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When Truth Is a Public Good: Strategic Information under the Provision of Verification in Social Networks

Abstract
Truthful information is essential for effective collective decision-making, yet its provision is often fragile when individuals behave strategically. This paper studies environments in which truth operates as a public good: while its benefits accrue broadly across society, the effort, risk, and cost of providing or verifying truthful information are borne privately. Focusing on social networks where verification mechanisms exist but are costly to use, the paper asks why truthful reporting remains limited even in settings explicitly designed to curb misinformation.
I develop a theoretical framework in which agents receive private signals and interact within a networked environment that shapes both expectations and perceived responsibility. Verification is feasible, but it is neither automatic nor evenly distributed across agents. Individuals must choose whether to report truthfully, remain silent, or rely on the expectation that others will undertake verification. Crucially, behavior in this setting cannot be explained by material incentives alone. Agents form beliefs about who is likely to verify information, how credibility is assigned within the network, and whether truth-telling is socially acknowledged or simply absorbed without consequence.
The analysis shows that the availability of verification can generate counterintuitive strategic effects. Rather than encouraging widespread honesty, verification may lead agents to defer or withhold truthful reporting, anticipating that others who are more visible, influential, or better positioned will bear the cost of accuracy. In such environments, truth is under-provided not because it is unimportant, but because responsibility for providing it becomes diffused across the network. The resulting equilibria are characterized by selective disclosure, strategic silence, and incomplete correction of false information.
By conceptualizing truth as a public good embedded in social networks, this paper offers a behavioral explanation for the persistence of misinformation and weak corrective dynamics even under verification regimes. The findings underscore the limits of verification-based policy responses and point to the central role of network structure and strategic beliefs in sustaining truthful communication.

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I. Introduction

Truthful information matters because collective choices depend on it. Markets, institutions, and social coordination all rely on shared beliefs that are at least approximately accurate. When those beliefs are distorted, decisions suffer. For this reason, misinformation is often treated as a technical problem: one that can be addressed through better monitoring, clearer incentives, or stronger verification. Yet this view sits uneasily with everyday observation. Even where verification mechanisms are present, and even where false claims can be challenged, accurate information is not consistently supplied. Corrections are delayed, partial, or absent altogether.

This paper starts from the observation that truth-telling is not simply a matter of honesty versus dishonesty. In many settings, providing truthful information creates benefits that extend well beyond the individual who supplies it. Once revealed, truth informs others, shapes expectations, and alters collective outcomes. At the same time, the act of speaking truthfully often carries private costs. These may be material, such as the effort required to verify information, or social, such as exposure to disagreement or reputational risk. When benefits are shared but costs are individualized, truth begins to resemble a public good rather than a private one.

This perspective becomes particularly relevant in social networks. Network structure who communicates with whom, whose statements are noticed, and whose corrections are taken seriously. They also shape expectations about responsibility. Individuals rarely decide in isolation whether to report information truthfully. Instead, they form beliefs about what others are likely to do. When verification is possible but costly, it is often reasonable to expect that someone else will undertake it, someone more central, more credible, or simply more visible. In such cases, silence is not necessarily deceptive; it is strategic.

Much of the policy response to misinformation assumes that expanding verification will strengthen incentives for accuracy. Fact-checking institutions, peer-review mechanisms, and platform-level interventions are built on this assumption. However, these approaches overlook a basic strategic tension. Verification not only

deters falsehoods; it also changes expectations about who will provide the truth. When individuals anticipate that errors will be corrected by others, the incentive to speak accurately in the first place may weaken rather than strengthen.

The aim of this paper is to examine this tension in a formal but behaviorally grounded way. I develop a theoretical framework in which agents receive private signals and interact within a social network. Verification is feasible, but it is costly and unevenly applied. Agents must choose whether to report truthfully, remain silent, or rely on the expectation that others will verify information. These choices depend not only on material payoffs but on beliefs about credibility, responsibility, and recognition within the network. The analysis shows how, under plausible conditions, truthful information is systematically under-provided even when verification exists, and truth is socially valuable.

By framing truth as a public good embedded in social networks, this paper seeks to explain why misinformation persists not simply because individuals lie, but because incentives to tell the truth are diluted across many actors. The argument suggests that verification alone is unlikely to sustain truthful communication unless it is accompanied by institutional arrangements that address how responsibility is distributed within networks. Accordingly, the central question guiding this paper is why truthful information is systematically under-provided in social networks, even when verification mechanisms exist, and truth is socially valuable

II. Literature review

The starting point for this paper lies in the long-standing concern of economic theory with the strategic use of information. From early work on communication under asymmetric information, it has been clear that truthful revelation cannot be assumed even when agents share broadly aligned interests. Crawford and Sobel's (1982) model of cheap talk established that equilibrium communication depends delicately on incentives and beliefs, and that full revelation is the exception rather than the rule. What is striking, however, is that much of the subsequent literature treated communication as an individual act, evaluated primarily through incentive compatibility, rather than as a contribution to a shared informational environment.

A parallel line of research has focused on verification as a corrective mechanism. In models of auditing and monitoring, the possibility of verification disciplines misreporting by raising the expected cost of false claims (Townsend, 1979; Border and Sobel, 1987). Later contributions refined this insight by allowing verification to be costly or endogenous, showing how enforcement intensity shapes equilibrium disclosure (Dye, 1988; Kartik, 2009). These models offer valuable insights into how institutions can improve information quality, yet they typically presume that the burden of verification is either externally imposed or uniformly faced. Little attention is paid to how the *expectation* of verification by others may itself alter incentives to speak truthfully.

The public goods literature offers a different lens through which to view this problem. When the benefits of an action are non-excludable and widely shared, voluntary provision tends to be incomplete (Olson, 1965; Bergstrom, Blume and Varian, 1986). Although this framework has been applied extensively to material contributions, its implications for information provision are less fully developed. Treating truth as a public good shifts the focus away from deception and toward responsibility. In such settings, silence may be individually rational even when honesty is socially valuable. Importantly, under-provision arises not because agents disagree about the value of truth, but because each expects others to supply it.

Behavioral economics complicates this picture further. A large body of work documents systematic departures from purely instrumental reasoning, including concerns for social image, norms, and reciprocity (Rabin, 1998; Dufwenberg and Kirchsteiger, 2004). In informational environments, these forces shape both reporting behavior and the interpretation of others' actions. Bénabou and Tirole (2006) show that image concerns can distort communication incentives, while more recent work highlights how motivated beliefs and selective attention affect responses to evidence (Gennaioli, Shleifer and Vishny, 2018). These insights suggest that verification may interact with cognition and social perception in ways that weaken, rather than strengthen, incentives to correct falsehoods.

The role of social networks introduces an additional layer of complexity. Networks determine whose statements are visible, whose corrections carry weight, and how beliefs evolve through repeated interaction. Research on social learning demonstrates that network structure can sustain persistent errors even when accurate information exists (Banerjee, 1992; Bikhchandani, Hirshleifer and Welch, 1998). More formal treatments show how central agents disproportionately shape collective beliefs (DeGroot, 1974; Acemoglu, Ozdaglar and ParandehGheibi, 2010; Jackson, 2010). Yet in most of this literature, the act of correcting misinformation is taken as given, rather than modeled as a strategic choice.

Empirical work on misinformation and fact-checking highlights the consequences of this omission. Studies of media and online platforms show that false information often spreads more widely than corrections, and that fact-checking has limited and uneven effects (Nyhan and Reifler, 2010; Allcott and Gentzkow, 2017). While these findings are often attributed to polarization or cognitive bias, they are equally consistent with a

strategic failure of truth provision: accurate information is available, but no single agent finds it optimal to supply it.

This paper brings these strands together by modeling truth-telling as a strategic, behaviorally influenced public good within a social network. Unlike existing approaches that focus on misreporting or enforcement in isolation, the framework developed here emphasizes how verification reshapes expectations about responsibility. Agents may choose silence not because they intend to mislead, but because they anticipate that others, more credible, more visible, or more central, will undertake verification. In this sense, verification does not eliminate the problem of truthful disclosure; it redistributes it.

By embedding verification, behavioral considerations, and network structure within a single theoretical framework, the paper aims to explain why truthful information remains under-provided even when mechanisms designed to support accuracy are in place. The contribution is not to dispute the value of verification, but to show why, on its own, it cannot sustain truthful communication in strategically complex social environments.

Conceptual Framework and Model Setup

The purpose of this section is to formalize the strategic tension outlined in the preceding discussion. Rather than beginning with a fully specified mathematical model, the analysis starts from a conceptual framework that clarifies the objects of choice, the structure of interaction, and the incentives faced by agents. This approach allows the central mechanism, the under-provision of truthful information under costly verification, to emerge transparently from strategic reasoning.

Consider a finite set of agents embedded in a social network. Each agent receives a private signal about an underlying state of the world. Signals are informative but imperfect, and agents understand that others may hold different information. Communication takes place through the network, which determines who observes whose actions and whose statements carry credibility. The network structure is taken as given, reflecting social, institutional, or platform-based constraints on interaction.

Agents face three conceptually distinct choices. First, an agent may report information truthfully, thereby contributing accurate information to the collective belief environment. Second, the agent may remain silent, neither distorting information nor actively correcting it. Third, the agent may engage in verification, incurring a cost to check the accuracy of existing claims and, if necessary, correct them. Verification is feasible but costly, and it is not automatically triggered by the presence of false information.

Truthful reporting generates a benefit that is largely non-excludable. Once accurate information enters the network, it shapes beliefs and decisions beyond the control of the agent who supplied it. At the same time, the costs of reporting or verifying information, effort, time, and reputational exposure are borne privately. This asymmetry is central to the analysis. While truth is socially valuable, the incentives to supply it are weak when individual contributions cannot be isolated or rewarded.

The strategic structure of this environment resembles a public goods game. Each agent prefers a world in which accurate information is available, but each would also prefer that someone else incur the cost of providing or verifying it. In this sense, truth-telling shares the logic of familiar dilemmas in game theory, including the Prisoner's Dilemma and voluntary contribution games. If all agents were to report truthfully, collective outcomes would improve. Yet when agents act strategically, silence or reliance on others becomes an individually rational response.

Verification complicates this structure in a subtle way. While verification is often assumed to discipline falsehoods, its availability also changes expectations. When agents believe that verification is likely to be undertaken by others, particularly those who are more central, visible, or credible within the network the incentive to report truthfully diminishes. Rather than strengthening honesty, verification can shift responsibility across agents, encouraging strategic deferral. Silence, in this context, is not equivalent to deception; it is a calculated response to anticipated actions by others.

Behavioral considerations further reinforce this mechanism. Agents form beliefs about who "should" verify information, whose corrections will be noticed, and whether truth-telling will be socially acknowledged. These beliefs are shaped by network position and social norms, not solely by material payoffs. As a result, even when agents recognize the social value of truth, they may rationally choose not to provide it.

The framework thus captures a central tension: verification increases the potential accuracy of the information environment, but it also weakens individual incentives to contribute truthfully. Equilibrium outcomes reflect this trade-off. Truthful information may enter the network sporadically, concentrated among a small subset of agents, while the majority remain silent. In such equilibria, misinformation persists not because verification is absent, but because responsibility for truth provision is diffused.

This conceptual setup provides the foundation for the formal analysis that follows. By specifying strategies, beliefs, and payoffs within this framework, the subsequent sections characterize equilibrium behavior and examine the conditions under which truthful information is systematically under-provided despite the presence of verification mechanisms.

Strategic Interaction and Equilibrium Analysis

The framework outlined above gives rise to a strategic environment in which individual actions are interdependent, and expectations play a central role. Agents do not choose whether to report truthfully or verify information in isolation; rather, their decisions depend on beliefs about the behavior of others and on how responsibility for accuracy is distributed within the network. This section examines the strategic interaction induced by these features and characterizes the resulting equilibrium outcomes.

Each agent faces a trade-off between contributing truthful information and remaining silent. Truthful reporting or verification is costly, while the benefits of accuracy are largely shared. From a game-theoretic perspective, this creates a familiar incentive structure. If no agent reports truthfully, collective beliefs remain distorted, and all agents are worse off. If at least one agent incurs the cost of reporting or verification, the informational environment improves for everyone. Yet for any given agent, the incentive to act depends critically on whether others are expected to do so.

This strategic structure closely resembles a voluntary contribution game with asymmetric roles, where individual contributions are substitutes rather than complements (Bergstrom, Blume and Varian, 1986). Each agent prefers that truthful information be provided, but conditional on believing that someone else will supply it, remaining silent becomes a best response. In equilibrium, this generates a classic free-rider problem: truth is valued by all, but provided by few.

The presence of verification alters, but does not eliminate, this logic. Verification introduces the possibility that false or misleading information will be corrected ex post. However, because verification is itself costly, agents must form expectations about who is likely to undertake it. When agents believe that verification will be performed by others, particularly by those who are more central, more credible, or more exposed within the network, the incentive to report truthfully weakens. In such cases, the availability of verification encourages strategic deferral rather than proactive disclosure.

Formally, equilibria in this environment are characterized by asymmetric behavior. A small subset of agents, often those with higher visibility or stronger reputational incentives, may engage in truthful reporting or verification. The majority, anticipating these actions, choose silence. Importantly, this outcome does not require deception or malicious intent. It emerges even when all agents agree on the value of truth and even when verification technologies are effective. Similar patterns have been observed in models of information aggregation and social learning, where belief correction is concentrated among a few influential agents while others rationally defer (DeGroot, 1974; Acemoglu, Ozdaglar and ParandehGheibi, 2010).

Behavioral considerations reinforce this equilibrium. Agents' beliefs about responsibility are shaped not only by incentives, but by social norms and expectations about appropriate roles. Experimental and theoretical work in behavioral economics shows that individuals are sensitive to perceived responsibility diffusion and may under-contribute to collective tasks when accountability is ambiguous (Rabin, 1998; Dufwenberg and Kirchsteiger, 2004). In the present setting, the presence of verification can amplify this effect by signaling that truth provision is someone else's task.

The resulting equilibrium displays systematic under-provision of truthful information. Corrections occur, but sporadically and unevenly. False or misleading claims may persist long enough to influence beliefs, even if they are eventually challenged. From a welfare perspective, these outcomes are inefficient: collective payoffs would be higher under broader participation in truth-telling, yet such participation is not individually optimal.

This analysis highlights a key implication of the model. Verification mechanisms, while valuable, do not guarantee truthful communication. By altering expectations about who will act, they can unintentionally reproduce the same coordination failures observed in other public goods settings. Truthful information, like many collective goods, requires not only the capacity to be provided, but incentives that prevent responsibility from becoming diluted across agents.

III. Discussion and Implications

The framework developed in this paper points to a failure that is easy to overlook precisely because it does not rely on deception. Truthful information may be widely valued, verification may be available, and yet accurate reporting can still fail to materialize. The reason is not that agents prefer falsehoods, but that the responsibility for supplying truth is never clearly assigned. When accuracy benefits everyone, but costs are privately borne, silence becomes a plausible response.

A striking feature of the model is the role played by verification. Verification is typically understood as a corrective force, something that intervenes once misinformation appears. In the present setting, however, verification also acts earlier, by shaping expectations. When agents believe that inaccurate claims are likely to be checked by others, the incentive to intervene weakens. Truth-telling is no longer urgent; it becomes optional. In this sense, verification does not simply deter misreporting. It redistributes the burden of accuracy across agents, often in ways that discourage action.

This dynamic closely resembles familiar problems in the provision of collective goods. As in standard public goods environments, each individual prefers that the good be provided, but also prefers that someone else bear the cost. What differs here is that the good in question is informational rather than material. Once truth enters the network, it cannot be withheld from others, nor can its benefits be confined to its provider. Olson's (1965) insight that shared benefits invite free-riding applies with equal force in this informational context.

Network structure sharpens this effect. Social networks do not treat agents symmetrically. Some individuals are more visible, more trusted, or more central to the flow of information. These agents are more likely to correct falsehoods, precisely because their actions matter. Others, observing this asymmetry, may rationally conclude that their own intervention is unnecessary or unlikely to matter. Over time, truth provision becomes concentrated among a small subset of agents, while the majority remain silent. This pattern echoes results from the social learning literature, where belief correction often rests disproportionately on influential nodes (DeGroot, 1974; Jackson, 2010).

Behavioral considerations make this outcome even more persistent. Individuals are sensitive to implicit norms about who is "supposed" to act. When verification mechanisms are institutionalized, they may signal that truth provision is a specialized responsibility rather than a shared one. In such environments, agents may overestimate the likelihood that inaccuracies will be corrected and underestimate the value of their own contribution. Experimental work on responsibility diffusion suggests that such misperceptions are common when accountability is unclear (Rabin, 1998).

What emerges from this analysis is a more restrained view of verification. Verification is clearly valuable, but it does not resolve the strategic problem at the heart of truthful communication. Without mechanisms that assign or reinforce responsibility, verification can coexist with persistent under-provision of truth. Misinformation survives not because it is uncontested, but because contestation is delayed, uneven, or left to others.

Seen in this way, failures of truthful communication appear less as moral failures and more as predictable outcomes of strategic interaction. Truth, when treated as a public good within a network, requires more than the capacity to verify. It requires institutions and norms that prevent responsibility from dissolving into expectation.

IV. Conclusion

This paper has examined the provision of truthful information in environments where verification is available but costly, and where individuals interact within social networks that shape expectations and responsibility. Rather than treating misinformation as a consequence of deception or ignorance, the analysis has approached truthful communication as a strategic problem. When the benefits of accuracy are widely shared, and the costs of providing or verifying truth are privately borne, truthful information begins to resemble a public good. In such settings, under-provision is not anomalous; it is predictable.

The central argument of the paper is that verification, while valuable, does not resolve this problem on its own. By altering expectations about who will act, verification can weaken incentives for individual truth-telling. Agents may remain silent not because they reject the value of truth, but because they anticipate that others who are more visible, credible, or centrally positioned will intervene. As a result, responsibility for accuracy becomes diffuse, and truthful information enters the network only intermittently and unevenly.

By embedding this logic in a theoretical framework that incorporates strategic interaction, behavioral considerations, and network structure, the paper highlights a mechanism that has received limited attention in existing work. Truthful communication fails not only when falsehoods are rewarded, but also when incentives to speak accurately are diluted across many actors. The persistence of misinformation, in this view, reflects a coordination failure rather than a purely informational one.

The analysis has deliberately abstracted from many real-world complexities. It does not model learning dynamics in detail, nor does it consider institutional enforcement beyond verification. These omissions are not limitations of relevance, but choices of focus. They point to directions for future research, including the study of how responsibility for truth provision can be reassigned or made salient within networks, and how institutional design might complement verification with incentives that sustain participation.

More broadly, the paper suggests that sustaining truthful communication requires more than technical solutions. When truth is treated as a collective outcome rather than an individual act, failures of accuracy appear less puzzling and more structural. Addressing them, therefore, requires attention not only to what can be verified, but to who is expected to speak.

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