don't, we will not need to worry about social punishment. We update our belief based on what we observe of others' behavior. Such experiences reshape our belief about the social standard. This, in turn, determines our behavior toward stealing and a thief whom we might encounter in the future.

Because each person's moral value is private information and members of society learns morality from each other, moral rules differ between different groups of people. For example, in some countries, dog fighting is considered to be immoral and to violate animal rights, whereas this is not so in other countries.<sup>1</sup> For the same reasons, moral rules evolve and adapt over time in the process of inter-generational interactions. There is abundant evidence of time-varying morality. Adultery, pornography, and

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<sup>1</sup>Currently, dog fighting is unlawful in the US, and often is a felony in many states. However, it is a legal and popular sport in Japan and Pakistan.

prostitution have been considered not only immoral, but also illegal for a long time. However, people are more tolerant today of adultery, and are even more lenient toward pornography and prostitution.

This paper shows that because of the nature of flexible adaptation and evolution, moral rules may easily become powerless to regulate behavior. I first prove that, indeed, a society's moral standards can easily decline, as is believed by many. This model highlights that what facilitates the decline is imperfect "social learning" when the members of a society can infer the social standard only on the basis of the "observed" actions of others. The observed actions may not be perfectly correlated with the members' true moral values, and thus, they can misrepresent the underlying moral standards of the society. Such misrepresentation will accelerate if there are a few more slight misrepresentations and inadequate moral sanctions.

Consider shoplifting, for example. According to the National Association for Shoplifting Prevention, "more than \$13billion worth of goods are stolen from retailers each year," and "[t]he vast majority of shoplifters are "non-professionals" who steal, not out of criminal intent, [...] but as a response to social and personal pressures in their life." Although stealing is illegal and immoral, the shoplifters are caught only "once in every 48 times they steal. They are turned over to the police 50 percent of the time."<sup>2</sup> Thus, as there is no enforcement of rules, more and more shoplifting occurs. The teens learn from each other that shoplifting is okay, as long as they don't get caught. This example shows how easily the moral sense of a person about a wrongful action can become hazy due to social influence when the majority of people around the shoplifters condone the act.

I show that the existence of a legal sanction prevents such degeneration of morality brought about by the social learning process. A legal sanction sets an "objective," lower bound for the expected punishment. As a result, the impact of social learning becomes less important in shaping the expected moral standards for members of society. In turn, this slows the decline of moral standards, which leads to fewer offensive behaviors and, thus, fewer chances of further misrepresentation. Therefore, if the moral standards can decline quickly, as in the case of shoplifting, having legal sanctions greatly helps to regulate behavior.

While there are numerous studies of social norms and morality,<sup>3</sup> economic analyses

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<sup>2</sup>[www.shopliftingprevention.org](http://www.shopliftingprevention.org)

<sup>3</sup>For examples of economic analyses of morality, see Frank (1987), Hirschleifer (1987), Berheim

of the relationship between morality and law are sparse. Cooter (1998) analyzes how law promotes individual incentive to acquire morality and self-control. Posner (1997) explains how law complements or substitutes social norms.

This paper revisits the discussion of the difference between morality and law in regulating conduct in Shavell (2002), by incorporating the impact of social learning on the dynamic formation of morality. Shavell (2002) compares the two in the social costs of enforcement and the effectiveness in controlling behavior. He argues that, if the expected private gain from undesirable action and the expected harm due to the conduct are large, it is optimal to have law supplement morality and, if morality does not function well, law alone is optimal.

In contrast, I focus on the dynamic aspects of moral rules in explaining their relationship with laws. In particular, I emphasize that the costs of moral enforcement are not fixed. Individual costs of taking moral actions are inter-dependent and change over time as people's willingness for moral actions changes.

Shavell (2002) describes several reasons why moral rules and legal rules can complement each other. The results in this paper show that the complementarity of legal rules and moral rules is much greater when we consider how external incentives of moral rules are dynamically influenced by the existence of legal rules. Moreover, since legal sanctions play an important role in keeping the moral standards from degenerating, an attempt to separate what should belong to the realm of morality and what to law can be potentially harmful by provoking moral degeneration that leads to absence of order entirely. The results of the paper suggest that, in many cases where the outcome from the demise of moral rules is dire, we may need laws, even if the laws are not actually enforced often, to keep our moral sense from being swayed and dispelled without any clear coordinates.

This paper explicitly models how individuals' moral incentives are influenced by the public support or blame that they expect to receive for their actions, apart from their own conscience. With strong public moral support, an individual's cost of taking an immoral action is higher and that of taking action against someone else's immoral action (e.g. blaming him) is lower. Individuals infer public moral standards based on their observations of their neighbors' actions, from which they estimate their cost of acting morally. They adjust their behavior according to the expected cost. This process of Bayesian updates in one's belief of public morality is built on the framework

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(1994), and Kaplow and Shavell (2007).

of information cascades in Bikhchandani et al (1992).

In this framework, people are uncertain of the true distribution of morality of society's members. This implies that there is no reason to believe that current moral rules are either absolutely right or wrong. This framework sheds light on the question of what "should be" legal/moral rules to regulate people's behavior, especially when it is unclear at the present time how much social costs the rules impose on people and how the rules would alter people's behavior in the dynamics of social interactions and the way a society organizes itself. I argue that the rules, especially laws, are our commitment to a certain way of regulating the behavior of the members of a society, in the spirit of the argument by Honoré (1993) in the case of "moral conflicts." For this reason, morality and law can never be solely derived from the majority opinion as was evident in the case of slavery which was legal for a substantial period before it was completely banned. We discuss the implication of the recent repeal of adultery statutes in Colorado in this context.

The remainder of this paper is organized as follows. Section 2 presents our basic framework of morality formation, external incentives, Bayesian inference and update of public morality, and declining moral standards. In Section 3, I analyze the role of legal sanctions. In Section 4, I discuss the implication of declining morality when law enforcement depends on people's willingness to become involved in the enforcement. Section 5 concludes.

## 2 The Model of Moral Incentives and Rules

Suppose at each period  $t$ , nature randomly draw one individual  $I$  and  $N$  neighbors of  $I$  from the population.<sup>4</sup> Nature presents  $I$  with an opportunity to take an offensive, immoral, action  $A$  (i.e. an action that imposes negative externalities on others).  $I$ 's motivation to refrain from taking such an action depends on how strongly he feels about the offensiveness of the immoral action  $A$  ("internal incentive" following Shavell [2002]), and the expected punishment for the action by the society to which he belongs ("external incentive" following Shavell [2002]). If  $I$  takes the action  $A$ , each of  $N$  neighbors chooses either to publicly condemn the action (which is sometimes followed by an act of punishment) or to silently condone it. At  $t$ , for choosing  $A$ ,  $I$

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<sup>4</sup>The neighbors are the boundaries of the society that matters to  $I$ . The society can be narrowly defined as a school that  $I$  attends, or widely defined as a country in which  $I$  lives.

receives a benefit  $b$  at the cost of moral anguish  $\widehat{m}_{It}$ , and legal sanctions,  $s$ , with a probability of  $r$ , if any. The moral cost  $\widehat{m}_{It}$  for  $I$  is the weighted sum of the personal moral cost  $m_{it}$  and the external incentive  $M_t$ . That is,  $\widehat{m}_{It} = (1-w)m_{it} + wM_t$ ,  $w > 0$ . The external incentive  $M_t$  is the level of public condemnation (and punishment) that  $I$  expects to receive from his neighbors upon choosing  $A$ .  $I$  estimates  $M_t$  based on his past experiences and observations of how society has responded to another similar offensive event  $A'$  in the past. Specifically, at each period  $t$ ,  $I$  has a learned expectation of

$$M_t = m \cdot E(N_t|\Omega_{t-1}), \quad (1)$$

based on his observations of people's past responses  $\Omega_{t-1}$  until period  $t-1$ , where  $m > 0$ ,  $N_t = \sum \beta_{jt}$ , and  $\beta_{jt}$  is the pure strategy variable of  $j \in N$  at  $t$  such that  $\beta_{jt} = 1$  if neighbor  $j$  condemns, whereas it is 0, otherwise. Roughly speaking,  $E(N_t|\Omega_{t-1})$  is the expected number of neighbors who would condemn and punish  $A$  if  $I$  takes the action. For a given  $E(N_t|\Omega_{t-1})$ ,  $I$  chooses  $A$  if and only if

$$b - rs - [(1-w)m_{it} + wM_t] \geq 0, \text{ or} \\ m_{it} \leq \frac{b - rs}{(1-w)} - \frac{wm}{(1-w)} E(N_t|\Omega_{t-1}). \quad (2)$$

Other things being equal,  $I$  is more likely to choose  $A$  as the legal sanction  $s$  decreases. Similarly, if expected public moral standards  $M_t = E(N_t|\Omega_{t-1})$  decline,  $I$  has less incentive to refrain from taking  $A$ .

Often, the public's willingness to "get involved" in others' situation and to take action against offensive behavior deters crime more effectively than the law does. This is particularly true for crimes that are in progress because public moral enforcement  $M_t$  lowers the probability of successfully committing the crimes. In contrast, law can be only in effect *ex post*. For example, in the case of the murder of Kitty Genovese (1964), the perpetrator had left her wounded, but alive, after the first attack upon hearing the neighbors' response. However, he returned and completed the murder and rape after observing that no one was coming forward to help her. If there had been a timely and adequate response by the neighbors, the perpetrator would not have been able to complete his criminal acts. Hence, sufficient moral responses by the public are often the most effective means to prevent crimes (or the completion of criminal acts).

The key element of this model relies on the fact that the formation of the public moral standard  $M_t$  is *social*. Each member learns the moral values from his or her parents, teaching, and observing other persons' responses to offensive actions. This implies that each person's moral incentive  $\widehat{m}_{It}$  is dynamically adapting through learning.

We show that social learning often may be inefficient. This is because members of a society cannot observe other members' moral values, but only observe their "actions," which may not perfectly reveal their moral values. Hence, there can be a slight misrepresentation of the neighbors' underlying moral standards. In the learning process based on Bayesian inferences about the members' moral values, if such a misrepresentation lowers expected public moral support and each member's incentive for doing a moral action, there will be more observations of immoral actions. Such a decline in morality accelerates as more persons remain silent about the immoral actions of others, reluctant to act upon their moral values without sufficient public support. This can occur even if the majority of the members of the society are strongly moral.

## 2.1 External Incentives

What determines the external incentives, i.e.,  $N_t = \sum \beta_{jt}$ ? That is, what makes the neighbors or members of a society interested in enforcing moral standards by having a say about an action taken by another person,  $I$ ? In this section, we consider the neighbor  $j$ 's decision to condemn  $I$ 's action  $A$ ,  $\beta_j$ , at any given period.

For  $j$ , given that there is no explicit rule that requires one to have a say regarding someone else's action, the benefits from criticizing  $A$  is only implicit. There is a personal reward that  $j$  receives from being truthful to what she believes in. The personal reward for keeping the moral value is greater if there is a strong support from other members of her society. Thus, there are two elements of a neighbor's incentive to personally "get involved" in enforcing moral rules. These are the neighbor's own personal moral value  $m_j$  and her expectation of social support for her action.

Observing an offensive action by another person, condoning it causes neighbor  $j$  to suffer moral anguish  $m_j$ . We assume that  $m_j$  is independent, private to  $j$ , and unobservable by others. Now consider the cost of taking a public "action" against  $A$ . It costs  $C_j = c(1 - \sum_{l \neq j} \beta_l / N)$  for  $j$  to publicly condemn  $A$  and take a necessary

action, where  $\sum_{l \neq j} \beta_l$  is the level of support from other neighbors  $l \neq j$ , i.e., the total numbers of  $l$  who concur.<sup>5</sup> Thus, a person's decision to take a public moral action costs  $c$ , which decreases if many other people concur. If  $j$  remains silent about the action, however, she does not incur  $c$  but only suffers from a personal moral anguish,  $m_j$ .<sup>6</sup>

Then, each neighbor  $j$  condemns the action  $A$  if her own  $m_j$  is high or if she expects that many other people  $l$  will condemn  $A$  (i.e., a high  $\sum_{l \neq j} \beta_l$ ). That is,  $j$  condemns  $A$  if and only if

$$\begin{aligned} m_j &> c \left( 1 - \frac{\sum_{l \neq j} \beta_l}{N} \right) \\ \Leftrightarrow \sum_{l \neq j} \beta_l &> \hat{\beta}_j = \frac{(c - m_j)N}{c}. \end{aligned} \quad (3)$$

Similar to  $j$ 's problem, whether another neighbor  $l$  would be willing to condemn  $A$  depends on his own  $m_l$  and the expected probability that  $j$  would condemn  $A$  as well. If  $j$  decides to condemn  $A$ , then any  $l$  with  $m_l > m_j$  would make the same choice of condemning  $A$ .

The problem is that neighbor  $j$  only observes her own moral cost  $m_j$  and not those of the others  $m_l$ . More specifically,  $j$  does not know how many neighbors have an  $m_l$  that is higher than her own  $m_j$  and, thus, how many neighbors would take the same action if she condemns  $A$ . What this implies is that, for example, she may feel bad about cheating according to her own  $m_j$ , but does not know if many others feel the same way. In addition, she does not know whether she feels bad because she has a higher moral standard than others, or because she is one of the many normal people. In the former case, she would not expect many persons to condemn cheating. In the latter case, however, she would expect that many other persons would condemn if she does.

Therefore,  $j$  needs to know the "*relative standing*" of her own  $m_j$  in the population distribution of morality. She does not know whether her  $m_j$  is in the lower tail or in

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<sup>5</sup>In this framework, public support can be either guilt or virtue (see, Kaplow and Shavell [2007]).

<sup>6</sup>In the model, we only consider two choices, condemnation or silence. Although  $j$  may also choose to publicly "approve" the offensive action, such a choice is always dominated by silence, as it is, in the end, an offensive action. Thus, even if  $j$  expects to receive great support for not condemning the action, the dominant strategy is to be silent rather than to actively support the action.

the upper tail of the distribution. Thus, she is unsure of the fraction of her neighbors whose moral values are higher than her own. If she knows the "distribution" of others'  $m_l$ , she can infer the fraction based on the information of her own  $m_j$  and the likelihood that she would receive support. Therefore, the uncertainty that each member of society faces in determining their moral action reduces to an uncertainty about the *true distribution of the population moral values*.

## 2.2 Uncertainty in Public Moral Standards

To model the members' uncertainty about the true population distribution, suppose that the true population cumulative density distribution (cdf) of morality  $m$  is either  $F_1$  with a mean of  $\mu_1$  or  $F_2$  with a mean of  $\mu_2$ , where  $\mu_2 > \mu_1$ , without loss of generality, and  $m \in [\underline{m}, \bar{m}]$ ,  $\underline{m} \geq 0$ . For simplicity, assume that  $F_1$  and  $F_2$  are identical in every other moment, except for the mean values. Let  $p > 0$  be the prior probability that the true distribution is  $F_1$ .

To see how the inferences of public moral standards are made, consider a case in which the true distribution is  $F_1$  and this information is common knowledge. Suppose that there exists an  $m_1$  such that at  $m_1$ , we can define an integer  $N_1$  that satisfies  $N_1/N = 1 - m_1/c = 1 - F_1(m_1)$  and, thus,  $m_1 = cF_1(m_1)$ . Similarly, we can define  $m_2$ .

**Assumption 1**  $\bar{m} > c$ .

Assumption 1 implies that  $\bar{m} > cF_d(\bar{m})$ , for  $d = 1, 2$ . Therefore, from (3), even if no one else wants to act truthfully based on his or her own moral value,  $\sum_{l \neq j} \beta_l = 0$ , there will be at least some people  $j$  whose personal moral value is too high to be silent about it. Let  $m_d^*$  be the largest value of  $m_d$ ,  $d = 1, 2$ .

**Lemma 1** *If it is known that the true distribution of population  $m$  is  $F_d$ ,  $d = 1, 2$ , then  $N_d^*/N$  fraction of people condemn  $A$ , where  $N_d^*/N$  satisfies  $N_d^*/N = 1 - m_d^*/c$ , and  $m_d^*$  is the largest value that satisfies  $m_d = cF_d(m_d)$ .*

**Proof.** See the Appendix. ■

Lemma 1 implies that, if the true distribution is  $F_1$ , all the neighbors  $l$  with  $m_l > m_1^*$  condemn  $A$  under the expectation that there would be moral support from  $N_1^*$  people, and the expectation is correct because for any  $m_l > m_1^*$ ,  $1 - F_d(m_l) >$

$N_1^*/N = \frac{(c-m_1^*)}{c} > \frac{(c-m_i)}{c}$ . For any  $m_i < m_1^*$ ,  $1 - F_d(m_i) < \frac{(c-m_i)}{c}$ , and the neighbor  $l$  does not want to take a moral action even if everyone else with a higher  $m > m_i$  does. Knowing that a person with a lower  $m < m_i$  would be even less willing, the neighbor  $l$  does not. Hence, the rational expectation is that only  $N_1^*$  people condemn  $A$ . Thus, if everyone knows that the true distribution is  $F_d$ ,  $d = 1, 2$ , when nature randomly draws  $N$  neighbors from  $F_d$ , people expect that  $N_d^*/N$  fraction of the neighbors whose morality value is in the range above  $m_d^*$  will condemn. Since  $F_2$  first order stochastically dominates  $F_1$ ,  $m_1^* > m_2^*$ . Thus, for the same immoral action, a larger fraction of people are expected to take moral actions if the true population distribution is  $F_2$ .

Since no one knows whether the true distribution is  $F_1$  or  $F_2$ , at  $t = 0$ ,  $j$  condemns  $A$  if

$$\begin{aligned} m_{j0} &> p \left[ c \left( 1 - \frac{N_1^*}{N} \right) \right] + (1-p) \left[ c \left( 1 - \frac{N_2^*}{N} \right) \right] \\ \Leftrightarrow m_{j0} &> c - \frac{c}{N} (pN_1^* + (1-p)N_2^*) = \widehat{m}_0. \end{aligned}$$

Under this expectation, let  $E(N_0) = pN_1^* + (1-p)N_2^*$  be the expected number of people who condemn  $A$  in period 0. At  $t = 1$ , each member will observe the actual, realized actions by other members,  $\widehat{N}_0$  that are greater or less than  $E(N_0)$ . This information of observed  $\widehat{N}_0$  will be used to infer whether the true distribution is more likely to be  $F_1$  at  $t = 1$ . That is, the members form an expectation of  $E(N_1|\widehat{N}_0)$  based on the observed  $\widehat{N}_0$ . If  $\widehat{N}_0 < E(N_0)$ , at  $t = 1$ , the members expect that there is a higher probability that the true distribution is  $F_1$ , i.e.,  $P(F = F_1|\widehat{N}_0) = \widehat{p}_1 > p$ . Similarly, the observation of  $\widehat{N}_1$  at  $t = 1$ , which may be greater or less than  $E(N_1|\widehat{N}_0)$ , will be used to update their inference of the probability at  $t = 2$ ,  $\widehat{p}_2$ . If  $\widehat{N}_1 < E(N_1|\widehat{N}_0)$ , then  $\widehat{p}_2 > \widehat{p}_1 > p$ , for example, and so on.

### 2.3 Social Learning Dynamics

The social learning dynamics occurs in the members' Bayesian updated beliefs of the true population distribution  $\widehat{p}_t = P(F = F_1|\widehat{N}_{t-1}, \widehat{N}_{t-2}, \widehat{N}_{t-3}\dots)$ . Let  $\Omega_{t-1} = \Omega(\widehat{N}_{t-1}, \widehat{N}_{t-2}, \widehat{N}_{t-3}\dots)$  be the set of information of observed moral enforcement by the members over time. Then,  $E \sum(\beta_{jt}|\Omega_{t-1}) = \widehat{p}_t N_1^* + (1 - \widehat{p}_t) N_2^*$ . At  $t$ , from (2),  $I$  chooses  $A$  if and only if  $m_{it} \leq \frac{b-rs}{(1-w)} - \frac{wm}{(1-w)} E \sum(\beta_j|\widehat{N}_{t-1}, \widehat{N}_{t-2}, \widehat{N}_{t-3}\dots)$ , where

$E(\sum \beta_j | \widehat{N}_{t-1}) = E(N_t | \widehat{N}_{t-1}, \widehat{N}_{t-2}, \widehat{N}_{t-3} \dots) = \widehat{p}_t N_1^* + (1 - \widehat{p}_t) N_2^*$ .<sup>7</sup> That is, at  $t$ ,  $I$  chooses  $A$  if and only if

$$m_{it} \leq \frac{b - rs}{(1 - w)} - \frac{wm}{(1 - w)} [\widehat{p}_t N_1^* + (1 - \widehat{p}_t) N_2^*] \quad (4)$$

There is a wrong information cascade if  $\widehat{p}_t \rightarrow 1$  even though the true distribution is  $F_2$ . What facilitates such a wrong information cascade? What is the role of legal rules in this context? The main analysis of this paper focuses on the answers to these questions.

### 2.3.1 At $t = 0$

**$I$ 's behavior** From (4),  $I$  chooses  $A$  if

$$m_{i0} \leq \frac{b - rs}{(1 - w)} - \frac{wm}{(1 - w)} E(N_0),$$

where  $E(N_0) = pN_1^* + (1 - p)N_2^*$ .

**Neighbors** Neighbor  $j$  condemns  $A$  if

$$m_{j0} > c - \frac{c}{N} (pN_1^* + (1 - p)N_2^*) = c - \frac{c}{N} E(N_0).$$

Suppose that  $\widehat{N}_0$  people were actually observed to act against the immoral action  $A$  at the end of the period  $t = 0$ . Since  $N_1^* < N_2^*$ , if  $\widehat{N}_0 < E(N_0)$ , this implies that  $P(\widehat{N}_0 | F_1) > P(\widehat{N}_0 | F_2)$ . Similarly, if  $\widehat{N}_0 > E(N_0)$ , the updated belief uses that  $P(\widehat{N}_0 | F_2) > P(\widehat{N}_0 | F_1)$ .

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<sup>7</sup>The result is robust even if there are more than two possible distributions. What matters to the members is the "expected number" of people who would act to condemn under each distribution. This expected number is always a real number  $\widehat{N} \in R^1$ . Hence, what matters is whether  $\widehat{N}$  is large enough to convince  $I$  and  $j$  to act differently.

### 2.3.2 At $t = 1$

Suppose that  $\widehat{N}_0 < E(N_0)$  (The argument is symmetrically applied to the case of  $\widehat{N}_0 > E(N_0)$ ). Then,

$$\begin{aligned}\widehat{p}_1 &= P(F = F_1 | \widehat{N}_0) \\ &= \frac{p \cdot P(\widehat{N}_0 | F_1)}{p \cdot P(\widehat{N}_0 | F_1) + (1 - p) \cdot P(\widehat{N}_0 | F_2)}\end{aligned}$$

Therefore,  $\widehat{p}_1 > p$  since

$$\begin{aligned}\widehat{p}_1 &= \frac{p \cdot P(\widehat{N}_0 | F_1)}{p \cdot P(\widehat{N}_0 | F_1) + (1 - p) \cdot P(\widehat{N}_0 | F_2)} > p \\ &\Leftrightarrow P(\widehat{N}_0 | F_1) > P(\widehat{N}_0 | F_2).\end{aligned}$$

This is consistent given the observation of  $\widehat{N}_0 < E(N_0)$ .

**$I$ 's behavior** Under the expectation of  $\widehat{p}_1 > p$ , at  $t = 1$ ,  $I$  chooses  $A$  if and only if

$$m_{i1} \leq \frac{b - rs}{(1 - w)} - \frac{wm}{(1 - w)} E(N_1 | \widehat{N}_0), \text{ where}$$

$$\begin{aligned}E(N_1 | \widehat{N}_0) &= E\left(\sum \beta_j | \widehat{N}_0\right) = \widehat{p}_t N_1^* + (1 - \widehat{p}_t) N_2^* \\ &< E(N_0) = p N_1^* + (1 - p) N_2^*\end{aligned}$$

That is, based on  $\widehat{p}_1 > p$ ,  $I$  expects that there will be fewer chances to observe public blame for  $A$ . Thus,  $m_i$  is more likely to satisfy the condition than it was at  $t = 0$ . Then, it is more likely that  $I$  will choose  $A$ . That is, if the same person is chosen by nature at  $t = 1$  and  $t = 0$ , he is more likely to take the action  $A$  at  $t = 1$  after observing  $\widehat{N}_0 < E(N_0)$ .

**Neighbor** For a given  $\widehat{N}_0 < E(N_0)$ , at  $t = 1$ ,  $P[F = F_1 | \widehat{N}_0] = \widehat{p}_1 > p$  and  $P[F = F_2 | \widehat{N}_0] = 1 - \widehat{p}_1 < 1 - p$ , and thus, if  $A$  is observed,  $j$  expects that fewer people  $E(N_1 | \widehat{N}_0) < E(N_0)$  would condemn  $A$ . This makes  $j$  less likely to continue to

condemn the action, i.e.,

$$m_j > c - \frac{c}{N}N_1 = \widehat{m}_{j1} > \widehat{m}_{j0}.$$

Thus, other things being equal, if the same people were drawn from the population as in period 0, at  $t = 1$ , fewer people will condemn, which makes it more likely that  $\widehat{N}_1 < \widehat{N}_0$ .

### 2.3.3 At $t = 2$ ,

For given  $\widehat{N}_1, \widehat{N}_0$  and  $\widehat{N}_1 < \widehat{N}_0$ , people infer the probability of true distribution being  $F_1$  or  $F_2$  in the following way.

$$\begin{aligned} \widehat{p}_2 &= P(F = F_1 | \widehat{N}_0, \widehat{N}_1) = \frac{P(F = F_1 \cap \widehat{N}_0 \cap \widehat{N}_1)}{P(\widehat{N}_0 \cap \widehat{N}_1)} \\ &= \frac{P(F_1) \cdot P(\widehat{N}_0 \cap \widehat{N}_1 | F_1)}{P(F_1) \cdot P(\widehat{N}_0 \cap \widehat{N}_1 | F_1) + P(F_2) \cdot P(\widehat{N}_0 \cap \widehat{N}_1 | F_2)} \\ &= \frac{p \cdot P(\widehat{N}_0 | F_1) \cdot P(\widehat{N}_1 | F_1)}{p \cdot P(\widehat{N}_0 | F_1) \cdot P(\widehat{N}_1 | F_1) + (1 - p) \cdot P(\widehat{N}_0 | F_2) \cdot P(\widehat{N}_1 | F_2)} \end{aligned}$$

Suppose that  $\widehat{N}_1 < \widehat{N}_0$ , as it is more likely to occur as shown above. Then, since  $P(\widehat{N}_1 | F_1) > P(\widehat{N}_1 | F_2)$ ,  $\widehat{p}_2 > \widehat{p}_1$  as well, i.e.,

$$\begin{aligned} \widehat{p}_2 &= \frac{p \cdot P(\widehat{N}_0 | F_1) \cdot P(\widehat{N}_1 | F_1)}{p \cdot P(\widehat{N}_0 | F_1) \cdot P(\widehat{N}_1 | F_1) + (1 - p) \cdot P(\widehat{N}_0 | F_2) \cdot P(\widehat{N}_1 | F_2)} \\ &> \frac{p \cdot P(\widehat{N}_0 | F_1)}{p \cdot P(\widehat{N}_0 | F_1) + (1 - p) \cdot P(\widehat{N}_0 | F_2)} = \widehat{p}_1 \\ &\Leftrightarrow P(\widehat{N}_1 | F_1) > P(\widehat{N}_1 | F_2) \end{aligned}$$

Therefore,  $\widehat{p}_2 > \widehat{p}_1 > p$ , and

$$\underbrace{\widehat{p}_2 N_1^* + (1 - \widehat{p}_2) N_2^*}_{\text{inference}} = E(N_2 | \widehat{N}_1, \widehat{N}_0) < E(N_1 | \widehat{N}_0) < E(N_0)$$

As a result,  $I$  is more likely to choose  $A$ , i.e.,

$$m_j \leq \frac{b - rs}{(1 - w)} - \frac{wm}{(1 - w)} E(N_2 | \widehat{N}_1, \widehat{N}_0)$$

The neighbor  $j$  is even less likely to condemn  $A$  than before.

$$m_j > c - \frac{c}{N} E(N_2 | \widehat{N}_1, \widehat{N}_0) = \widehat{m}_{j2} > \widehat{m}_{j1} > \widehat{m}_{j0}.$$

That is, offensive action is more likely to be taken, and people are less likely to condemn it, i.e.,  $\widehat{N}_2 < \widehat{N}_1$ .

Suppose that  $\widehat{N}_1 > \widehat{N}_0$ , instead. The same inference of  $\widehat{p}_2 > \widehat{p}_1$  may hold as long as  $\widehat{N}_1$  is not so large that  $\widehat{N}_1 < E(N_0)$ . Any changes in the perspectives can occur only if  $\widehat{N}_1 > \widehat{N}_0$  and  $\widehat{N}_1 > E(N_0) > \widehat{N}_0$ . The result in this case will be  $P(\widehat{N}_1 | F_1) < P(\widehat{N}_1 | F_2)$  and, thus,  $\widehat{p}_2 < p < \widehat{p}_1$ . Given the offsetting information about the true distribution of morality from the two periods, the next period's observation would tend to confirm one of the two observations as being more reliable, and determine the future inference process.

#### 2.3.4 At $t = 3$ and thereafter

For given  $\widehat{N}_2, \widehat{N}_1, \widehat{N}_0$ , people infer the probability of true distribution being  $F_1$  in the following way.

$$\begin{aligned} \widehat{p}_3 &= P(F = F_1 | \widehat{N}_2, \widehat{N}_0, \widehat{N}_1) = \frac{P(F = F_1 \cap \widehat{N}_0 \cap \widehat{N}_1 \cap \widehat{N}_2)}{P(\widehat{N}_0 \cap \widehat{N}_1 \cap \widehat{N}_2)} \\ &= \frac{p \cdot P(\widehat{N}_0 | F_1) \cdot P(\widehat{N}_1 | F_1) \cdot P(\widehat{N}_2 | F_1)}{p \cdot P(\widehat{N}_0 | F_1) \cdot P(\widehat{N}_1 | F_1) \cdot P(\widehat{N}_2 | F_1) + (1 - p) \cdot P(\widehat{N}_0 | F_2) \cdot P(\widehat{N}_1 | F_2) \cdot P(\widehat{N}_2 | F_2)} \end{aligned}$$

Then,  $\widehat{p}_3 > \widehat{p}_2$  if and only if

$$\begin{aligned} &\frac{p \cdot P(\widehat{N}_0 | F_1) \cdot P(\widehat{N}_1 | F_1) \cdot P(\widehat{N}_2 | F_1)}{p \cdot P(\widehat{N}_0 | F_1) \cdot P(\widehat{N}_1 | F_1) \cdot P(\widehat{N}_2 | F_1) + (1 - p) \cdot P(\widehat{N}_0 | F_2) \cdot P(\widehat{N}_1 | F_2) \cdot P(\widehat{N}_2 | F_1)} \\ &> \frac{p \cdot P(\widehat{N}_0 | F_1) \cdot P(\widehat{N}_1 | F_1)}{p \cdot P(\widehat{N}_0 | F_1) \cdot P(\widehat{N}_1 | F_1) + (1 - p) \cdot P(\widehat{N}_0 | F_2) \cdot P(\widehat{N}_1 | F_2)} \\ &\Leftrightarrow P(\widehat{N}_2 | F_1) > P(\widehat{N}_2 | F_2) \end{aligned}$$

From the above, we have shown that, because people's actions are based on their Bayesian inference from observed actions, if  $\widehat{N}_0 < E(N_0)$ , it is more likely that  $\widehat{N}_1 < \widehat{N}_0$ , and if  $\widehat{N}_1 < \widehat{N}_0$ , it is even more likely that  $\widehat{N}_2 < \widehat{N}_1$ . Suppose  $\widehat{N}_2 < \widehat{N}_1 < \widehat{N}_0$ . Since it is more likely that  $P(\widehat{N}_2|F_1) > P(\widehat{N}_2|F_2)$ ,  $\widehat{p}_3 > \widehat{p}_2 > \widehat{p}_1 > p$ , and

$$\underbrace{\widehat{p}_3 N_1^* + (1 - \widehat{p}_3) N_2^*}_{\text{inference}} = E(N_3|\widehat{N}_2, \widehat{N}_1, \widehat{N}_0) < E(N_2|\widehat{N}_1, \widehat{N}_0).$$

Thus, as  $\widehat{N}_{t-1}$  declines,  $E(N_t|\widehat{N}_{t-1}, \widehat{N}_{t-2}, \widehat{N}_{t-3} \dots)$  declines. This makes it more likely for  $\widehat{N}_t$  to decline, and more likely to encourage  $A$ , and so on. That is, as  $E(N_t|\Omega_{t-1})$  declines, it is more and more likely that

$$m_{jt} \leq \frac{b - rs}{(1 - w)} - \frac{wm}{(1 - w)} E(N_t|\Omega_{t-1}), \quad (5)$$

and the neighbor  $j$  will be less and less willing to condemn  $A$ .

$$m_{jt} > c - \frac{c}{N} E(N_t|\Omega_{t-1}) = \widehat{m}_{jt} > \widehat{m}_{jt-1} > \dots > \widehat{m}_{j0}. \quad (6)$$

Suppose that  $\widehat{N}_0 < \widehat{N}_1$  but that  $\widehat{N}_2 < \widehat{N}_1$ , instead. Then, the observation of  $\widehat{N}_2 < \widehat{N}_1$  leads to  $\widehat{p}_3 > \widehat{p}_2$ . Moreover,  $\widehat{p}_3 > \widehat{p}_1$  if

$$\begin{aligned} & \frac{p \cdot P(\widehat{N}_0|F_1) \cdot P(\widehat{N}_1|F_1) \cdot P(\widehat{N}_2|F_1)}{p \cdot P(\widehat{N}_0|F_1) \cdot P(\widehat{N}_1|F_1) \cdot P(\widehat{N}_2|F_1) + (1 - p) \cdot P(\widehat{N}_0|F_2) \cdot P(\widehat{N}_1|F_2) \cdot P(\widehat{N}_2|F_2)} \\ & > \frac{p \cdot P(\widehat{N}_0|F_1)}{p \cdot P(\widehat{N}_0|F_1) + (1 - p) \cdot P(\widehat{N}_0|F_2)} \\ & \Leftrightarrow P(\widehat{N}_1|F_1) \cdot P(\widehat{N}_2|F_1) > P(\widehat{N}_1|F_2) \cdot P(\widehat{N}_2|F_2) \end{aligned}$$

That is, which of the past observations has a stronger connection to either of the two distributions will determine the inference of  $\widehat{p}_3$ . A similar process applies to the later periods.

## 2.4 Declining Moral Standards

The above analysis shows that, if the first few observation of  $\widehat{N}_2, \widehat{N}_1, \widehat{N}_0$  are lower than  $E(N_0)$ , they will trigger a process of information cascade that leads to  $\widehat{p}_t \rightarrow 1$ , i.e.,

$P(F = F_1|\Omega_{t-1}) \rightarrow 1$  even if the true distribution is  $F_2$ . Therefore, moral standards decline quickly.

**Proposition 1** *Moral rules are difficult to enforce for a low  $rs$ ,  $w$ , and  $c$ .*

**Corollary 1** *Without legal sanctions,  $s = 0$ , it may not be possible to regulate behavior.*

Suppose  $N_1^*$  is significantly low. If  $s = 0$ , declining moral standards would lead to a situation where a  $N_1^*/N \approx 0$  fraction of the population act to uphold the moral rules. This implies that there may not be any meaningful enforcement of moral rules.

The decline in the standards accelerates as a result of the chain reactions in the social learning process. (1) As the members observe that a lower fraction of the population actually condemn immoral actions, they form a belief that their society consists of many immoral people. Then, their individual incentive to refrain from acting immorally declines. (2) Due to the increase in immoral actions, the members are exposed more often to a situation where the moral standards matter. They see more frequently how other members react to immoral actions. They update their beliefs concerning moral standards and conduct more often. Thus, the members become more dependent on social signals. The importance of social influence on the members' actions increases. (3) More members decide to remain silent, and more immoral actions are taken. The observation of fewer enforcements and more immoral actions serves to lower the expected moral standards even further in the future.

Therefore, without the aid of legal sanctions  $s$ , it is easy to observe insufficient enforcement, once there is an expectation of insufficient enforcement, a further decline in moral standards can occur quickly. As a result, it might be almost impossible to regulate behavior.

### 3 The Role of Law

**Proposition 2** *Law enforcement  $rs > 0$  slows the speed of a decline in moral standards.*

What accelerates the decline of moral rules is the feedback effects of more immoral actions and insufficient moral enforcement. Law enforcement slows the decline by

alleviating the feedback effects described in (1) and (3) above. Imposing a legal sanction  $s > 0$  increases the lower bound of moral standards (as long as  $r > 0$ ). Thus, even if the moral standards are expected to be low, there is less incentive to take an immoral action, thereby lowering the effect of (1). As fewer immoral actions are taken by the members, there is less need for the members to update their belief of true distribution, thus lowering (2). Fewer immoral actions and a low chance of social influence combine to slow the speed of decline in (3).

Although our analysis focuses on the case in which a wrong information cascade occurs, we can easily extend the analysis to the other case of information cascade in order to understand the role of law.

**Corollary 2** *If a positive information cascade takes place, law enforcement  $rs > 0$  expedites the speed of convergence for  $\hat{p}_t \rightarrow 0$ .*

If  $\widehat{N}_0 > E(N_0)$ , members of society expect that  $\widehat{N}_1 > \widehat{N}_0$  is likely to occur. If  $\widehat{N}_1 > \widehat{N}_0$ , the expectation that  $E(N_2) > \widehat{N}_1$  will be strengthened. Thus, the members will be able to reach the long run equilibrium belief  $\hat{p}_t \rightarrow 0$ , i.e.,  $P(F = F_2 | \Omega_{t-1}) \rightarrow 1$  quickly.

If the correct distribution is  $F_2$ , with the enhanced deterrence effects on  $A$ , legal sanction expedites the social learning process of the true distribution. If the true distribution is  $F_1$ , legal sanction increases the society's moral standards.

Proposition 2 and Corollary 2 show when there should be law. In general, law prevents the decline of moral standards and facilitates a convergence in people's belief of a higher level of moral standards, *regardless of* whether the society has a strong morality. Thus, such an institution is beneficial only if higher morality is truthful, or desirable, even if not truthful. Suppose that the true distribution of the society is  $F_1$ . Legal sanctions are likely to encourage the society to deviate from one that reflects the true underlying distribution of population to another that places more restrictions on behavior. As a result, many of the society's members will incur a loss in welfare due to the loss of freedom in choosing what is most representative of themselves. When would this be desirable?

Pluralism does not necessarily guarantee what is best for the society. Often people differ in what they believe is moral. For example, consider abortion. Some people believe that it should be allowed and they have their own moral reasons. Similarly, there are other people who believe that it should not be allowed for different moral

reasons. In such a situation of "moral conflict," Honoré (1993) asked: "Why not resolve the abortion issue by allowing those who do not object to abortion to have abortions or perform them if they wish, while those who think abortions wrong are free to refuse to have or to perform them?" Why should there be a law? He argues that law is our "commitment" to what should be. Then, it guides us to coordinate our behavior in such a situation of moral conflict. That is, with law, we are deciding what to discourage and what not to discourage. We do so, not because the unlawful behavior is immoral, but because we find it better to commit ourselves to discouraging the behavior. For that reason, law may not need to be backed by social consensus. In some cases, it may even need to work against the will of the majority, to prevent "the tyranny of the majority." The same logic is applied to the legal issues surrounding prostitution, adultery, and organ sales. Law should be based on long-term implications of what the law permits or disallows in social harms and how it would alter our way of coordinating behavior, instead of basing it on whether or not the majority agrees that it is necessary.

Consider as an example the recent repeal of adultery statutes in Colorado. Should adultery be illegal? In 2013, Colorado decided that the answer is "no" on the ground that many people believe adultery is a personal and moral matter and, thus, the state should not intervene, whereas adultery continues to be illegal in many other states, including Georgia, Massachusetts, and Illinois. In general, a breach of contract is considered to be immoral. It is also illegal. However, in the case of adultery, a breach of marital contract, the recent changes in many states reflect an uncertainty as to whether it should be treated in the same way as other contracts. Denver Democratic Representative, Daniel Kagan, the proposer of the legislative change in Colorado, stated, "I see it as saying adultery is a matter between a spouse and his conscience and his God, but not his local county sheriff."<sup>8</sup>

The main point of this paper is that one's will to follow one's "conscience" is a moving thing, especially as it is heavily influenced by the people around him. Without a coordinate provided by law, one's determination to follow one's conscience may be easily lost, even if one possesses a strong morality. Without an objective social statement against the breach of marital contract, adultery would occur frequently, given that it is subject to individual discretion and that there is often too high an incentive to breach the contract. Frequent observations of adultery around us would

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<sup>8</sup>"Colorado legislators look to decriminalize adultery," [www.foxnews.com](http://www.foxnews.com) (February 22, 2013)

lead us to expect that marriage would have a short duration, lead to a greater chance of becoming heart-broken, and constitute an unfaithful, not-worthwhile relationship. Such expectations would lower the percentage of the population that enters into a traditional marital relationship. Then, it would be questionable how long the current system of marriage as the foundation of a family will last.

## 4 Moral Involvement in Law Enforcement

Until now, we have assumed that the probability of law enforcement  $r$  is independent and fixed. However, in many cases, law enforcement requires the involvement of citizens, from reporting wrongful actions to providing evidence for conviction in court. That is, often  $r_t = f(\widehat{N}_t)$ , and  $f' > 0$ . Thus, how effectively laws can be enforced also depends on the extent to which the citizens are willing to become involved in the process of law enforcement.

What causes people to be unwilling to get involved? A low  $r_t$  occurs often because people believe that there is no real reward for becoming involved, but only a cost of doing so, especially since there will be insufficient support from the public and they will be alone in doing the right thing. Whistleblowers are often punished for doing the right thing when corruption by others makes it impossible to punish the true wrongdoers. Witnesses of crimes frequently pay a very high price to come forward with information about a crime that they have witnessed. An awareness of such situations substantiates people's belief that the *individual* expected cost of getting involved is prohibitively high. It is not surprising that in many situations citizens are unwilling to get involved. In 2010, in New York, a man who was trying to help a woman who was being mugged was stabbed and left to die, while more than 20 persons passed by. In Seattle, a teenager was beaten and robbed by other teenagers, "while three security guards stood by and watched."<sup>9</sup> As shown in our analysis in Section 2, the decline of morality accelerates when the number of Good Samaritans  $\widehat{N}_t$  declines.

As  $\widehat{N}_t$  decreases,  $r_t$  decreases. As  $r_t \rightarrow 0$ , no enforcement of law would be possible, no matter how severe the punishment  $s$  is. Therefore, when the enforcement of law  $r_t$  also depends on citizen's voluntary involvement, declining moral standards accompanies ineffective law enforcement.

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<sup>9</sup>"Good Samaritan Left for Dead on City Sidewalk" (April, 25, 2010) [www.abcnews.com](http://www.abcnews.com)

**Proposition 3** *Law enforcement cannot be effective if the society has low moral standards.*

Observing a lower  $\widehat{N}_t$ , people expect a lower likelihood of law enforcement and a greater probability of successful crimes. This, in turn, will lead to more crimes, people becoming more silent, and the ineffectiveness of law enforcement rising, and so on. This shows the importance of maintaining the morality of society in order to effectively enforce law. Without morality, law enforcement may not be possible. Hence, morality cannot be separated from law.

Overall, our analysis highlights the interactive, mutually-enhancing relationship of morality and law. Our analysis in Section 3 shows that law makes it difficult for moral rules to weaken. The result in this section shows that maintaining moral standards are, in turn, important to make people more willing to become involved in the process of law enforcement. This implies that the objective of the rule making should incorporate this important dynamic between the two types of rules, considering how law and morality interact and influence each other. Law that maintains morality becomes easy to enforce.

## 5 Conclusions

This paper discusses the relationship between morality and law and re-examines the role of law, with a model that shows how easily moral standards can decline in the process of social learning. We find that law generally slows the decline of the standards and provides the lower bound of public morality. This aspect of law indicates when there should be a law. We argue that legal rules are necessary when moral rules are easily swayed by social influence, especially when such a commitment to regulate behavior is desirable in the long run, even if the idea of such a commitment is not popular at present. We also discuss how important it is to maintain moral rules with the help of law when the enforcement of law itself depends on people's morality, which determines their willingness to get involved.

## A Appendix

**Proof of Lemma 1.** Since  $m_d^*$  is the largest value of  $m_d$ , by construction,  $\frac{N_d^*}{N} = 1 - F(m_d^*) = \frac{(c-m_d^*)}{c}$ . Thus, there are  $\frac{N_d^*}{N}$  fraction of population with  $m_l > m_d^*$ ,  $d = 1, 2$ . Under Assumption 1,  $m_l > cF_d(m_l)$  for all  $m_l > m_d^*$ . Therefore,  $\frac{(c-m_l)}{c} < 1 - F_d(m_l) < \frac{(c-m_d^*)}{c} = \frac{N_d^*}{N}$ . Thus, from (3), a person  $j$  with  $m_j = m_d^*$  expects that all of the other neighbors  $l$  with  $m_l > m_j$ , a  $N_d^*/N$  fraction of people, would condemn  $A$ . Let  $m_{d-1}^*$  be the second largest  $m_d$ , and  $m_{d-2}^*$  be the next largest  $m_d$ , if any. Then, it must be that  $m_k < cF_d(m_k)$  for all  $m_k$  in the range where  $m_{d-1}^* < m_k < m_d^*$ . Therefore,  $\frac{(c-m_k)}{c} > 1 - F(m_k)$ . This implies that even under the expectation that everyone else who has a slightly higher moral value condemns, the person with  $m_k$  would not condemn. Thus, the person with  $m_k$  expects that none of the  $m_k$  in the range where  $m_{d-1}^* < m_k < m_d^*$  would. For all  $m_n$  in the range where  $m_{d-2}^* < m_n < m_{d-1}^*$ , if any,  $m_n > cF_d(m_n)$ . Let  $N_d^n/N$  the fraction of people that  $m_n$  would expect to condemn among all of those people with  $m > m_n$ . Since  $m_n < m_k$ ,  $\frac{(c-m_n)}{c} > \frac{(c-m_k)}{c} > 1 - F(m_k) > N_d^n/N$ ,  $m_n$  in this range would not condemn. Similar logic applies to the range below if any. Thus, the rational expectation is that  $\frac{N_d^*}{N}$  fraction of people condemn.

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