



Show off or hide it? Property rights and status competition shape wealth display, evil eye beliefs, and egalitarian norms[☆]

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ABSTRACT

Visible wealth creates both prestige and envy. In some societies, prestige wins with people gaining status through conspicuous consumption, while in others, envy dominates with people concealing signs of success. We argue that these are alternative cultural equilibria that can be explained by two structural features of societies: (1) the intensity of status competition (how strongly relative status translates into payoffs) and (2) the strength of property rights (how costly it is for others to damage or appropriate others' wealth). We formalize this context in an economic model in which players choose their level of production and consumption, where consumption acts as a signal of a player's status, and players destroy others' wealth at a cost. The model predicts three regimes. When property rights are very weak and status competition is strong, the model predicts compressed and homogenized consumption (i.e., egalitarianism) and low production. Standing out invites destruction, the threat of which serves as a leveling mechanism. This first regime is consistent with many hunter-gatherer societies. As property rights increase, a second regime emerges with most individuals concealing wealth to some degree. This second regime is consistent with societies where evil eye beliefs are common; evil eye may be a culturally evolved mechanism that encourages wealth shielding. When property rights are strong, conspicuous consumption becomes the dominant strategy. This effect increases when the intensity of status competition is stronger, as long as property rights are strong. This third regime is consistent with many highly developed societies. We derive testable predictions linking institutions and competitive intensity to (a) display versus concealment, (b) visible inequality, and (c) productive versus destructive competition, and evaluate them against existing evidence.

1. Introduction

Societies differ sharply in how they respond when someone prospers. In some societies, buying an expensive car or building a larger house earns admiration and inspiration. In these societies, individuals tend to engage in conspicuous consumption, publicly signaling success (Grafen, 1990; Veblen, 1899; Zahavi, 1975). In other societies, the same visible signs of success would invite resentment, ridicule, theft, and sabotage, and in these societies, individuals tend to strategically conceal success as they attribute misfortune to envy, witchcraft, or the evil eye (Dundes, 1981; Foster, 1965; Gershman, 2015). In this paper, we show how these behaviors may be alternative strategies in the trade-off between

success, inviting prestige, and envy. We focus on two dimensions that vary between societies and that may vary not only between countries but also between socio-economic classes within a single city. The first is what we call the strength of status competition; the degree to which material and social payoffs from status competition depend on relative standing. The second is what we call the strength of property rights; so the degree to which institutions and norms make predation, theft, sabotage, and other forms of harm costly (Ellickson, 2009; Ostrom, 2000; Platteau, 2009). Where property rights are weak, informal sanctions and cultural practices can still regulate conflict, but they may do so unevenly (Mathew & Boyd, 2011).

Our research is motivated by three observed cross-cultural

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differences that seem to be connected. The first two concern how individuals respond to others' envy directed at them, namely by shielding wealth (1) or by suppressing differentiation altogether (2). The third concerns the flip side, namely how individuals act when they envy others (3). Our framework brings these two sides of envy into one model and seeks to answer several seemingly unrelated questions:

1. **Wealth-concealment and evil eye beliefs:** Why do many societies treat envy as hazardous and discourage visible success, whereas others encourage conspicuous display? Evil eye beliefs, the belief that others' envy can cause harm, remain prevalent across the Middle East, South Asia, Latin America, Africa (see Fig. 1), but also large parts of Southern and Eastern Europe (Gershman, 2015; Pew Research Center, 2014, 2018). From a signaling perspective, these protective behaviors seem to forego the clear prestige benefits of advertising success to others (Henrich & Gil-White, 2001).
2. **Egalitarianism:** Why do some societies have strong leveling norms and compressed material inequality, while others have steeper hierarchies and larger wealth differentials? For example, although egalitarian norms are associated with hunter-gatherers (e.g., (Suzman, 2017)) and many mobile forager societies have been documented maintaining egalitarian outcomes through ridicule, demand sharing, and coalitionary sanctions (Boehm et al., 1993; Lee, 1969; Woodburn, 1982), egalitarianism is not universal even among foragers. Ecological conditions, storage opportunities, and inter-group dynamics seem to be the key features that support stable hierarchies (Marlowe, 2005; Marquardt, 2014).
3. **Productive versus destructive competition:** How do individuals act on their own envy of more successful others: by working harder (productive competition) or by punishing, sabotaging, or destroying rivals (destructive competition)? Experimental evidence reveals stark cross-cultural differences in willingness to harm others' wealth, even at personal cost, with destructive behaviour increasing under resource scarcity (Abbink & Herrmann, 2011; Abbink & Sadrieh,

2009; Prediger et al., 2014). If others are willing to harm you at a cost to themselves, advertising success invites harm. Why might resource scarcity incentivize destructive rather than productive competition?

Some of these outcomes may covary because they are jointly shaped by the strength of status competition and property rights. When status competition is intense and property rights are weak, visible success invites retaliation, so cultural practices that conceal wealth or compress status become advantageous. In the extreme, where resource constraints intensify competition and wealth cannot be stored or defended, egalitarian-enforcing norms dominate, and there is little incentive to produce beyond subsistence. When property is secure, the prestige benefits of signaling outweigh the risk, and conspicuous consumption becomes the dominant strategy. Across generations, cultural evolution stabilizes the norms and beliefs that coordinate behavior under each of these conditions (Henrich et al., 2016), whether leveling practices, evil eye beliefs, or norms that celebrate display.

We formalize this argument with a game-theoretic model. In the model, each individual chooses how much to produce and how much to visibly consume, where visible consumption signals status. Individuals then destroy others based on their status signal, at a personal cost to themselves. Utility in the game is based on a status competition, where players benefit from being of higher status than others but in doing so invite envious destruction. Two parameters summarize the broader socioecological and institutional conditions. The strength of status competition sets how much relative standing affects payoffs from the status competition, and the strength of property rights sets how costly destruction is. Together these parameters generate three regimes. When property rights are weak and competition is strong, most individuals conceal or suppress consumption, and we observe egalitarian leveling. At intermediate property rights, individuals conceal wealth to varying degrees, the pattern associated with evil eye beliefs. When property rights are strong, displaying wealth is safe and conspicuous consumption dominates. The strength of status competition exaggerates these

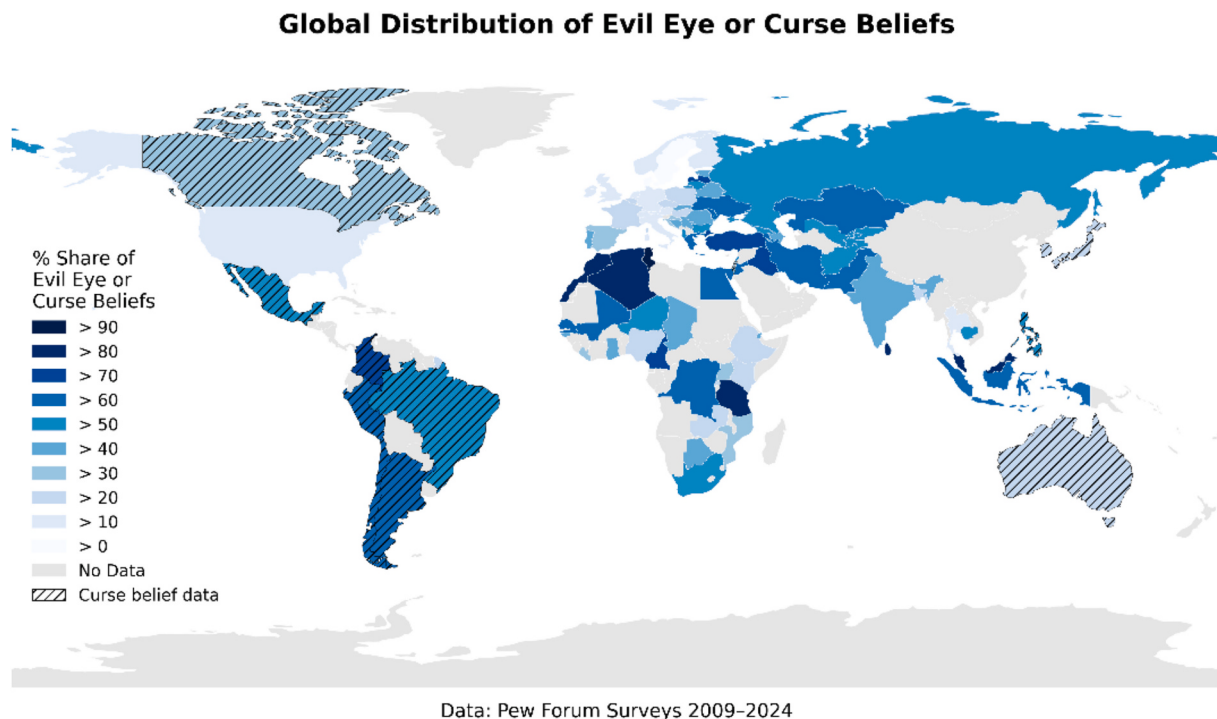


Fig. 1. Prevalence of evil eye and curse beliefs across regions. Adapted from (Winkler, 2017). Uses most recent Pew Forum Survey data on evil eye where available. Where evil eye beliefs are unavailable but curse beliefs are available then uses most recent curse beliefs data available. Evil eye data is represented by solid colors and curse data with diagonal bars.

behaviors. When the status competition is strong, conspicuous consumers greatly over consume and wealth concealers conceal more of their wealth. The combination of the two parameters does work that neither does alone, since weak property rights make display dangerous only when status competition is strong enough to motivate destruction. We evaluate these predictions informally against existing evidence on hunter-gatherer egalitarianism, evil eye beliefs, and cross-cultural variation in destructive competition.

We now take each of these three phenomena in turn and locate it in the literature it has generated, beginning with the trade-off between conspicuous consumption and concealment.

2. The evolutionary trade-off between wealth display and concealment

Research on conspicuous consumption and evil eye beliefs largely exists in two separate literatures. Conspicuous consumption, consuming in ways that are socially legible as a signal of prosperity, has its roots in Veblen's work (1899), later formalized through costly signaling theory (Grafen, 1990; Miller, 2009; Zahavi, 1975). Psychological research has linked conspicuous consumption to self-presentation (Belk, 1988), status pursuit (Griskevicius et al., 2007), and mate competition (Sundie et al., 2011). Conspicuous consumption is highest in societies that are unequal and have high status competition. Here, there are high stakes to relative status rank (Frank, 2005; Walasek & Brown, 2015). Importantly, conspicuous consumption is only one form of status signaling. When accumulated wealth can be displayed safely, status competition may manifest through visible consumption and material displays. However, when such displays are at risk, people may use other methods to display their status such as through sharing or skill demonstrations (Bliege Bird & Smith, 2005; Hawkes, 1991).

At the other end of the trade-off are evil eye beliefs, the belief that envy can cause harm, often assumed to be supernatural, through a gaze or malevolent feelings, whether intentional or unintentional (Schoeck, 1969). These beliefs have been described as an "ancient widespread superstition" and a "superstition of all times and people" (Elworthy, 1895; Seligmann, 1910; quotes from the subtitles). These beliefs often come with practical rules for avoiding the evil eye, such as downplaying success, deflecting praise, hiding new possessions, and avoiding ostentation, including conspicuous consumption (Elworthy, 1895; Seligmann, 1910). From a Western perspective, these behaviors are puzzling and indeed seem culturally maladaptive because they forego the benefits of advertising one's success, such as attracting mates, allies, or gaining influence through prestige (Henrich & Gil-White, 2001). Yet evil eye beliefs remain prevalent throughout the Middle East, South Asia, Latin America, and Africa (Pew Research Center, 2012, 2014), despite the presence of organized religions that ostensibly reject such superstitions and despite high levels of formal education in many of these populations. Indeed, evil eye beliefs were common in Europe before the Industrial Revolution and persist today in parts of Southern and Eastern Europe. For example, as depicted in Fig. 1, more than 50% of Greeks, Ukrainians, and Russians hold such beliefs (Gershman, 2016; Oster, 2004; Pew Research Center, 2018; Schnoebelen, 2009).

We argue that conspicuous consumption and wealth concealment are a cultural evolutionary tradeoff, adaptive strategies for navigating status competition depending on local conditions. All people want status, even if all other material benefits are suppressed, mating competition remains. The question is whether status signaling is worth the risk of others using destructive strategies in the status competition.

2.1. Egalitarianism as enforced concealment

A second phenomenon we aim to explain is why strong egalitarian norms emerge in many, but not all, hunter-gatherer societies. Many mobile forager groups are noted for their egalitarianism, enforcing a flat distribution of resources and preventing status differences (Cashdan,

1980; Gurven, 2004; Lee, 1969; Smith et al., 2010; Woodburn, 1982). Classic ethnographic accounts illustrate how these norms operate. Richard Lee's (1969) famous description of the !Kung hunter-gatherers describes how Lee, after procuring a large, fat ox for a Christmas feast, was met not with praise or gratitude but with mockery that the ox was meager and worthless. Lee later learned that this practice of "insulting the meat" - ridiculing a hunter's catch, instead of praising him - served as a way to prevent anyone from becoming arrogant or claiming a higher status by virtue of a successful hunt. This and other practices, such as demand sharing and ostracism, act as leveling mechanisms to maintain equality (Boehm, 2012; Boehm et al., 1993).

These leveling mechanisms can be understood as a form of enforced wealth concealment. Evil eye beliefs discourage individuals from displaying success. Hunter-gatherer leveling norms are a more extreme cultural trait that more forcefully suppresses the signaling of differential ability or productivity. At a functional level, Cashdan (1980) argues that sharing operates as mutual insurance, when returns are highly variable and storage is limited, and leveling norms enforce the reciprocity that sustains it. Wiessner (1982), Gurven (2004) and Woodburn (1982) make similar arguments for the existence of egalitarian norms among hunter-gatherers. However, it is unclear why mutual insurance should need to turn into strict egalitarianism, and not some other food sharing norms. Consistent with this perspective, rates of egalitarianism vary considerably among hunter-gatherer groups, predicted by ecological conditions (Binford, 1980; Bird et al., 2019; Gurven, 2004; Kelly, 1996). The Calusa of North America, for example, living in coastal environments with plentiful resources, developed large, complex societies with geographic stability and hierarchical structures (Marquardt, 2014). Other explanations for hunter-gatherer egalitarianism have also been proposed. Hawkes (1991), Hawkes et al., (1993) argue that food sharing emerges as a costly prestige signal, with egalitarianism a byproduct of this behavior, and Blurton Jones (1984, 1987) instead argues that in hunter-gatherer societies, the marginal returns for protecting one's wealth are too low and so theft becomes tolerated.

Hunter-gatherer societies are often treated as a proxy for ancestral conditions, with their psychology, social organization, and ecology assumed to be more similar to human ancestral conditions than those found in post-agricultural and Western, educated, industrialized, rich, and democratic (WEIRD) societies (Apicella, Norenzayan and Henrich, 2020; Henrich et al., 2010; Marlowe, 2005). Thus, features like egalitarianism are sometimes assumed to be a more "natural" human condition, particularly in popular discussions. In line with Kelly (2013) and Bergerhoff Mulder et al. (2009) we treat enforced egalitarianism as a culturally evolved response to specific socioecological conditions rather than a default ancestral state. Our model extends these anthropological accounts to explain why egalitarian norms emerge, and why these norms are primarily associated with hunter-gatherers but also not found in all hunter-gatherer societies.

2.2. Destructive vs productive competition

The third phenomenon we aim to explain is the variance in destructive competition - the willingness to impose costs on successful others. In environments perceived as zero-sum, harming rivals (destructive competition) can improve relative standing more cheaply than increasing one's own production (productive competition) (Bergeron et al., 2025; Gavrillets & Seabright, 2025). This tendency has a direct link to wealth display. If success attracts sabotage, the rational response is to hide success.

This desire to harm others, even at personal cost, has been measured using the Joy of Destruction game (Abbink & Herrmann, 2011; Abbink & Sadrieh, 2009). In this game, participants can pay to destroy other participants' endowments, which harms the other more than themselves, but with no direct benefit. Behavior in this game reveals stark cross-cultural differences. Prediger et al. (2014) assessed the effects of resource scarcity on destructive behavior among Namibian pastoralists.

Overall, 32% of participants chose to destroy their opponent's wealth, but people in regions with low rainfall destroyed significantly more often (40%) compared to those in regions with high rainfall (23%). Cross-cultural studies of antisocial punishment, punishing cooperators in public goods games, reveal similar variation, with societies differing markedly in their tendency toward destructive behaviors (Herrmann et al., 2008).

Resource scarcity and zero-sum competition appear to influence multiple aspects of social behavior. Gatiso et al. (2015) found that resource scarcity in commonly managed Ethiopian forests explained decreased cooperation. Bone and Raihani (2015) found that punishment can be triggered by both revenge and a desire for equality. Vardy and Atkinson (2019) showed that after a cyclone in Vanuatu, participants reduced prosocial behavior toward both ingroup and outgroup members. Chinoy et al. (2023) find that Americans with zero-sum thinking are more likely to perceive both in-group and out-group competition. These data are all consistent with the idea that when the world appears zero-sum, destructive strategies become more attractive.

2.3. Prior explanations and gaps

Our model offers a unifying ultimate explanation that complements several prior proximate and separate, disconnected explanations for each of these phenomena. In doing so, it brings into conversation these three adjacent literatures – conspicuous consumption, evil eye beliefs, and leveling/destructive competition – that rarely speak to each other, despite describing overlapping strategic terrain. Prior work has provided valuable explanations, but operating at different levels. Some describe the mechanism that enforces outcomes whereas others describe the selective pressure that favors it. Our contribution is a single functional account that connects all three behaviors and which provides both an individual-level explanation and societal outcomes which distinguishes our model from the existing literature.

For evil eye beliefs, Gershman (2015) shows that evil eye beliefs are positively associated with inequality and weak property rights, and negatively associated with economic development. He argues that inequality drives evil eye beliefs by intensifying envy. Our framework connects and contrasts with this account. We agree that property rights matter but argue that inequality may be endogenous, as much a consequence as a cause. Many hunter-gatherers, for example, are equal as a consequence rather than a cause. The same level of inequality can support different equilibria, conspicuous consumption or wealth concealment, depending on the vulnerability of successful individuals to envious harm.

For hunter-gatherer egalitarianism, Boehm's (2012); Boehm et al., 1993) reverse-dominance theory explains the proximate enforcement mechanisms, coalitions suppressing would-be dominants, but not why some societies develop reverse dominance hierarchies while others do not. Cashdan (1980) argues that high variability in food production, combined with limited storage, favors reciprocal sharing as insurance. Woodburn (1982) emphasizes that agricultural activities required the accumulation of grain and tools, which needed property rights protection, shifting incentives away from strict egalitarianism. Blurton Jones (1984, 1987) argues that food sharing in hunter-gatherer societies occurs due to theft being too costly to punish. These factors are likely important, but they do not by themselves explain why leveling, concealment, and destructive retaliation often move together, nor do they provide a unified framework for predicting when egalitarianism versus hierarchy will emerge.

For destructive competition, explanations have focused on resource scarcity (Prediger et al., 2014), weak institutions (Herrmann et al., 2008), and cultural differences in norms around punishment (Henrich et al., 2006). But these accounts are rarely integrated with theories of wealth display and concealment, even though the threat of destruction is precisely what makes visible success dangerous.

Our account reveals why hunter-gatherer societies with weak

property rights and intense local competition tend toward egalitarianism and low visible conflict, but also low productivity. Low- to middle-income farming and herding societies have stronger property rights than nomadic foragers but still face resource scarcity and inter-group competition; these conditions are associated with higher inequality, more frequent destructive behaviors such as witchcraft accusations and sabotage, and higher prevalence of evil eye beliefs (Gershman, 2015, 2016; Oster, 2004). In high-income societies with strong property rights and relatively positive-sum economic conditions, competition becomes more productive, conspicuous consumption flourishes, and evil eye beliefs recede to negligible levels, even where inequality remains high. To test these predictions, we develop a game-theoretic model of consumption behavior. Our model has two focal parameters, the strength of status competition and the strength of property rights, which jointly determine each individual's consumption behavior. We then study how these individual level consumption decisions manifest into societal level patterns.

3. Methods

We formalize the interaction between the strength of status competition and property rights using a game-theoretic model. Each player has a personal ability (e.g., an individual's skill or strength), which determines what they can produce and consume. Players then compete in a status competition against one another and receive utility based on their relative consumption. Finally, players destroy each other at a personal cost and are the targets of destruction from others. Afterwards, players update their consumption based on the results, and the game is repeated until an equilibrium is reached.

Each player has an ability (a), with abilities distributed according to density $f(a)$, which informs how much they can produce. Ability is a measure of how much someone is able to produce and can be shaped by a number of factors, such as education, wealth, social standing, or any other real-world factors that give some people the ability to produce more than others. Ability captures the fact that there are differences in how much people can produce, but we do not focus on where these differences come from. Players first produce some amount of goods (y), where production is constrained by their ability (a). Producing above or below one's ability is costly, for example, by having to work too hard or by the consequences of the opportunity cost of not achieving one's potential. Players then choose to consume some portion of goods (s). Consumption is constrained by production in the same way that production is constrained by ability. Players can consume more than they produce at a cost, for example, through credit or owed favors, or they can consume less than they produce, again at a cost. Individuals have some baseline amount (δ) of consumption for subsistence, with any additional consumption representing the player's status.

After observing the consumption of all the other players and thus inferring their status, players can then choose a level of destruction. Destroying others reduces their utility, but it requires the destroyer to pay a cost. The cost of this destruction is moderated by the level of property rights in the society (ρ). Destruction does not directly affect a player's status; however, it indirectly affects status through players shifting their consumption in response to destruction. Destruction represents acts such as theft, sabotage, or violence that reduce the destroyer's wealth.

Importantly, players cannot directly observe each other's true ability or total production; they can only see the level of conspicuous consumption. From the consumption of others, players form a perception of others' status in comparison to their own consumption. Players are motivated to destroy those of higher status than themselves in an attempt to dissuade high status players from consuming and thus closing the status gap. Overall, players are trying to maximize their returns from the status competition, which is determined by the consumption gap ($\frac{s_j}{s_i}$) between the target player's consumption (s_j) and the consumption of

others (s_j), while avoiding destruction from others. The degree to which this difference in consumption affects utility is controlled by the strength of status competition (λ). A flowchart of the game design is provided in Fig. 2.

The model's two focal parameters are the strength of status competition (λ), which is a multiplier on the gain from the status competition, and property rights (ρ), which control the cost of inflicting destruction. Higher λ means a more competitive environment in which having greater status yields disproportionately more resources. Higher ρ represents stronger institutions and norms for protecting property, making destruction more costly. These parameters can vary across societies: for example, a society where available resources are fixed and one person's gain is another's loss has a high λ (i.e., zero-sum competition), while one with growing resources and opportunities has a lower λ (i.e., more positive-sum). A society with a strict rule of law and policing has a high ρ , whereas a lawless society or one with communal property has a low ρ . For instance, the United States would be an example of a society with strong status competition and strong property rights, as compared to Nordic countries, which have a stronger social safety net, weakening the status competition.

We define the key model variables and parameters in Table 1, Table 2, and Table 3.

Players select production and conspicuous consumption. These variables jointly determine whether equilibrium behavior favors wealth display or concealment.

These variables are fixed agent-level variables. Ability determines how costly it is for players to produce beyond their baseline.

The strength of status competition scales how much relative standing affects payoff, while property rights determine the costliness of destructive retaliation. Together, these parameters generate the social, cultural, and environmental factors, which shape player behavior. We also include baseline subsistence as a parameter, which determines how much players seek to consume regardless of the status competition.

Table 1

Model choice variables.

Variable	Meaning	Domain
y	<u>Production</u> : Units a player produces (Hidden from others)	$y \geq 0$
s	<u>Consumption</u> : Units a player consumes from what was produced (Signal; Visible to others)	$s \geq 0$

Table 2

Agent-level state variables.

State Variable	Meaning	Domain
a	<u>Ability</u> : Determines how much a player can produce (Hidden from others)	$a_{\min} \leq a \leq a_{\max}$ In the manuscript we consider $a_{\min} = 0.01$ and $a_{\max} = 6$

Utility Functions.

To model behavior, we specify a utility function (U):

$$U(y_i, s_i; a_i) = \underbrace{h(y_i, s_i; a_i)}_{\text{Deviation Costs}} + \underbrace{q(s_i)}_{\text{Status Competition Benefit}} + \underbrace{d(s_i)}_{\text{Cost of Being Destroyed}} + \underbrace{c(s_i)}_{\text{Cost of Destroying}} \quad (1)$$

$$h(y_i, s_i; a_i) = -\underbrace{\frac{1}{2}(y_i - a_i)^2}_{\text{Over/under-production costs}} - \underbrace{\frac{1}{2}(s_i - y_i)^2}_{\text{Over/under-consumption cost}} \quad (2)$$

$$q(s_i) = \lambda \int \frac{s_i}{s(a') + \delta} f(a') da' \quad (3)$$

A game theoretic model of status competition

One round of play. Each of N players produces, consumes and destroys based on a status competition.

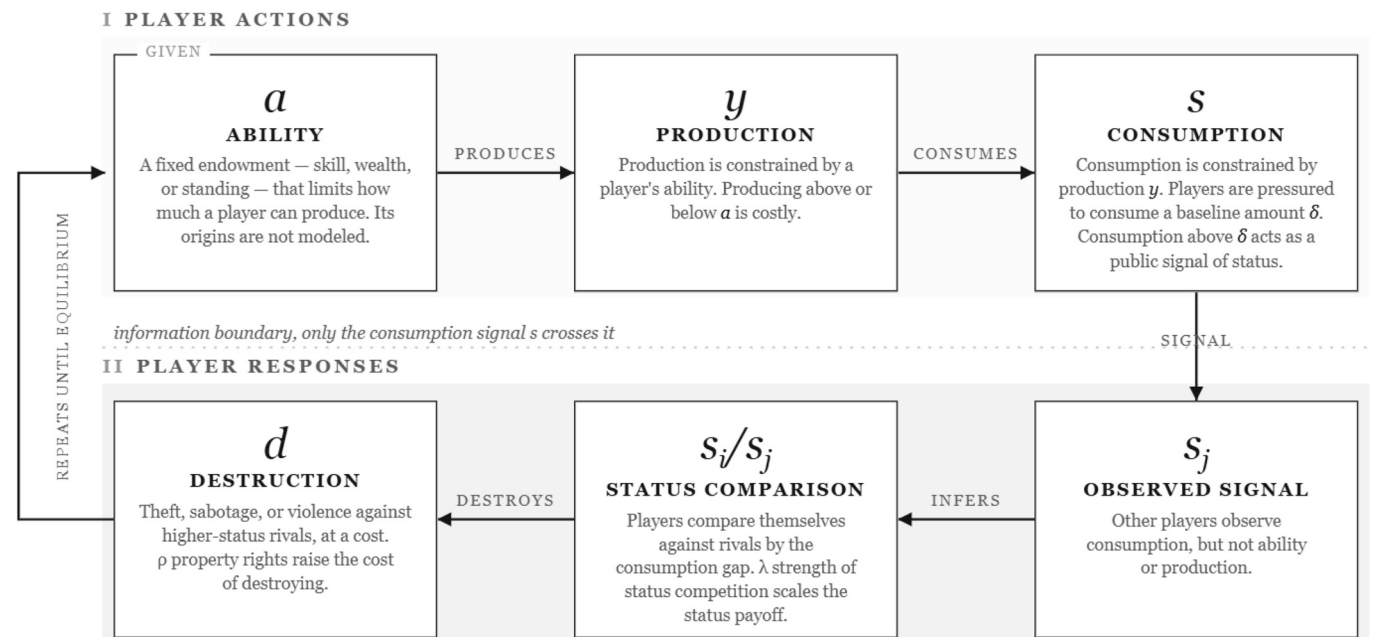


Fig. 2. Flowchart of game structure. Each of N the players has a fixed ability (a), which constrains how much they can produce (y) and in turn, how much they can consume (s). A player's consumption (s) acts as a status signal that all other players can see. Based on observing the consumption signals of all other players (s_j), players infer their own relative status s_i/s_j and destroy others based on that status. This process is repeated until the system reaches equilibrium. Strength of status competition (λ) and strength of property rights (ρ) are the two focal parameters which shape player actions, with baseline subsistence (δ) acting as an additional parameter applying pressure on player consumption.

Table 3

Model parameters.

Parameter	Meaning	Domain
λ	<u>Strength of status competition:</u> Determines how strongly relative status translates into payoffs	No competition; player's status has no effect: $\lambda = 0$ Noncompetitive distribution of resources; benefit of status is lessened: $0 < \lambda < 1$ Proportional distribution of resources; player benefits exactly as their status states: $\lambda = 1$ Competitive distribution of resources; status has an overemphasized role: $\lambda > 1$
ρ	<u>Property rights:</u> Manipulates how costly it is to destroy other's property	Weak property rights: $0 < \rho < 1$ Moderate property rights: $\rho = 1$ Strong property rights: $\rho > 1$
δ	<u>Baseline Subsistence:</u> Determines a player's baseline consumption regardless of the status competition	No subsistence; consumption only matters for the status competition: $\delta = 0$ Subsistence; some amount of consumption is desired regardless of the status competition: $\delta > 0$

$$d(s_i) = -\frac{\lambda}{\rho} \int \left(\frac{s_i}{s(a')} \right)^2 f(a') da' \quad (4)$$

$$c(s_i) = -\lambda \rho \int \left(\frac{s(a')}{s_i} \right)^2 f(a') da' \quad (5)$$

A player's utility (1) has four components: deviation costs (2), status competition benefit (3), cost of being destroyed (4) and cost of destroying others (5). For deviation costs (2), players lose utility when their production deviates from their ability (i.e., over-/under-production: producing more/less than their ability allows). Individuals can put in extra effort to produce more or slack to produce less, but both are costly, encouraging individuals to produce according to their ability. This mechanism constrains how much players produce and effectively creates differences between individuals' wealth that are rooted in their exogenously given ability. The lower ability individual can still produce as much output as their high ability counterpart, but at a greater cost to themselves. Just as with production, players can consume more (or less) than they have produced at a cost.

Status competition benefit (3) and both destruction costs (4) and (5) are defined comparatively. The integrals in these equations average consumption over the society, where $s(a')$ is the consumption of a player of ability a' and $f(a')$ is the distribution of abilities in the society. In the manuscript, we primarily consider ability to be uniformly distributed between 0.01 and 6, as this gives a range of abilities to consider without making any assumption about the shape of ability's distribution in a society. Alternative distributions are covered in the supplementary information, including lognormal distributions, where societies are mostly made up of similarly skilled individuals, with only a few highly skilled individuals. In the status competition (3), players are rewarded for consuming more than the rest of the group, and the returns from this comparison increase when the strength of social competition (λ) is higher. Additionally, players are also urged to consume some baseline level of consumption (δ) for subsistence. This ensures that players cannot simply reduce their consumption to 0 to avoid all destruction.

Performing well in the status competition and out-consuming the rest of the group attracts destruction (4), mimicking real-world envious destruction (Abbink & Sadrieh, 2009). Importantly, our model does not

explain how envious destruction evolves, but rather how envious destruction affects consumption behavior. Destruction's effect and cost are directly modeled, representing a behavior that may have evolved either directly to improve social standing or indirectly via another mechanism, such as the joy of destruction. In our model, destruction costs increase quadratically, where a player who greatly out-consumes the rest of the group is the target of more destruction than someone who only slightly out-consumes others. This effect is moderated by social competition (λ) and property rights (ρ). As social competition increases, the amount of destruction faced also increases because in more competitive environments, people will be more willing to turn to destruction as a way of leveling the playing field. Property rights have an inverse effect on destruction. When property rights increase, the amount of destruction received decreases, reflecting the increased cost of destroying. Finally, players also pay a cost to destroy others (5). This cost has an inverse relationship with how much destruction a player receives. This represents that players who perform poorly in the status competition spend more effort on destroying others as a leveling mechanism. If you cannot out consume others, then you need to find an alternative way of competing in the status competition. Again, strength of social competition (λ) increases the amount of destruction, meaning it has a positive relationship with destruction costs. Property rights (ρ) also have a positive relationship with destruction costs, because the higher property rights the more costly it is to destroy others.

When choosing production and consumption levels, players face a trade-off. Based on the deviation costs (2), players should consume exactly what they produce and produce as per their ability. However, given the incentives for high consumption in the social utility function (3), players are encouraged to deviate from this choice and over-consume. Finally, due to the risk of being destroyed when a player's consumption is too high (4), players are encouraged to decrease their consumption to reduce the amount of destruction they receive. Alternatively, low consumers are encouraged to consume more to avoid spending too much on destroying others (5). Simply put, players must balance the individual costs of deviating from optimal production and consumption against the social benefits of higher status and the destruction that higher status invites. Conceptually, we label under-consumption as wealth-concealment and over-consumption as conspicuous consumption.

With this utility function, we can solve for the optimal actions. The full derivations are presented in the supplementary information. We first solve for optimal production (y_i^*):

$$y_i^* = \frac{a_i + s_i}{2} \quad (6)$$

We can thus replace y_i in the utility function with y_i^* , and solve for optimal consumption (s_i^*). We are left with the following first-order condition, where optimal consumption is the solution in s_i to the following equation:

$$(\rho + 4\lambda B)s_i^4 - (a_i + 2\lambda A)\rho s_i^3 - 4\lambda \rho^2 C = 0 \quad (7)$$

Where,

$$A = \int \frac{1}{s(a') + \delta} f(a') da'$$

$$B = \int \frac{1}{s(a')^2} f(a') da'$$

$$C = \int s(a')^2 f(a') da'$$

To find the optimal level of consumption for an individual, we need to find the positive root $s_i > 0$ which solves Eq. (7). Solving for s_i is particularly difficult because any changes in one player's consumption behavior will change the status comparison that every other player makes, potentially changing their optimal consumption as well. As such,

we use a brute force algorithm whereby each round, all players solve for their optimal consumption and repeat the process until equilibrium. The analytic results of the model were formally verified in the Lean 4 proof assistant using the Mathlib library. All 17 theorems compile with no incomplete proofs and depend only on Lean's three standard foundational axioms. Please refer to the supplementary information, or code provided, for more details.

4. Results

We analyze how the strength of the status competition and the strength of property rights shape (i) individual display versus concealment of wealth via chosen consumption levels, (ii) population-level inequality in visible consumption, and (iii) destructive versus productive competition. We first analyze individual-level consumption behavior, identifying when individuals optimally over-consume (conspicuous consumption) or under-consume (wealth concealment). Next, we show how these individual choices coalesce into distinct societal patterns, with a particular interest in egalitarian behaviors similar to those found in hunter-gatherer societies. Finally, we examine destructive behavior, distinguishing between absolute and effective destruction, and demonstrate how weak property rights combined with intense status competition channel competition into destructive rather than productive forms.

4.1. Conspicuous consumption and wealth concealment

First, we seek to know under what conditions a player will over-consume (i.e., conspicuous consumption, $s_i^* > y_i^*$) versus under-consume (i.e., concealment, $s_i^* < y_i^*$). We first note that, given eq. (6) for optimal production (y_i^*), optimal production will always occur at the midpoint between optimal consumption (s_i^*) and ability (a_i). As such, if $s > a$ then $s > y$, and similarly if $s < a$ then $s < y$ and if $s = a$ then $s = y$. Thus, we need to solve eq. (7) for when optimal consumption is exactly equal to ability ($s_i^* = a_i$), or a player neither over-consumes nor under-consumes. For the same reasons that we cannot directly solve for optimal consumption from eq. (8), we also cannot formally state when $s_i^* = a_i$, we can state that this occurs at most once in the following proposition.

4.1.1. Proposition 1 (One-crossing proposition)

Holding the aggregate signaling environment fixed, there exists at most one ability threshold $a^\dagger$ such that:

$$s_i^* > a_i \text{ for } a_i < a^\dagger$$

$$s_i^* < a_i \text{ for } a_i > a^\dagger$$

This means that low ability players will over-consume and high ability players will under-consume, with $a^\dagger$ acting as the boundary between low and high ability players. To prove this, we define a function $G(a_i)$, which is the marginal utility function from Eq. (1), evaluated at $s_i = a_i$:

$$G(a_i) = A - \frac{2a_i B}{\rho} + \frac{2\rho C}{a_i^3} \quad (8)$$

And differentiating this with respect to a_i :

$$G'(a_i) = -\frac{2B}{\rho} - \frac{6\rho C}{a_i^4} < 0$$

Given that the derivative with respect to a_i is negative, this means that $G(a_i)$ is always decreasing and can only cross 0 at most once. This tells us that all low ability players will over-consume and all high ability players will under-consume, with the boundary being given by $G(a^\dagger) = 0$, but once again we cannot solve for the boundary location analyti-

cally. Note that $a^\dagger$ may not occur within our ability range $[a_{\min}, a_{\max}]$, meaning that the whole range could be made up of over-consumers or under-consumers.

We plot over-consumption and under-consumption for different ability levels in Fig. 3, along with the boundary point given by $G(a^\dagger) = 0$, and find that this is primarily determined by the strength of property rights (ρ). When destruction is cheap under weak property rights, players tend to conceal, and when destruction is expensive under strong property rights, players tend to display. This finding follows from the mathematical formulation of $G(a_i)$, which only includes the strength of property rights (ρ) and not the strength of social competition (λ). Strength of social competition (λ) only affects the outcome insofar as it changes average consumption in A , B and C . Across the three panels, we can see that ability largely determines the strength to which a player over- or under-consumes, but does not greatly affect the boundary of over- and under-consumption. High-ability players have more to lose from retaliation and therefore conceal more strongly, while low-ability players are more likely to gamble on display. That is, we would predict more status signaling among those who are less able to afford it. Status competition also changes how aggressively players over- or under-consume, but it largely does not affect which strategy a player follows, outside of very weak social competition.

$$a^\dagger \delta = 0.1$$

Fig. 4 shows how these individual strategies scale across the ability spectrum for different parameters. Given the varying strengths of status competition and property rights. Under intense status competition, behaviors become more extreme. Low-ability individuals stretch their over-consumption to avoid falling hopelessly behind, while high-ability individuals suppress consumption to avoid retaliation. This results in consumption differences being compressed across ability. People's consumption levels appear more similar to each other than to their underlying ability or productivity. People with similar cars, houses, and lifestyles may have very different levels of debt and wealth. Under weak status competition, these pressures relax, and consumption tracks ability more closely. Property rights determine who tends to display vs conceal, as also seen in Fig. 3. Low ability players will always display, whereas high ability will always conceal, but who counts as low and high ability for this purpose is determined by property rights. When property rights are strong, more agents across the ability distribution will over-consume because retaliation is costly and over-consumption is therefore safer. When property rights are weak, even moderately successful individuals conceal because the marginal risk of being targeted rises sharply. In that sense, property rights do most of the directional work, and status competition sets the intensity.

$$\rho a^\dagger \lambda \delta = 0.1$$

Notably, in all conditions, we see that over-consumers are also over-producers, and similarly, under-consumers are also under-producers. This comes from the fact that optimal production is the midpoint between ability and optimal consumption. However, this also has deeper implications for the role of status competition in a society's production. The conditions that favor over-consumption, namely, strong property rights, also lead to over-production. As such, we predict a positive correlation between economic production and property rights. When property rights are strong, then strong status competition promotes even more over-production. To ensure that over-consumers can afford to consume as much as they would like, they must also over-produce. The reverse of this is that weak status competition and weak property rights lead to systemic under-production.

From these results, we develop predictions for how social conditions shape societal consumption patterns. Societies with strong status competition have the starkest consumption patterns. We find that strong status competition and strong property rights (Fig. 4b) lead to a high degree of over-consumption. This results in consumption patterns that mimic a culture of conspicuous consumption, where most members of the society consume outside their means for the purpose of keeping up

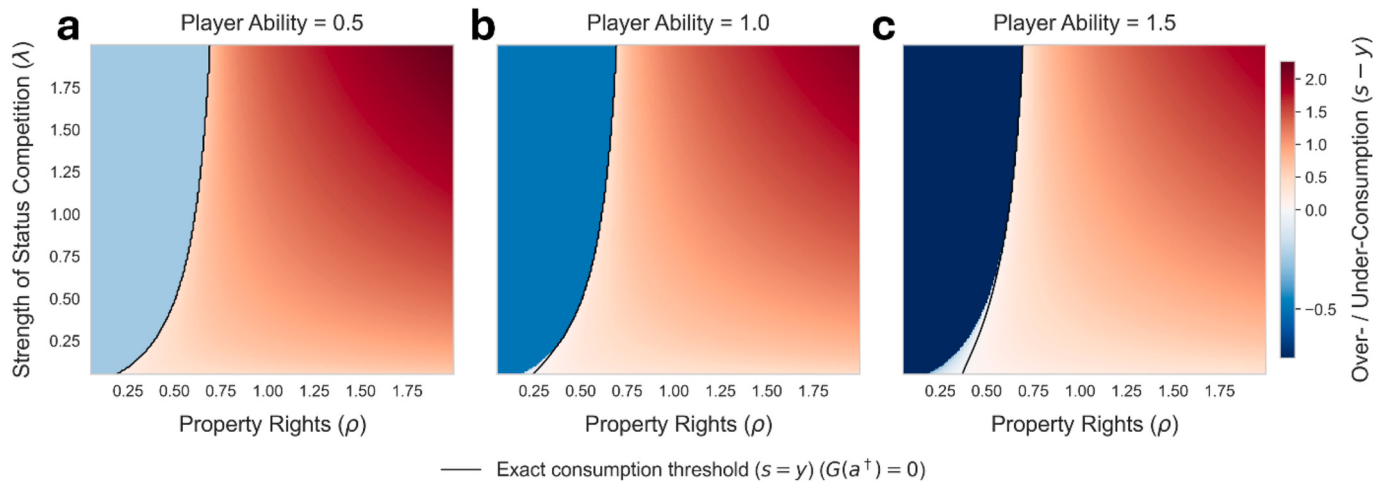


Fig. 3. Property rights (ρ) determine over/under-consumption ($s - y$). Blue shaded areas signal over-consumption and red-shaded areas signal under-consumption. We see that players over-consume when property rights are relatively strong and under-consume when property rights are relatively weak. High ability players (c) under-consume to a greater degree while low ability players (a) over-consume to a greater degree. The tipping point for over-/under-consumption is given by $a^\dagger$ and is denoted by a black line. The strength of status competition only has a relatively weak amplifying influence on the level of over- or under-consumption. (Parameters: baseline subsistence $\delta = 0.1$).

with their peers in the status competition. This supports research that has shown that the United States, which has stronger status competition and more zero-sum belief (Chinoy et al., 2023), is more materialistic than many other countries, for instance Sweden which has weaker status competition (Ger & Belk, 1996). On the other hand, societies with strong status competition but weak property rights (Fig. 4a) are made up mostly of under-consumers. We categorize such societies as having wealth-concealment cultural practices. Since players under-consume due to fear of envious destruction, we conceptualize this behavior as akin to evil eye beliefs, which has been described as “belief in the supernatural destructive force of envy” (Gershman, 2015). Importantly, we cannot state that evil eye beliefs themselves will emerge from our model, but rather than modeling outcomes consistent with those found in societies holding evil eye beliefs. Finally, societies with weak status competition (Fig. 4c and Fig. 4d) still follow societal-wide patterns of over- or under-consumption, these effects are muted. As such, they may still have social and cultural practices which promote conspicuous consumption or wealth-concealment, but these practices are not as strong as those found in their counterparts with strong status competition.

4.2. Egalitarianism

Our model predicts that under strong status competition and weak property rights, wealth concealment becomes commonplace across most players. This concealment equilibrium becomes especially stark at extreme parameter values. When status competition is very intense and property rights are weak, concealment becomes nearly universal, and consumption flattens across ability. Fig. 5 illustrates how pushing parameters to extreme values yields a pattern that looks more like stringent leveling, consistent with strong egalitarian outcomes as found among some hunter-gatherers, than the more moderate concealment we associate with other wealth concealment practices, such as evil eye beliefs.

$$\lambda\rho\delta = 0.1$$

As seen in Fig. 5, there are certain parameters where consumption drops to nearly 0 for all ability players. We can approximate the parameter sets that lead to egalitarian outcomes. In the supplementary information, we derive two propositions that detail the emergence and stability of egalitarian outcomes, namely, near-zero consumption for all individuals regardless of ability. In the main text, we simply state these results.

4.2.1. Proposition 2 (Egalitarianism Stability)

If $\rho < 1$ and average group consumption $t \rightarrow 0$, or all members of the group consume nearly 0, then players can only reduce their consumption further. This means that the egalitarian outcome is stable when property rights are weak ($\rho < 1$), because when the group enters the egalitarian condition, they are unable to escape it. If property rights are strong ($\rho > 1$), then even if the group has stopped consuming for some reason, players would still be able to increase their consumption and escape this equilibrium.

4.2.2. Proposition 3 (Egalitarianism Attraction)

Given that consumption is initialized at ability, or $s_i^{(0)} = a_i$ where $s_i^{(0)}$ denotes the consumption of a player with ability a_i at the initial stage. There exists some property right value ρ^* , such that for all property rights less than this value, or $\rho < \rho^*$, then the group will enter the egalitarian condition. Please refer to the supplementary information to see how ρ^* is derived, along with its formula. Note that the exact value of ρ^* cannot be given for the same reasons as we cannot solve for s_i^* directly. All we show is that there exists a boundary between egalitarian outcomes and other wealth-concealment behavior in our model. This boundary is visible in Fig. 6, where we plot the average consumption of the whole group at equilibrium. Here we plot average consumption for two different initial ability distributions, the uniform case, which we have been considering throughout, and a lognormal distribution centered with parameters $\mu = 0.5$ and $\sigma = 0.5$, where most players will be of low ability and only a few high ability individuals. Here we see that when abilities are more similar, the group enters a hunter-gatherer egalitarian equilibrium under stronger property rights, and the level of consumption remains lower throughout.

$$0.016\mu = 0.5\sigma = 0.5a \approx 1.87\delta = 0.1$$

Hunter-gatherer environments are noteworthy for being highly competitive, having no formal property rights and having little ability to store resources. All resources can be actively fought over and without coalitional sanctions, dispersed wild resources still prevent any individual from monopolizing supply, but inequality in access can still arise through alliance, ritual office, or skill differentials (Boehm et al., 1993; Kelly, 2013). And yet, hunter-gatherers have been widely noted for their strong egalitarian norms (Cashdan, 1980; Gurven, 2004; Lee, 1969; Smith et al., 2010; Woodburn, 1982). Some have used this egalitarianism to posit that humans are originally egalitarian, and wealth stratification is an abnormal response to social and environmental

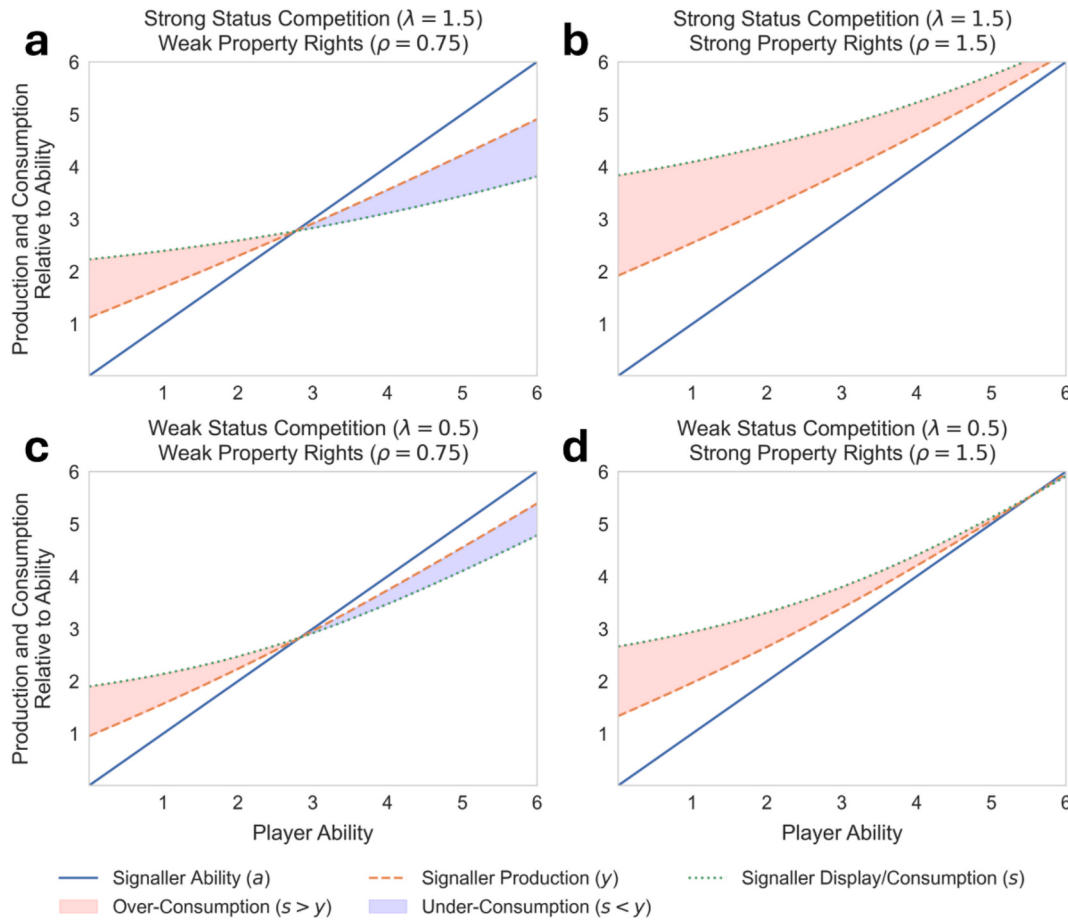


Fig. 4. Property rights (comparing left and right columns) determine who across the ability spectrum over/under-consumes, while the strength of status competition (comparing upper and lower rows) moderates how much they do so. Across all conditions, low ability players produce (orange dashed line) more relative to their ability (blue solid) and consume (green dotted line) more relative to their production. Higher ability players under-produce and under-consume (blue shaded) and lower ability players over-produce and over-consume (red shaded). However, at which point on the ability spectrum this change occurs is shaped by the level of property rights (ρ). Weak property rights ((a) and (c) on the left) mean most players under-consume, and strong property rights mean most players over-consume. The exact transition point between over- and under-consumption occurs at a^* . Status competition (λ) only weakly changes which players over- or under-consume, primarily influencing the degree to which they over-/under-consume. Specifically, strong status competition ((a) and (b) on top) leads to a greater differentiation between consumption, production, and ability level. Contrarily, weak status competition ((c) and (d) on the bottom) leads to players producing more closely to their ability and consuming more closely to their production. As such, we suggest that strong status competition represents cases of societal wide cultural beliefs around consumption behavior. In particular, strong status competition and weak property rights (a) reflect evil eye beliefs, where nearly all members of society conceal wealth, and strong status competition and strong property rights (b) reflect a culture of conspicuous consumption, where nearly all members of society consume for status purposes. (Parameters: baseline subsistence $\delta = 0.1$).

conditions. However, our model predicts that egalitarianism is itself a response to extremely strong status competition and extremely weak property rights. This also provides an explanation as to why some hunter-gatherer groups, such as the Calusa (Marquardt, 2014), do not display the same level of egalitarian norms, partly due to their capability to store resources, which is rather unique among hunter-gatherers. According to our model, by virtue of the Calusa's environment having natural means of protecting one's wealth, egalitarian norms begin to break down.

Our results do not speak to how these beliefs occur in practice, and thus, we cannot explain exactly how a society will transition from egalitarian norms to evil eye beliefs or conspicuous consumption. Our model also does not explain the foundations of evil eye beliefs, but rather the emergence of society-wide wealth concealment. We show that as a result of social conditions, namely strong status competition and weak property rights, people are likely to wealth-shield out of fear of envious destruction. In our model, when property rights are particularly weak, this turns into stringent egalitarian norms, where all members of a society consume the same amount, regardless of their production, similar to what is observed in hunter-gatherer societies.

4.3. Destruction and property rights

Finally, we examine destructive behavior. In the destruction function (4), we have that destruction is proportional to the strength of status competition and inversely proportional to property rights. In more competitive environments, players are more willing to pay a cost to destroy others because the cost of leaving a high consumer unattended is greater. In environments with strong property rights, players are less likely to destroy because doing so becomes more costly. However, to complicate the relationship between our parameters and destructive behavior, we have also seen that players reduce consumption to avoid envious destruction. This means that the same conditions that promote high destruction also promote low consumption, which in turn reduces destruction. To disentangle these relationships, we not only measure total destruction but also the effectiveness of destruction.

To measure effective destruction, we look at how much destruction a player receives proportionally to how much they consume, or in other words $\frac{d(s_i)}{s_i}$. To understand why this is necessary, consider two individuals with different consumption levels. One individual consumes at a sub-

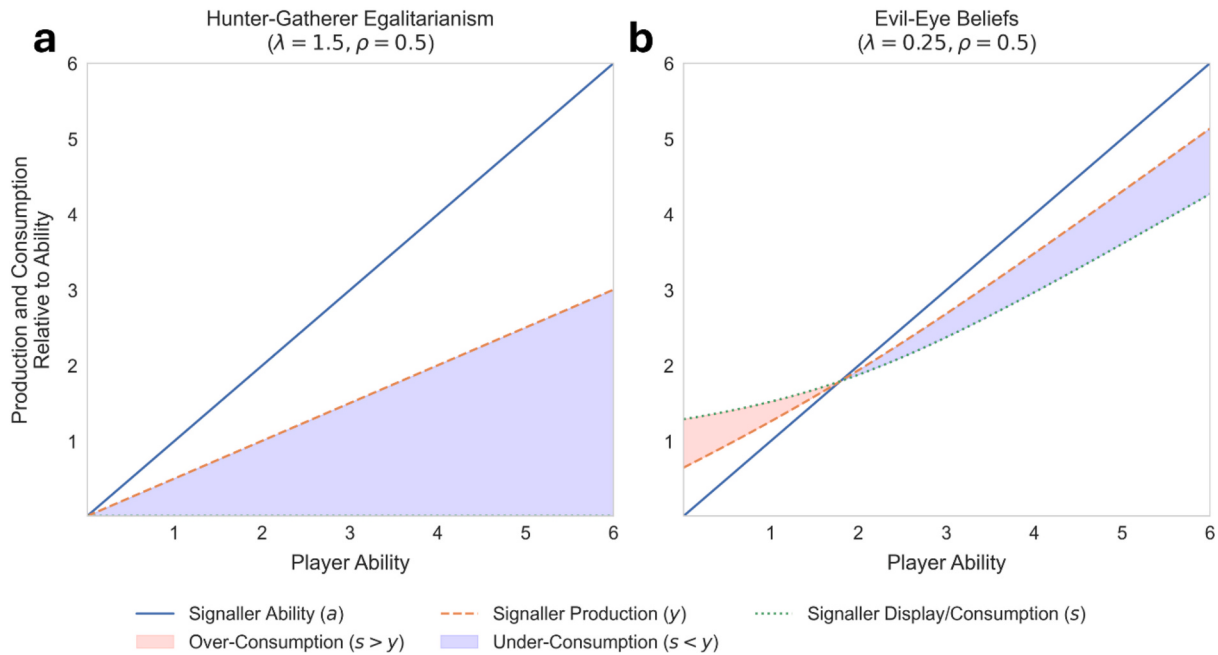


Fig. 5. Hunter-gatherer conditions lead to egalitarianism as compared to wealth concealment. When social competition (λ) is very strong and property rights (ρ) are very weak (a), then nearly all players, regardless of ability, under-consume, and consumption is relatively flat across players ability. We say that these conditions model egalitarian outcomes similar to those found in hunter-gatherer societies. More moderate social conditions, but still with weak property rights (b), lead to a high degree of under-consumption and wealth-concealment, but not as dramatic as in the egalitarian case. Under these conditions there is a portion of the population that over-consumes and there is more significant differentiation in consumption levels across the ability spectrum. Here, we say the conditions and their resulting consumption patterns more closely mimic the wealth concealment behavior found in societies practicing evil eye beliefs. (Parameters: baseline subsistence $\delta = 0.1$).

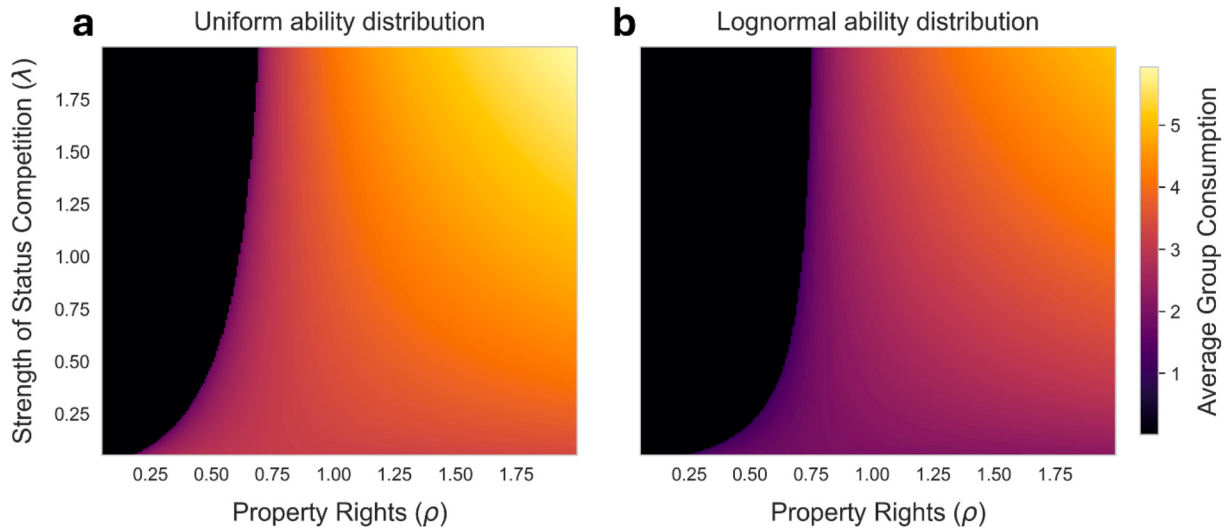


Fig. 6. Average group consumption under uniform and lognormal distributions. We compare average group consumption when ability is uniformly distributed between 0.01 and 6 (left), and when ability is distributed based on a lognormal distribution with parameters $\mu = 0.5$ and $\sigma = 0.5$ (right). Under a lognormal distribution, most individuals have a similar ability to one another and ability is centered on the lower end, with a mean ability of approximately $a \approx 1.87$. This means that there are fewer high ability individuals to increase the group level consumption. On top of that, as seen in the supplementary information, high ability individuals are more likely to under-consume and wealth-shield under a lognormal distribution. All this explains why we consistently see higher levels of consumption across all parameter values for the uniform condition case. Furthermore, this explains why the boundary between egalitarian conditions and other wealth-shielding conditions occurs under stronger property rights in the lognormal condition. (Parameters: baseline subsistence $\delta = 0.1$).

sistence level, whereas the other consumes far more than they need to survive. If they both lost the same total amount of resources, then the individual living at subsistence has their livelihood threatened, whereas our high-consuming individual is simply temporarily inconvenienced. As such, to best understand the impact of destruction on the consumer, it is best to analyze effective destruction in addition to absolute

destruction.

In Fig. 7, we examine both absolute and effective destruction. Studying effective destruction (Fig. 7b), we find the exact pattern one would expect to see. Strong status competition promotes more effective destruction, as people have more incentive to destroy. Weak property rights also promote more effective destruction as players can destroy

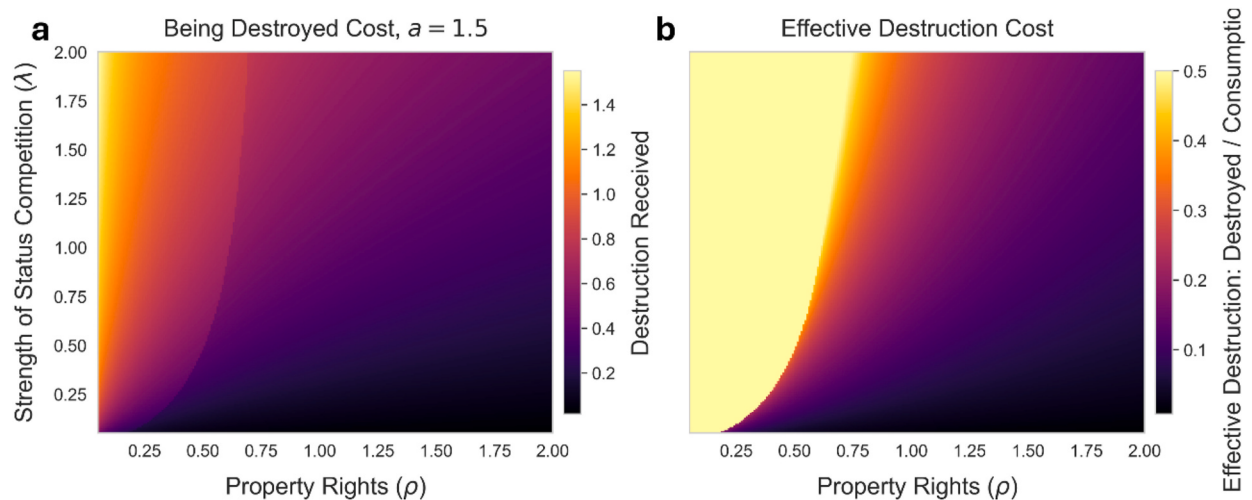


Fig. 7. Effective destruction ($\frac{d}{c}$) is highest under low property rights (ρ), even though destruction (d) decreases. Comparing absolute destruction (d) (left) to effective destruction ($\frac{d}{c}$) (right), we find that destruction is most prevalent under strong status competition (λ) and weak property rights (ρ). When players are incentivized to destroy (strong status competition) and destroying is easy (weak property rights), then effective destruction is highest. Both absolute and effective destruction follow the same pattern, but effective destruction is much stronger than absolute destruction. The reason for this is because consumption is so much longer in the cases where destruction is highest, as seen in Fig. 6. Strong property rights not only disincentivize destruction, but also incentivizes consumption, explaining why effective destruction is so low in these conditions. The values of destruction and effective destruction have been log transformed for the purpose of visualization. (Parameters: baseline subsistence $\delta = 0.1$)

more for the same cost. In particular, there exists a boundary where, for weak property rights, effective destruction is extremely high. This boundary matches the conditions for hunter-gatherer egalitarianism because if everyone consumes very little, then any amount of destruction is incredibly effective. Absolute destruction follows the same pattern as effective destruction but is less dramatic (Fig. 7a). Here, destruction is still highest under weak property rights and strong status competition, but the variation across parameters is smoother. Even though weak property rights encourage destruction, in absolute terms, destruction does not increase that much because players have also reduced their consumption out of fear of envious destruction.

$$d_s^d \lambda \rho \delta = 0.1$$

Overall, the results of destruction show a trade-off. Weak property rights make conspicuous consumption dangerous, so players conceal and, by doing so, reduce realized destruction. Strong property rights make destruction costly, allowing aggressive display, and making the destruction which occurs less effective relative to consumption. This helps reconcile why concealment norms can flourish in settings where retaliation is credible even if overt destruction appears infrequent.

5. Discussion

Success is a pathway to prestige, but it also paints a target for envious harm. Our model ties three literatures to address the problem of status competition under the threat of envy-motivated harm. When property is easy to damage or appropriate, visible success is riskier, pushing societies toward concealment or in extreme cases, leveling. When property is secure, the same competitive motives can fuel open display and “keep-up” dynamics.

5.1. Evil eye beliefs as adaptive wealth concealment

Our model predicts that under conditions of moderate to strong status competition and weak to moderate property rights, individuals will under-consume relative to their ability (Fig. 4 and Fig. 5). We label this pattern as wealth-concealment and behavior that could be supported by a belief in the “evil eye”. That is, we argue that evil eye beliefs represent a cultural adaptation - a set of norms and practices - that discourage visible success because in the circumstances we find evil eye

beliefs, visible success attracts harm.

Evil eye beliefs are the notion that others' envy can cause misfortune through supernatural means, like illness, accident, or loss of property. These beliefs manifest in protective behaviors: avoiding ostentatious displays of wealth, downplaying success, deflecting praise, and hiding signs of prosperity (Elworthy, 1895; Seligmann, 1910). The underlying logic, whether or not believers articulate it this way, is that standing out invites danger.

Gershman (2015) provides the most systematic cross-cultural analysis of evil eye beliefs, showing they are positively associated with inequality and weak property rights, and negatively associated with economic development. He argues that inequality intensifies envy, which drives evil eye beliefs. Our model offers a complementary but distinct interpretation. We agree on property rights but argue that inequality is as much a consequence as a cause. In our framework, weak property rights and strong competition cause both wealth-concealment and compressed inequality: people under-consume to avoid destruction, which flattens the consumption distribution. The same level of underlying ability variation can produce different levels of visible inequality depending on whether people display or conceal their wealth.

By this account, evil eye beliefs fall into the category of culturally evolved behaviors that are adaptive even when the perceived causal mechanism is false. Other examples include pregnancy taboos that help women avoid teratogens even when framed as spiritual pollution (Henrich & Henrich, 2010); bird augury helps the Kantu' randomize planting locations even when framed as divination (Dove, 1993). Similarly, evil eye beliefs may reduce the temptation to advertise status in environments where advertising status genuinely is dangerous, not because envious gazes carry supernatural power, but because they correlate with real risks of theft, sabotage, or social sanctioning. The cultural belief tracks the strategic reality without requiring believers to understand the underlying game theory.

Our model also suggests downstream consequences. When people under-consume to avoid destruction, aggregate productivity falls (Oster, 2004; Piketty, 2017). This decreased productivity may reinforce perceptions of zero-sumness (and thus the strength of status competition), if the total pie is not growing, competition for shares intensifies, which in turn strengthens the incentive for destructive competition and the protective beliefs that guard against it. This feedback loop could help

explain why evil eye beliefs persist so stubbornly in low-growth environments, including some of the weaker economies of Europe, such as Greece. Property rights may be the key lever: strengthening property rights raises the cost of destruction, which makes display safer, which allows productivity to rise, which reduces zero-sum perceptions.

The evidence is broadly consistent with our predictions, but systematic tests remain scarce. Evil eye beliefs are most prevalent in societies with moderate property rights and high competition, among agriculturalists and pastoralists, low- to middle-income countries, rather than in either hunter-gatherer societies (where egalitarianism takes a different form) or high-income societies (where property is secure and display pays). However, comprehensive data on evil eye beliefs across small-scale societies are lacking. Cross-cultural experimental evidence, measuring both beliefs and the underlying strategic calculations, would provide a stronger test of whether wealth-concealment responds to property rights and competition in the ways the model predicts.

5.2. Hunter-gatherer egalitarianism

In the extreme corner of the parameter space with very weak property rights, the model predicts near-universal concealment and a flat profile of visible consumption. This prediction maps onto a well-documented pattern where many mobile forager societies sustain strongly egalitarian outcomes despite underlying variation in individual ability and productivity.

Egalitarianism among hunter-gatherers is maintained through leveling mechanisms such as ridicule, gossip, demand sharing, and coordinated sanctions (Boehm, 2012; Boehm et al., 1993; Lee, 1969). Richard Lee's (1969) famous account of the !Kung illustrates the pattern vividly: when Lee procured a large ox for a Christmas feast, he was met not with praise but with mockery. Lee later learned that this practice of "insulting the meat" serves to prevent hunters from becoming arrogant or claiming elevated status. The successful hunter cannot boast; the norm enforces concealment. Boehm (2012; 1993) describes this as a "reverse dominance hierarchy" in which coalitions of lower-status individuals suppress would-be dominants. This account provides a plausible proximate mechanism, but it does not explain why reverse dominance hierarchies emerge in some societies and not others. Most agriculturalists and pastoralists do not show the same pattern. The transition to small-scale agriculture typically brings increasingly hierarchical structures (Kelly, 2013). And some forager societies also depart from strict egalitarianism, suggesting that foraging alone does not produce leveling.

Ultimate explanations have emphasized socioecological constraints. Cashdan (1980), Kaplan and Hill (1985), and Gurven (2004) argue that in mobile foraging economies, food is perishable, returns are highly variable, storage is limited, and there are no capital goods that sustain wealth differentials. Under these conditions, sharing functions as mutual insurance, and leveling norms enforce reciprocity (Hawkes et al., 1993; McElreath & Koster, 2014; Ringen et al., 2019). Hierarchy emerges when ecological conditions allow accumulation through storable surpluses, livestock, or land, which creates both the possibility of sustained inequality and the need to protect property (Borgerhoff Mulder et al., 2009; Smith et al., 2010; Woodburn, 1982).

Our model captures these same ecological variables at a higher level of abstraction. Strength of property rights, representing the cost of destroying or appropriating another's wealth, is shaped by storability, resource predictability, defensibility of accumulated goods, and the institutional and coalitional infrastructure that supports enforcement. Weak property rights correspond to the mobile-forager conditions described above and produce the suppressed-consumption equilibrium. Strong property rights correspond to the conditions that allow accumulation and produce display and hierarchy. As such, property rights in our model function very similar to the mechanism of tolerated threat as described by Blurton Jones (1984, 1987) and Winterhalder (1996).

The framework also adds a unifying account. Hunter-gatherer

egalitarianism, evil eye beliefs, and conspicuous consumption sit at three points in a continuous parameter space defined by the strength of status competition and the cost of destroying others' wealth. The same individual optimization that predicts conspicuous consumption under strong property rights predicts suppressed consumption under weak property rights. Egalitarianism in foraging societies follows from this general logic. The framework also predicts something pure insurance accounts do not. When displaying wealth invites destruction, individuals reduce production in the first place. The egalitarian equilibrium, therefore, has low aggregate productivity as well as equal consumption.

This framework predicts variation among foragers. The Calusa of North America lived in coastal environments with abundant, predictable resources (Marquardt, 2014). This abundance likely reduced the intensity of competition for survival. Plentiful resources may also have enabled some accumulation and the defense of property, shifting the equilibrium toward hierarchy. The Calusa developed complex, geographically stable societies with clear status differentiation. Our model accommodates this: when competition is less intense or property can be protected, the pressure to conceal weakens, and hierarchy can emerge. Egalitarianism is not a feature of foraging per se, but a response to the combination of intense competition and weak property rights.

The evidence supports our predictions for societies in this region of parameter space. Many hunter-gatherer societies show compressed consumption, low visible inequality, and low overt destruction. This is not a state of natural harmony but a strategic equilibrium in which everyone holds back.

5.3. Productive vs destructive competition, antisocial behavior, and the joy of destruction

Our model predicts that the form of competition takes, depends on property rights and the intensity of status competition. When property rights are weak, destruction is relatively cheap and attractive. When property rights are strong, destruction is costly, and individuals must compete by other means, primarily by producing and consuming more. The strength of status competition amplifies whichever dynamic prevails. Under weak property rights, strong competition intensifies destruction; under strong property rights, strong competition intensifies production.

The distinction between productive and destructive competition is straightforward. In productive competition, I respond to your success by working harder or smarter. Your gain may motivate me, but it does not directly threaten my position. In destructive competition, I respond to your success by tearing you down. Your gain is my loss, and the easiest way to close the gap is to take what you have or destroy it. An analogy may help. Consider waiting for a bus, where the frequency of buses represents economic growth or resource availability. If buses arrive every five minutes, I can tolerate someone cutting ahead. I may grumble, but another bus is coming soon. If buses arrive once an hour and seats are scarce, that same queue-jumper becomes intolerable. Grumbling turns into shoving. When resources feel scarce and fixed, destructive strategies and antisocial behaviors become attractive (Bergeron et al., 2025).

Destructive behavior in the Joy of Destruction game varies sharply with resource scarcity: Namibian pastoralists in low-rainfall regions destroy at nearly twice the rate of those in high-rainfall regions (Prediger et al., 2014). Our model interprets this variation as reflecting differences in the perceived cost-benefit ratio of destruction. When resources are scarce, competition feels zero-sum, and harming a rival becomes an attractive way to improve one's relative standing. When resources are abundant, the same destructive act yields less relative advantage and is less worth the cost.

Our model provides a framework for understanding why these patterns persist. When property rights are weak, destruction is cheap relative to its impact. Even a modest destructive effort can substantially harm a rival. Under these conditions, the rational response to someone

else's success is to tear them down. But this creates a feedback loop. If everyone fears destruction, everyone conceals. Productivity falls. And when productivity falls, the world becomes more zero-sum in reality, not just perception. Perceptions of zero-sumness can create actual zero-sum conditions (Bergeron et al., 2025). This dynamic may function as a “psychological trap”, analogous to a poverty trap (Balboni et al., 2022). Even when objective conditions improve, the cultural expectation of destruction persists, undermining trust and preventing the shift to productive competition. With peer conformity, such worldviews can persist even after structural conditions change, leading to cultural evolutionary mismatch (Gavrilets & Seabright, 2025). Undermining trust contributes to market failures (Algan & Cahuc, 2010; Nunn & Wantchekon, 2011) and can create a culture of low expectations that is self-reinforcing (Gambetta & Origgi, 2013).

When property rights are strong, the calculus reverses, and destruction becomes expensive. Players in our model still want to harm successful others, but the cost of doing so outweighs the benefit. Under these conditions, the only way to compete is productively: work harder, produce more, and consume more visibly. Strong property rights do not eliminate competition but rather redirect it. When status competition is also intense, the result is conspicuous consumption and “keeping up with the Joneses”. People overconsume not because they need the goods, but because visible consumption is how status is won when destruction is off the table.

A related observation is that wealthy populations in some contexts appear to consume discreetly. Old-money families in parts of Europe avoid ostentation in dress and architecture, and recent commentary has labelled this pattern stealth wealth or quiet luxury. This is sometimes read as evidence against the prediction that strong property rights produce display. We read it differently. Discretion of this kind is conspicuous consumption calibrated to a particular audience. The relevant signals are specific brands, regional accents, knowledge of wine or art, university ties, and similar markers that are illegible to outsiders but highly legible to other members of the in-group. Bourdieu and Bourdieu (1984) describes the underlying logic as cultural capital and distinction. A more recent marketing and consumer behavior literature provides direct empirical support. Han et al. (2010) show that consumers with high economic and cultural capital prefer luxury goods without prominent logos, while those with less capital prefer loud-logo versions. Other research (Berger & Ward, 2010) shows that insiders can identify each other through subtle markers that outsiders cannot decode. Currid-Halkett (2017) documents a contemporary American version under the label of inconspicuous consumption. In our framework, this can be teased out by limiting the status comparison a player makes. We do not explore this ourselves, but if you own compare yourself to close others, rather than the whole group, then we would expect consumption behavior to stratify across society. When the point of comparison is other wealthy Europeans rather than the general public, signals tuned to that audience look discreet from outside without being concealed in the sense the model uses. The display-versus-conceal distinction applies to a fixed dyad. What varies across contexts is who is the relevant point of comparison.

Overall, the model thus links three phenomena that are usually studied separately. Destructive competition, wealth concealment, and egalitarianism cluster together under weak property rights and strong competition. Productive competition, conspicuous consumption, and visible inequality cluster together under strong property rights. These are not separate puzzles requiring separate theories. They are different manifestations of the same underlying strategic problem, shaped by where societies fall in the space defined by property rights and competition intensity.

5.4. Limitations and opportunities for future research

Our model makes several simplifying assumptions that constrain its scope but also point toward productive extensions.

First, we treat the intensity of status competition and the strength of property rights as exogenous parameters. Both, however, may be endogenous to technology, ecology, and institutional history and may respond to the very behaviors the model predicts. For instance, widespread destruction might prompt stronger property rights as a cultural or institutional response. Future work could model the co-evolution of these parameters with consumption and destruction strategies, potentially illuminating how societies transition between equilibria over historical time.

Second, our model only includes competition, not cooperation, and all competition in the model is zero-sum; the strength of competition parameter (λ) controls only the intensity of zero-sumness, not whether competition is zero-sum or positive-sum. A natural extension would introduce a social wealth factor that grows with aggregate production and shrinks with destruction, creating a second reason, beyond personal cost, to refrain from destroying others. We could also extend the model to consider competition between groups, which would in turn create a natural pathway for cooperation within groups. This could create scenarios where individuals choose to help one another rather than destroy each other.

Third, destruction in our model is treated as a stated fact rather than an evolved behavior. We assume that people seek to destroy those who are more successful than they are, based on literature on the joy of destruction and antisocial behavior (Abbink & Sadrieh, 2009; Herrmann et al., 2008; Prediger et al., 2014). Our model simply tries to explain how individual and societal consumption patterns evolve with respect to status competition and envious destruction, not the emergence of these two social pressures. Future work could look to explore the evolution of envious destruction from base principles.

Fourth, we do not model the emergence of evil eye beliefs or hunter-gatherer egalitarianism themselves, but rather the emergence of outcomes associated with these beliefs. In particular, we cannot explain the supernatural elements of evil eye beliefs. One possible future direction would be to study evil eye beliefs as a produced cultural representation, where the existence of supernatural evil eye beliefs benefits the producer of the belief and not just the consumer (André et al., 2023).

Fifth, we do not model conspicuous leisure. Veblen (1899) noted that leisure, like consumption, can signal status. In our model, underproduction is purely costly. Yet the relationship between leisure and status is context-dependent: in some settings, overworking and lack of leisure time is associated with higher status (Gershuny, 2005; Schor, 1998) and in highly competitive environments, busyness rather than leisure becomes the status symbol (Bellezza et al., 2017). Incorporating leisure as a potential signal would enrich the model's applicability to modern economies and could perhaps explain more nuanced differences in consumption and wealth display between different rich countries (e.g., the importance of status in the United States vs. Europe).

Finally, we lay out several predictions that could be tested empirically in future research. While we evaluate predictions against existing ethnographic and cross-cultural evidence, direct tests would require systematic data on evil eye beliefs, wealth display norms, and destructive behavior across societies varying in property rights and competition intensity. Cross-cultural experimental paradigms, such as variants of the Joy of Destruction game administered across populations, offer one promising avenue.

6. Conclusion

We show that conspicuous consumption, evil eye beliefs, and hunter-gatherer egalitarianism can be understood as alternative cultural equilibria shaped by two parameters: the strength of property rights and the intensity of status competition. When property rights are weak and competition is intense, visible success invites destruction. Cultural norms that suppress wealth display become adaptive. When property rights are strong, the costs of destruction outweigh the benefits, and wealth display becomes the dominant strategy.

This framework unifies phenomena that have been studied separately. Egalitarianism among foragers emerges not as a default state but as a strategic response to weak property protection. Evil eye beliefs function as adaptive cultural mechanisms rather than irrational superstitions. Conspicuous consumption reflects the rational allocation of resources to signaling when property is secure. These outcomes covary because they are jointly determined by the same underlying parameters.

The model also predicts feedback dynamics. Wealth concealment reduces aggregate productivity, reinforcing zero-sum conditions and strengthening norms against display. Such zero-sum worldviews can persist through cultural transmission even after material conditions change (Gavrilets & Seabright, 2025). Conversely, strong property rights enable productivity growth, weakening the incentives for destructive competition. This suggests that institutional changes to property rights may have downstream effects on cultural norms governing wealth, envy, and competition.

Our work has implications for features of societies that have puzzled anthropologists, psychologists, and economists. The relative wealth of nations is rooted in both formal and informal institutions and cultural values that affect property rights, redistribution beliefs and practices (Alesina & Angeletos, 2005), and how individuals and firms compete. The features found in different societies are often connected (Muthukrishna et al., 2020), and are products of present or past ecological and cultural conditions (Muthukrishna et al., 2021). The take-home is that cross-cultural differences in “how people are” don’t reflect some underlying human nature, but rather cultural adaptations to different circumstances. The status competition may be universal, but local institutions and ecology shape the cultural traits that determine whether it manifests as conspicuous display, quiet concealment, or enforced equality.

CRedit authorship contribution statement

Eric Schnell: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Robin Schimmelfennig:** Writing – review & editing, Writing – original draft, Conceptualization. **Xueheng Li:** Writing – review & editing, Methodology, Conceptualization. **Michael Muthukrishna:** Writing – review & editing, Supervision, Project administration, Funding acquisition, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

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