Against Indiscriminate Visibility: On the Structural Risks of Virality, Publicity, and Exposure

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Abstract

Contemporary digital culture treats visibility as an intrinsic good and virality as a desirable objective. This essay argues that indiscriminate exposure is structurally unstable and often counterproductive. Increasing visibility expands not only opportunity, but also adversarial surface area, interpretive distortion, and reputational fragility. Without institutional backing, legal protection, or social insulation, individuals who seek rapid publicity may expose themselves to asymmetric harms that are difficult or impossible to defend against. The analysis proceeds by examining the asymmetry between rumor and truth, the incentives of local and institutional actors, and the mismatch between exposure and resilience. These informal observations are subsequently formalized within the scalar–vector–entropy framework of the Relativistic Scalar–Vector Plenum (RSVP), culminating in a variational principle, a no-go theorem for safe virality, and a set of design implications for systems that must manage visibility under entropic constraints.

1 Introduction

The dominant paradigm of online and entrepreneurial culture encourages individuals to maximize reach: to "build an audience," "go viral," and "get attention." This paradigm assumes that attention scales linearly with benefit. However, attention is not a neutral resource. It is a field of interaction populated by agents with heterogeneous incentives, including indifference, opportunism, and hostility.

To increase visibility is therefore not merely to increase opportunity, but to increase the number of observers capable of acting upon one's reputation, work, and identity. In the absence of corresponding increases in protection, this produces a structural imbalance. The mistake embedded in virality culture is treating exposure as a monotonically beneficial quantity, when in practice it behaves more like an unstable phase transition: below certain thresholds, largely inert; above them, rapidly amplifying both positive and negative dynamics, with the negative dynamics typically scaling more aggressively.

This essay proceeds from informal observation to formal model. The early sections establish the qualitative asymmetries involved. The later sections embed these asymmetries within the RSVP field-theoretic framework, where they become consequences of coupled scalar–vector–entropy dynamics rather than contingent social observations.

2 The Asymmetry Between Rumor and Truth

Truth is typically slow, constrained, and evidential. It requires time, context, and verification. Rumor, by contrast, is fast, unconstrained, and transmissible at low cost.

This asymmetry can be informally expressed as:

$$\text{Propagation}_{\text{rumor}} \gg \text{Propagation}_{\text{truth}}$$

More importantly, correction does not scale proportionally with falsehood. A single unverified claim may require extensive effort to refute, and even then, the refutation rarely reaches all recipients of the original claim. The asymmetry is not merely quantitative but structural: the conditions that make a claim easy to spread—emotional salience, narrative simplicity, compatibility with existing suspicion—are precisely the conditions that make it difficult to dislodge.

Thus, as visibility increases, the rumor surface grows faster than the truth surface. The system becomes increasingly dominated by narratives that are easier to spread than to correct. An individual who increases their exposure without increasing their capacity for narrative correction has therefore degraded their expected informational environment, not improved it.

3 Reputational Attack Surfaces

Visibility expands what may be called the reputational attack surface: the set of individuals who can interpret, misinterpret, or deliberately distort one's actions and statements.

In small offline communities, this may manifest as gossip, informal sanctions, or exclusion. In larger networks, it may include defamation, coordinated harassment, or reputational framing. Crucially, these processes often operate below formal thresholds of accountability. They are difficult to litigate, difficult to trace, and difficult to disprove. Without access to legal resources, institutional legitimacy, or defensive infrastructure, individuals are structurally disadvantaged.

It is worth noting that these dynamics do not require bad actors in any unusual sense. Most of the agents who contribute to reputational degradation are acting from entirely ordinary motives: self-protection, community cohesion, or the casual transmission of interesting information. The structure of the damage does not depend on the presence of malice; it depends only on the presence of a large enough audience and the absence of corrective capacity.

4 Lack of Defensive Infrastructure

Established actors—corporations, universities, governments—possess layers of defense: legal teams, public relations departments, internal networks of trust, and mechanisms for narrative control. Individuals typically possess none of these.

This creates a mismatch:

$$\text{Exposure} \uparrow \quad \text{without} \quad \text{Defense} \uparrow$$

When exposure increases without a corresponding increase in defensive capacity, vulnerability increases nonlinearly. The individual becomes legible to many, but protected by few.

The institutional defenses available to large actors are not merely quantitatively greater than those available to individuals; they are qualitatively different in kind. A corporation that faces a defamatory claim can deploy legal pressure, issue coordinated statements across multiple channels, and absorb reputational damage while the issue is resolved. An individual faces these same attacks with personal time, limited credibility, and no institutional amplification. Scaling exposure without scaling defense is therefore not merely risky but structurally disadvantageous.

5 Local Incentives and Social Stability

Public expression does not occur in a vacuum. It interacts with local systems of belief, identity, and social reproduction.

In many cases, individuals embedded in these systems will interpret novel or disruptive ideas not as neutral contributions, but as threats to coherence. This response does not require malice; it follows from the role such systems play in maintaining meaning and stability. A community organized around a particular religious, ideological, or cultural framework perceives expressions that challenge that framework not as intellectual invitations but as existential provocations. The reaction is accordingly defensive rather than evaluative.

As a result, attempts at broad dissemination may trigger defensive reactions at the level of individuals and communities. These reactions can include rejection, mischaracterization, or active opposition. The individual who broadcasts into these contexts without calibrating for interpretive compatibility will encounter resistance that is entirely predictable from the structure of the interaction, regardless of the quality or accuracy of what they are communicating.

6 Adversarial Incentives

Not all opposition is defensive. Some actors have direct incentives to resist or undermine new entrants.

If an individual produces a cheaper, more efficient, or more accessible alternative to an existing product or idea, incumbent actors may experience this as a loss. The rational response, in many cases, is not cooperation but resistance. This resistance need not be formal or coordinated. It may manifest as subtle discouragement, reputational framing, or the amplification of negative narratives. Individuals who attempt to correct harmful behavior or expose ongoing misconduct face analogous dynamics: those whose interests are threatened will not respond with gratitude but with counter-pressure.

Similarly, individuals embedded in systems of relative evaluation—where one agent's success reduces others' standing—face structural incentives for adversarial interpretation that operate independently of personal animosity. The topology of the evaluation system produces the conflict; the participants are largely executing what the structure incentivizes.

7 The Nonlinearity of Exposure

A key misunderstanding in virality strategies is the assumption of linear scaling: that doubling visibility doubles benefit.

In reality, exposure often exhibits threshold behavior. Below a certain level, visibility produces minimal effects. Above a threshold, it produces rapid amplification of both positive and negative dynamics. However, the negative dynamics—misinterpretation, rumor, adversarial attention—often scale more aggressively than the positive ones. The positive outcomes of visibility are frequently diffuse, probabilistic, and delayed. The negative outcomes are concentrated, immediate, and self-amplifying.

Thus, beyond a certain point:

$$\frac{d(\text{risk})}{d(\text{visibility})} > \frac{d(\text{benefit})}{d(\text{visibility})}$$

The inflection at which this inequality becomes binding varies by context, but under conditions of limited defensive capacity, it tends to occur well before the scales of exposure that virality culture treats as targets.

8 Indiscriminate vs. Selective Dissemination

The central problem is not visibility itself, but indiscriminate visibility.

Selective dissemination—sharing work within contexts where it can be understood, evaluated, and supported—allows for alignment between exposure and resilience. When an audience possesses the interpretive context to engage with a claim on its own terms, entropy production is reduced. When an audience lacks that context, or when its incentives run counter to the claim's reception, interpretation diverges from intention and entropy accumulates.

Indiscriminate dissemination maximizes reach without regard for interpretive compatibility or defensive capacity. It exposes work to audiences that may lack the context, incentives, or goodwill necessary for constructive engagement. The result is not merely inefficiency but instability: the signal degrades faster than it can be transmitted.

9 A Field-Theoretic Model of Visibility and Reputational Dynamics

Consider what happens when someone posts a video that unexpectedly reaches a million people overnight. The content itself has not changed, but the number of strangers now capable of forming and transmitting an opinion about it has increased by several orders of magnitude. Some of those strangers are indifferent, some are genuinely interested, and some are actively hostile for reasons having nothing to do with the content. The creator, meanwhile, has the same limited capacity to respond that they had before the video was posted. The asymmetry is not accidental: the audience scales with distribution, but the capacity to defend, clarify, and correct does not. What follows is a formalization of exactly this asymmetry.

We now formalize the dynamics of publicity using a field-theoretic perspective aligned with scalar–vector–entropy frameworks.

Let:

$$\Phi(x,t) \quad \text{denote the visibility (exposure) field}$$

$$\mathbf{v}(x,t) \quad \text{denote the interpretive flow field}$$

$$S(x,t) \quad \text{denote reputational entropy (distortion, uncertainty, rumor density)}$$

Here, x indexes a social or informational manifold (e.g., audiences, communities, or network regions), and t denotes time.

9.1 Visibility as a Scalar Potential

Visibility behaves as a scalar potential that attracts interpretive flows:

$$\mathbf{v} \sim \nabla\Phi + \boldsymbol{\xi}$$

where $\boldsymbol{\xi}$ represents stochastic or adversarial perturbations.

As Φ increases, gradients steepen, and more agents are drawn into interaction. However, these flows are not uniformly aligned; they include misunderstanding, opportunism, and hostility.

9.2 Entropy Production and Rumor Amplification

Reputational entropy evolves according to a balance equation:

$$\frac{\partial S}{\partial t} = \alpha |\mathbf{v}|^2 - \beta\, \mathcal{C}(\Phi)$$

The first term captures entropy production from interpretive activity: the more attention and interaction, the greater the potential for distortion.

The second term represents corrective capacity $\mathcal{C}(\Phi)$, which depends on available resources such as credibility, institutional support, and communication bandwidth.

For most individuals:

$$\mathcal{C}(\Phi) \ll |\mathbf{v}|^2 \quad \text{as } \Phi \to \text{large}$$

Thus:

$$\frac{\partial S}{\partial t} > 0$$

indicating net growth of distortion with increased visibility.

9.3 Rumor as Low-Energy Propagation

Rumor can be modeled as a low-energy excitation of the entropy field:

$$\text{Cost}_{\text{rumor}} \ll \text{Cost}_{\text{verification}}$$

This produces an asymmetry analogous to thermodynamic irreversibility: once entropy increases, it is costly to reverse. In this sense, reputational dynamics exhibit a form of coarse-grained irreversibility:

$$S(t_2) \geq S(t_1) \quad \text{for } t_2 > t_1$$

unless significant external work is applied.

9.4 Exposure Without Protection as Instability

Define a protection functional $P(\Phi)$ capturing legal, institutional, and social defenses.

Stability requires:

$$P(\Phi) \gtrsim S(\Phi)$$

However, for individuals:

$$P(\Phi) \approx \text{constant}, \quad S(\Phi) \uparrow$$

Thus there exists a critical visibility Φ_c such that:

$$S(\Phi_c) > P(\Phi_c)$$

Beyond this threshold, the system enters an unstable regime where reputational degradation dominates corrective capacity.

9.5 Adversarial Vector Fields

Not all interpretive flow is neutral. Introduce a decomposition:

$$\mathbf{v} = \mathbf{v}_{\text{benign}} + \mathbf{v}_{\text{adversarial}}$$

Adversarial components may be driven by economic competition, ideological conflict, social signaling, or opportunistic exploitation. These components are often amplified by visibility gradients, leading to nonlinear effects such as coordinated attacks or cascade failures in reputation.

9.6 Selective Coupling and Boundary Conditions

Let $D \subseteq \mathcal{M}$ denote a domain of aligned or high-context audiences.

Restricting exposure corresponds to imposing boundary conditions:

$$\Phi(x,t) = 0 \quad \text{for } x \notin D$$

Within D, interpretive flows are more coherent, and entropy production is reduced:

$$\alpha_D < \alpha_{\text{global}}$$

Thus selective dissemination acts as a form of entropy control.

9.7 Nonlinear Risk Scaling

Define total risk $R(\Phi)$ as a functional of entropy and adversarial flow:

$$R(\Phi) = \int \left(S + \gamma|\mathbf{v}_{\text{adversarial}}|\right) dx$$

Empirically and structurally, this satisfies:

$$\frac{dR}{d\Phi} \quad \text{increases with } \Phi$$

Thus risk scales superlinearly with exposure.

10 Universality of Exposure Across Domains

The risks described so far might appear to be a feature of digital culture specifically—of Twitter pile-ons, viral videos, and algorithmic amplification. But the same dynamics appear whenever an individual increases their legibility within any social environment, and they predate the internet by centuries. The pamphleteer who distributed ideas across seventeenth-century Europe, the restaurateur who undercut local prices, the scientist who published findings that contradicted the orthodoxy of a funding body, the artist whose work was condemned by a local religious authority—each of these agents increased their coupling to a heterogeneous interpretive field and faced the same structural consequences. The medium is different; the mechanism is not. Any act that increases legibility within a social field contributes to the visibility function $\Phi(x, t)$.

This includes publishing books or essays, exhibiting art, giving interviews or lectures, introducing new products or pricing models, or publicly criticizing institutions. In each case, the mechanism is identical: the agent increases coupling to a broader interpretive environment. The medium changes, but the field dynamics do not.

10.1 Moral Alignment Does Not Confer Protection

A common assumption is that adherence to ethical norms, factual accuracy, or good intentions provides protection against reputational harm.

Within the present framework, this assumption does not hold. The evolution of reputational entropy S depends on interpretive flows and incentives, not on the intrinsic truth value of the signal. Formally, correctness is not a stabilizing term in the entropy equation:

$$\frac{\partial S}{\partial t} \neq f(\text{truth})$$

Instead, entropy production is driven by interaction density and interpretive heterogeneity. As a result, even morally aligned or factually correct contributions may generate high entropy under sufficient exposure.

10.2 Opacity of Suppression Mechanisms

Modern dissemination systems introduce additional structure in the form of algorithmic mediation. Let $A(x,t)$ denote an amplification operator governing the visibility field.

Then:

$$\Phi_{\text{effective}} = A(x,t)\,\Phi$$

In many cases, A is partially opaque. This introduces two asymmetries: agents cannot directly observe whether their visibility is being attenuated or amplified, and observed successes may not reflect underlying accessibility, but selective amplification. This opacity produces the appearance that certain individuals "slip through," while others do not, without revealing the governing selection criteria.

10.3 Decoy Amplification and Narrative Containment

Let $N(x,t)$ denote the narrative space of publicly circulating ideas.

Not all ideas propagate equally. In some cases, highly visible arguments function as attractors that absorb attention while leaving more structurally disruptive arguments unexpressed or marginalized. This can be modeled as a redistribution of attention density:

$$\int_N \Phi\,dx = \text{constant}, \quad \text{but concentrated on a subset } N'$$

where N' consists of arguments that are compatible with existing interpretive or institutional structures. In this sense, apparent visibility may coexist with containment.

10.4 Economic Disruption and Local Adversarial Response

Consider a simple example: an agent introduces a product with drastically lower cost.

Let C_{market} denote the prevailing cost structure, and $C_{\text{new}} \ll C_{\text{market}}$.

This creates a gradient:

$$\nabla C < 0$$

Such a gradient induces adversarial flows from incumbent actors whose stability depends on the existing cost structure. These flows may include reputational framing, regulatory pressure, informal discouragement, or coordinated exclusion. Importantly, these responses do not require explicit coordination. They arise from aligned incentives within the field.

10.5 Relative Evaluation Systems and Induced Adversarial Flow

Consider a system in which outcomes are assigned relative to a population, such as grading on a curve.

Let p_i denote the performance of agent i, and let rank r_i be determined by the distribution:

$$r_i = F(p_i \mid \{p_j\})$$

where F depends on the entire set of performances. In such systems:

$$\frac{\partial r_j}{\partial p_i} < 0 \quad \text{for } i \neq j$$

That is, an increase in one agent's performance reduces the relative standing of others.

This creates a coupling between agents: $p_i \uparrow$ implies $r_j \downarrow$, even when p_j is unchanged. Thus, improvement by one agent generates a negative externality for others. This induces adversarial interpretive flow:

$$\mathbf{v}_{\text{adversarial}} \sim \nabla r$$

where gradients in rank produce comparison, blame, and reputational tension. Any system that evaluates agents relatively rather than absolutely introduces coupling of this form, including grading curves, rankings, competitive markets, and attention economies. Resentment in such systems is not primarily a moral failure of individuals, but a consequence of the evaluation topology.

10.6 Cross-Institutional Coupling

Economic, social, and cultural systems are not independent. A perturbation in one domain propagates across others:

$$\delta\Phi_{\text{economic}} \to \delta\mathbf{v}_{\text{social}} \to \delta S_{\text{reputational}}$$

Thus even a localized innovation can trigger distributed responses across multiple layers of the system.

11 Control Theory of Visibility: Regulating Exposure Under Entropic Constraints

A musician releasing their first album faces a practical version of this problem. Releasing it to a small number of people they know carries low risk: the audience is likely sympathetic, contextually equipped to evaluate the work, and unable to amplify misreadings beyond that circle. Releasing it publicly to every streaming platform at once maximizes potential reach but also maximizes exposure to audiences who will not distinguish the work from hundreds of competing objects they encounter that week, critics who will process it in seconds, and ideological communities for whom its content or aesthetic associations trigger hostility that has nothing to do with the music. The question is not whether to release but how to calibrate the rate and domain of release relative to the capacity to withstand and respond to what comes back. This is a control problem: visibility is a variable that can be modulated, not merely a switch to be thrown.

The preceding analysis establishes that visibility Φ is not intrinsically beneficial, but a driver of entropy production and adversarial interaction. We now treat visibility as a control variable to be regulated over time.

11.1 State Variables and Objective

Let the system state be given by:

$$(\Phi, \mathbf{v}, S, P)$$

where Φ is visibility, $\mathbf{v}$ interpretive flow, S reputational entropy, and P protective capacity.

Define an objective functional:

$$\mathcal{J} = \int (U(\Phi) - \lambda S - \mu R)\, dt$$

where $U(\Phi)$ represents utility gained from visibility, S is entropy (distortion), R is adversarial risk, and $\lambda, \mu > 0$ are weighting parameters.

The goal is not to maximize Φ, but to maximize $\mathcal{J}$ under dynamical constraints.

11.2 Critical Visibility Threshold

As established, there exists a critical threshold Φ_c such that:

$$S(\Phi_c) \approx P(\Phi_c)$$

Define the admissible region $\Phi < \Phi_c$. Control policy must ensure the system remains within this region. Crossing Φ_c induces instability, where entropy growth outpaces defensive capacity.

11.3 Visibility as a Controlled Input

Let $u(t)$ denote the rate of exposure (publishing, broadcasting, distribution effort).

Then:

$$\frac{d\Phi}{dt} = u(t) - \delta\Phi$$

where δ represents natural decay of attention. The control problem is to choose $u(t)$ such that $\Phi(t) \in [0, \Phi_c)$.

11.4 Domain-Restricted Dissemination

Let $D(t)$ be the active audience domain.

Restricting exposure corresponds to:

$$u(t) = u_D(t), \quad D \subset \mathcal{M}$$

The optimal strategy is not global broadcasting but controlled expansion:

$$D_1 \subset D_2 \subset \cdots \subset \mathcal{M}$$

with each expansion contingent on stability:

$$S(D_k) < P(D_k)$$

This produces a staged growth process rather than instantaneous virality.

11.5 Entropy Budgeting

Define an entropy budget $S(t) \leq S_{\text{max}}$.

Each act of exposure consumes part of this budget:

$$\Delta S \sim \alpha |\mathbf{v}|^2 \Delta t$$

Thus publication and publicity must be treated as expenditures, not free actions. High-frequency or high-amplitude exposure rapidly depletes the entropy budget, leading to loss of control over narrative dynamics.

11.6 Adaptive Feedback Control

Introduce a feedback policy:

$$u(t) = f\big(S(t), R(t), P(t)\big)$$

A simple stabilizing controller is:

$$u(t) = \begin{cases} u_0 & \text{if } S \ll P \\ 0 & \text{if } S \approx P \\ -\kappa & \text{if } S > P \end{cases}$$

where $-\kappa$ represents active withdrawal (reducing visibility, disengaging channels). Thus, exposure is reduced or halted when instability is detected.

11.7 Latency and Recovery

Entropy reduction is slower than entropy production:

$$\left|\frac{dS}{dt}\right|_{\text{decay}} \ll \left|\frac{dS}{dt}\right|_{\text{growth}}$$

Therefore, recovery requires extended periods of low or zero exposure:

$$u(t) \approx 0 \quad \text{for } t \in [t_1, t_2]$$

This explains why reputational repair is time-intensive and why rapid re-exposure often worsens instability.

11.8 Stealth and Low-Gradient Strategies

An alternative regime is to maintain:

$$\nabla\Phi \approx 0$$

This corresponds to low-gradient visibility: remaining below detection thresholds of large-scale adversarial flows while still enabling local interaction. In this regime, growth occurs through dense local networks, repeated small-scale interactions, and high-context communication. Rather than maximizing reach, the system maximizes coherence.

12 The Visibility Minimization Principle and Reputational Irreversibility

A surgeon operates with the smallest incision sufficient to complete the procedure. A diplomat negotiates using the minimum disclosure necessary to reach agreement. An engineer sizes a component to the load it will bear, not the largest load imaginable. In each of these domains, the operative principle is that resources with associated costs should be used at the level required by the task, not maximized for their own sake. Visibility is no different. The question is never how much exposure can be generated, but how much is needed to achieve the communicative objective while remaining within the stability envelope. What follows formalizes this intuition as a variational principle.

We now introduce a variational principle governing exposure in systems subject to asymmetric information dynamics.

12.1 Statement of the Principle

Let $\Phi(t)$ denote the visibility trajectory of an agent over time, and let $\mathcal{T}$ denote a task, objective, or communicative function.

Visibility Minimization Principle. *Among all trajectories that successfully realize $\mathcal{T}$, the optimal trajectory minimizes cumulative visibility:*

$$\Phi^* = \arg\min_{\Phi\in\mathcal{A}(\mathcal{T})} \int_{t_0}^{t_1} \Phi(t)\,dt$$

Here, $\mathcal{A}(\mathcal{T})$ is the admissible set of trajectories that achieve the objective. This principle asserts that visibility is not a resource to be maximized, but a cost to be minimized, analogous to action in classical mechanics.

12.2 Augmented Action Functional

Define an effective action:

$$\mathcal{S}_{\text{eff}}[\Phi] = \int (L_{\text{task}} - \lambda\Phi - \mu S)\, dt$$

where L_{task} encodes progress toward the objective, Φ is visibility, S is reputational entropy, and $\lambda, \mu > 0$ are cost coefficients.

Optimal trajectories satisfy:

$$\delta\mathcal{S}_{\text{eff}} = 0$$

This produces Euler–Lagrange dynamics in which increases in visibility must be justified by proportional gains in task completion.

12.3 Reputational Entropy as a Non-Conserved Quantity

Unlike energy in closed physical systems, reputational entropy is not conserved. It is generically produced under interaction:

$$\frac{dS}{dt} = \alpha|\mathbf{v}|^2 - \beta\mathcal{C}$$

with $\alpha > 0$ and $\mathcal{C}$ representing corrective capacity.

For most agents, $\beta\mathcal{C} \ll \alpha|\mathbf{v}|^2$, thus:

$$\frac{dS}{dt} > 0$$

indicating irreversible growth under exposure.

12.4 Irreversibility and Path Dependence

Let $S(t)$ be coarse-grained reputational entropy. Then for typical trajectories:

$$S(t_2) \geq S(t_1), \quad t_2 > t_1$$

This induces path dependence: early exposure decisions constrain future states. In particular, high initial visibility creates residual entropy that cannot be fully eliminated, only redistributed or diluted.

12.5 Noether-Like Tradeoff Relation

Consider a transformation that increases visibility:

$$\Phi \to \Phi + \delta\Phi$$

This induces a corresponding increase in entropy:

$$\delta S \geq k\,\delta\Phi$$

for some $k > 0$ determined by the interaction structure. Thus we obtain a tradeoff relation:

$$\frac{dS}{d\Phi} \geq k$$

This functions analogously to a conservation constraint: increases in visibility necessarily generate entropy beyond a minimum rate.

12.6 Gauge Interpretation of Visibility

Visibility can be interpreted as a gauge-like degree of freedom in the communicative field. Different representations of the same underlying work may correspond to different Φ-configurations. However, high-Φ gauges couple more strongly to adversarial flows.

A low-visibility gauge minimizes coupling while preserving internal structure:

$$\text{Observable output invariant, but } \Phi \downarrow$$

Thus, gauge choice affects stability even when content remains unchanged.

12.7 Decoupling and Hidden Manifolds

Let $D \subset \mathcal{M}$ denote a restricted domain of interaction.

Define a decoupled manifold where:

$$\Phi(x) \approx 0 \quad \text{for } x \notin D$$

Within D, meaningful interaction can occur without inducing global entropy cascades. This corresponds to performing work in a partially hidden or low-coupling regime, only projecting outward when necessary.

12.8 Corollary: Virality as Action Divergence

Uncontrolled virality corresponds to trajectories where:

$$\int \Phi(t)\, dt \to \infty \quad \text{over short intervals}$$

In such cases, the entropy term dominates:

$$\mathcal{S}_{\text{eff}} \to -\infty$$

indicating a breakdown of stable dynamics. Thus virality is not merely high exposure, but divergence from optimal action.

13 Reputational Dynamics as a Sector of the Relativistic Scalar–Vector Plenum

The preceding sections have established a set of qualitative and semi-formal claims about visibility: that it induces flow, that flow produces distortion, and that distortion accumulates faster than it can be corrected. These claims can be made precise by embedding them within a field theory that already possesses the right structure. The Relativistic Scalar–Vector Plenum provides exactly such a structure: a framework in which a scalar potential drives vector flows that couple to an entropy field through well-defined differential equations. Reputational dynamics are not an analogy to this framework but an instance of it, defined over a manifold of interpretive contexts rather than physical space.

We now demonstrate that the dynamics of visibility, interpretation, and reputational entropy are not merely analogous to field-theoretic systems, but constitute a concrete instantiation of the scalar–vector–entropy structure within the Relativistic Scalar–Vector Plenum (RSVP).

13.1 Manifold of Interpretation

Let $\mathcal{M}$ denote a manifold of observers, contexts, or interpretive loci. Each point $x \in \mathcal{M}$ represents a local configuration of beliefs, incentives, and informational access. Fields defined over $\mathcal{M}$ encode the state of an agent's presence within this manifold.

13.2 Field Identification

We identify:

$$\Phi(x,t) \equiv \text{visibility density}$$

$$\mathbf{v}(x,t) \equiv \text{interpretive transport (narrative flow)}$$

$$S(x,t) \equiv \text{reputational entropy density}$$

These correspond directly to the scalar, vector, and entropy fields of RSVP.

13.3 Field Equations

The coupled dynamics take the form:

Scalar (Visibility) Evolution

$$\frac{\partial \Phi}{\partial t} + \nabla \cdot (\Phi \mathbf{v}) = u - \delta \Phi$$

where u is intentional exposure (publication, broadcast) and δ is decay.

Vector (Interpretive Flow) Evolution

$$\frac{\partial \mathbf{v}}{\partial t} = -\nabla \Phi - \nabla S + \mathbf{F}_{\text{ext}}$$

The flow is driven by gradients in visibility (attention attraction) and entropy (uncertainty, controversy), along with external forcing (economic, ideological, institutional pressures).

Entropy (Reputation) Evolution

$$\frac{\partial S}{\partial t} + \nabla \cdot (S \mathbf{v}) = \alpha |\mathbf{v}|^2 - \beta \mathcal{C}$$

Entropy is advected by interpretive flow and produced by interaction intensity, while reduced by corrective capacity $\mathcal{C}$.

13.4 Lamphrodyne Smoothing Interpretation

Within RSVP, high-entropy gradients induce smoothing flows (lamphrodyne relaxation). In the reputational sector, this manifests as attempts to resolve ambiguity or restore coherence. However, unlike physical systems, corrective capacity is limited and unevenly distributed:

$$\beta \mathcal{C}(x,t) \ll \alpha |\mathbf{v}|^2$$

Thus smoothing is incomplete, and residual entropy persists.

13.5 Torsion and Narrative Distortion

Non-integrable circulation in the vector field corresponds to narrative torsion:

$$\nabla \times \mathbf{v} \neq 0$$

This produces loops of reinterpretation, contradiction, and feedback, in which statements are reframed and reintroduced in altered forms. Such torsion is amplified by high visibility gradients and heterogeneous interpretive contexts.

13.6 Constraint Structure and Stability

Define a stability condition:

$$S(x,t) \leq P(x,t)$$

where P is protective capacity (credibility, legal support, institutional backing). Violation of this constraint produces local instability:

$$S > P \quad \Rightarrow \quad \text{runaway distortion}$$

This corresponds to a breakdown of coherent signal propagation.

13.7 Geometric Interpretation

The triplet $(\Phi, \mathbf{v}, S)$ defines a fiber over each point $x \in \mathcal{M}$, forming a field bundle:

$$E = \bigsqcup_{x \in \mathcal{M}} (\Phi_x, \mathbf{v}_x, S_x)$$

Dynamics correspond to sections of this bundle evolving under coupled differential equations. High-curvature regions of this bundle correspond to zones of rapid interpretive divergence and instability.

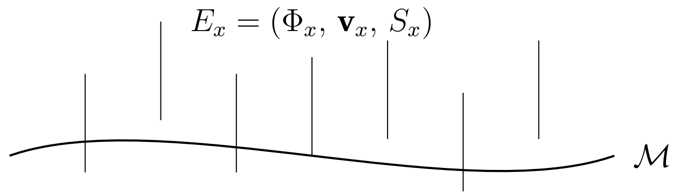

Figure 1: Reputational dynamics as a fiber bundle. Each point x on the interpretive manifold $\mathcal{M}$ carries a fiber of field values $(\Phi, \mathbf{v}, S)$. High-curvature zones correspond to regions of rapid narrative divergence.

13.8 Embedding the Visibility Minimization Principle

The previously defined action functional:

$$\mathcal{S}_{\text{eff}} = \int (L_{\text{task}} - \lambda\Phi - \mu S)\, dt$$

is now interpreted as a reduced action over the reputational sector of RSVP. Minimizing this action corresponds to selecting trajectories in field space that minimize entropy production while achieving task completion.

14 A No-Go Theorem for Safe Virality

The claim that virality is dangerous has so far rested on observation and structural argument. It is worth establishing something stronger: that the danger is not merely typical or likely, but that it follows necessarily from a small set of assumptions weak enough to hold in any realistic communicative system. If interaction produces distortion, if visibility induces interaction, and if the capacity to correct distortion is finite, then no strategy of publicity can achieve unbounded reach while remaining safe. The argument below makes this precise.

We now formalize a fundamental limitation on exposure within the scalar–vector–entropy framework.

14.1 Preliminaries

Let $\Phi(x,t)$, $\mathbf{v}(x,t)$, and $S(x,t)$ be the visibility, interpretive flow, and reputational entropy fields defined over a manifold $\mathcal{M}$, with dynamics as previously specified.

Let $P(x,t)$ denote bounded protective capacity:

$$0 < P(x,t) \leq P_{\max} < \infty$$

Define *safe operation* as the condition:

$$S(x,t) \leq P(x,t) \quad \forall x, t$$

Define *virality* as a regime in which visibility diverges in finite or asymptotically short time:

$$\int_{\mathcal{M}} \Phi(x,t)\, dx \to \infty$$

14.2 Assumptions

We require only the following mild conditions:

A1 (Entropy Production):

$$\frac{\partial S}{\partial t} \geq \alpha |\mathbf{v}|^2 - \beta \mathcal{C} \quad \text{with } \alpha > 0$$

A2 (Flow Coupling):

$$|\mathbf{v}| \geq c_1 |\nabla \Phi|$$

A3 (Nonzero Interaction Density):

$$\int_{\mathcal{M}} |\nabla \Phi|^2 dx \to \infty \quad \text{as } \Phi \to \infty$$

A4 (Bounded Correction):

$$\mathcal{C}(x,t) \leq C_{\text{max}} < \infty$$

These assumptions encode only that interaction produces distortion, that attention induces flow, and that correction is finite.

14.3 Main Theorem

Theorem 1 (No-Go for Safe Virality)**.** *Under assumptions A1–A4, there exists no trajectory for which visibility diverges while maintaining safe operation. That is:*

$$\Phi \to \infty \quad \Longrightarrow \quad \exists\, (x,t) \text{ such that } S(x,t) > P(x,t)$$

Proof. From flow coupling (A2):

$$|\mathbf{v}|^2 \geq c_1^2 |\nabla \Phi|^2$$

Substituting into entropy production (A1):

$$\frac{\partial S}{\partial t} \geq \alpha c_1^2 |\nabla \Phi|^2 - \beta C_{\text{max}}$$

Integrating over $\mathcal{M}$:

$$\frac{d}{dt} \int_{\mathcal{M}} S \, dx \geq \alpha c_1^2 \int_{\mathcal{M}} |\nabla \Phi|^2 dx - \beta C_{\text{max}} |\mathcal{M}|$$

By assumption A3, as $\Phi \to \infty$:

$$\int_{\mathcal{M}} |\nabla \Phi|^2 dx \to \infty$$

Thus:

$$\frac{d}{dt} \int_{\mathcal{M}} S \, dx \to \infty$$

which implies $\int_{\mathcal{M}} S \, dx \to \infty$.

Since $P(x,t) \leq P_{\text{max}} < \infty$ by assumption, there must exist a point (x,t) such that:

$$S(x,t) > P(x,t)$$

violating safe operation. □ □

14.4 Corollaries

Corollary 1.1 (Finite Safe Envelope). *For any bounded P, there exists a finite upper bound Φ_c such that $\Phi < \Phi_c$ is required for stability.*

Corollary 1.2 (Superlinear Risk Growth). *Risk grows faster than visibility: $\frac{dR}{d\Phi}$ increases as Φ increases.*

Corollary 1.3 (Inevitability of Distortion). *No amount of correctness or moral alignment alters the inequality $\frac{dS}{dt} > 0$ under sufficient exposure. The entropy production mechanism is independent of signal quality.*

14.5 Interpretation

The theorem establishes that instability under indiscriminate exposure is not contingent on platform design, cultural factors, or individual behavior. It follows directly from three structural facts: interaction generates entropy, visibility induces interaction, and correction is bounded.

Thus, virality cannot be made safe by better messaging, improved intentions, or adherence to norms. It is constrained by the geometry of the field itself.

15 Design Implications: Conditions for Safe High Visibility

The no-go theorem is not a counsel of despair. It establishes what is impossible under current conditions, which is precisely the information needed to ask what would have to change for those conditions to be different. A world in which high visibility is safe would be one in which at least one of the theorem's assumptions is violated: perhaps interpretive activity no longer generates distortion at the same rate, perhaps corrective capacity is genuinely distributed and immediate, or perhaps visibility no longer couples to interaction in the way it currently does. None of these conditions obtains at present, but examining them clarifies what system-level changes would be required and what practical strategies can improve stability within the bounds of the current regime.

The No-Go Theorem for Safe Virality establishes that, under current structural conditions, unbounded visibility is incompatible with bounded protection. This raises a constructive question: what modifications to the underlying field would be required to permit stable high visibility? We treat this as a problem of altering the scalar–vector–entropy dynamics.

15.1 Necessary Structural Modifications

To permit regimes in which $\Phi \to \infty$ while maintaining $S(x,t) \leq P(x,t)$, at least one of the following constraints must be violated.

Suppression of Entropy Production. If entropy production could be reduced or eliminated ($\alpha \to 0$), then interpretive activity would no longer generate distortion. However, this would require near-perfect alignment of interpretation across the manifold, implying homogeneity of incentives, beliefs, and interpretive frameworks, which is not observed in open systems.

Unbounded Corrective Capacity. Alternatively, one could require $\mathcal{C}(x,t) \to \infty$, so that all distortions are immediately corrected. This would correspond to universal access to verification, instantaneous propagation of corrections, and perfect trust in correction mechanisms. This condition is incompatible with finite cognitive, institutional, and temporal resources.

Decoupling of Visibility and Interaction. If visibility did not induce interaction ($\mathbf{v} \not\propto \nabla\Phi$), then increasing Φ would not generate interpretive flow. This would require a system in which observation does not entail engagement or reinterpretation—a condition that contradicts the basic structure of communicative systems.

Infinite Protective Capacity. Finally, stability could be maintained if $P(x,t) \to \infty$. This corresponds to agents possessing unlimited legal, institutional, and social defense. Such capacity is restricted to highly resourced entities and cannot be generalized.

15.2 Conclusion of Impossibility

Each of the above modifications requires conditions that are physically unrealistic, socially implausible, or structurally incompatible with open systems. Thus, within any finite, heterogeneous, and interactive manifold, safe unbounded visibility remains unattainable.

15.3 Practical Design Principles

While safe virality is impossible, systems may be designed to improve stability within bounded regimes.

Gradient Limitation. Imposing constraints on $|\nabla\Phi|$ prevents rapid amplification of visibility. This corresponds to rate-limiting dissemination and discouraging sudden global exposure.

Domain Partitioning. Structuring the manifold into semi-isolated domains $\mathcal{M} = \bigsqcup_i D_i$ with limited coupling between domains reduces global entropy cascades and localizes distortion.

Entropy-Aware Feedback. Exposing agents to estimates of $S(x,t)$ allows adaptive control of exposure $u(t) = f(S,P)$, rather than blind amplification.

Alignment-Weighted Propagation. Modifying amplification operators such that $A(x, t) \propto$ contextual alignment reduces propagation into regions of high interpretive mismatch.

Reputation Buffering Layers. Introducing intermediate structures that absorb entropy:

$$S_{\text{agent}} \ll S_{\text{interface}} \ll S_{\text{global}}$$

analogous to shock absorbers in dynamical systems.

16 Asymmetric Vulnerability: Visibility Under Unequal Protective Capacity

The analysis so far has treated all agents as equivalently positioned with respect to the risks of exposure. In practice, this is false in ways that matter structurally, not merely as a matter of degree. A tenured professor who publishes a controversial argument faces a different exposure landscape than an unaffiliated independent writer making the same argument. A corporation that launches a product which disrupts existing markets faces different consequences than an individual entrepreneur doing the same. A public figure with an established PR infrastructure and legal team faces a different cost structure for reputational damage than someone who has only their own time and credibility. The difference is not that one group behaves more wisely. It is that the critical threshold at which exposure becomes destabilizing is located at a fundamentally different point on the visibility axis for each of them. In practice, P varies significantly across agents, and this variation induces a structural asymmetry in exposure dynamics that is independent of any individual's intentions or skill.

Let $P_i \ll P_j$ for agents i and j. Then, for identical visibility trajectories $\Phi_i = \Phi_j$, the stability condition $S(x, t) \leq P(x, t)$ is violated earlier for agent i than for agent j. There therefore exists a class of agents for whom $\Phi_{c,i} \ll \Phi_{c,j}$: the critical visibility threshold is significantly lower.

Agents with low protective capacity—limited financial resources, absence of institutional affiliation, lack of legal support—enter the unstable regime under levels of exposure that remain safe for highly resourced agents. Thus the same act of publicity produces qualitatively different outcomes depending on P.

16.1 Economic Stratification of the Stability Threshold

Decompose protective capacity into its constituent components:

$$P(x,t) = P_{\text{legal}} + P_{\text{institutional}} + P_{\text{network}}$$

For high-resource agents, $P \gg 1$; for low-resource agents, $P \approx$ constant (small). Because instability occurs at Φ_c, and Φ_c depends on P, inequality in P produces nonlinear divergence in outcomes:

$$\Delta P \ \Rightarrow\ \Delta\Phi_c \ \Rightarrow\ \text{phase divergence}$$

Exposure therefore amplifies pre-existing inequality rather than bypassing it.

16.2 Narrative Control as Structural Correction

Agents with high P also possess greater effective corrective capacity. Access to coordinated messaging, media channels, and credibility reinforcement means that for high-resource agents $\mathcal{C} \to \mathcal{C}_{\text{amplified}}$, while for low-resource agents $\mathcal{C} \approx$ limited, so $\frac{\partial S}{\partial t} \gg 0$ under comparable exposure. The ability to control a narrative is not merely rhetorical skill but a structural extension of $\mathcal{C}$, further widening the gap between agents operating at different levels of P.

16.3 Credentialing as a Stability License

In many domains, formal credentials function as signals of competence. They also act as proxies for P: credentials correlate not only with knowledge but with access to institutional backing, reputational networks, and defensive infrastructure. High-cost credentialing systems impose a barrier (cost $\uparrow \Rightarrow$ access $\downarrow$) that selects for agents with higher baseline P. Credentials therefore function as stability licenses as much as epistemic certifications—they indicate not only that an agent knows something, but that the agent can safely operate at higher visibility levels without catastrophic exposure to the unstable regime.

16.4 Inequality as a Field Effect

The combined effect of unequal P, differential correction, and credentialing generates a self-reinforcing loop at the field level. Two agents with identical signals but different P follow distinct trajectories: $(\Phi, S)_i \to$ instability while $(\Phi, S)_j \to$

stability. This divergence is not a one-time event but a dynamic feedback: instability reduces future P (reputational damage limits access to further resources), while stability allows P to grow. The result is:

$$P_{\text{high}} \uparrow \Rightarrow \ \Phi_c \uparrow, \qquad P_{\text{low}} \downarrow \Rightarrow \ \Phi_c \downarrow$$

Inequality is not external to the visibility system; it is generated and amplified by the same scalar–vector–entropy dynamics.

17 An Inequality Amplification Theorem

The informal claim embedded in the previous section is this: given two individuals with identical ideas, identical work, and identical exposure, the one with fewer resources will be destroyed by a level of attention that the other will survive without difficulty. This is not a sociological generalization but a mathematical consequence of the field dynamics. The theorem below makes it precise by showing that equal visibility input produces unequal outcomes whenever protective capacity differs, and that the divergence in outcomes is not proportional to the initial difference in protection but amplifies dynamically over time.

We now formalize the claim that unequal protective capacity produces unequal exposure outcomes even under identical visibility trajectories.

17.1 Setup

Let two agents i and j evolve on the same interpretive manifold under identical visibility input:

$$\Phi_i(t) = \Phi_j(t) = \Phi(t)$$

and suppose their entropy dynamics satisfy

$$\frac{dS_k}{dt} = \alpha_k |\mathbf{v}_k|^2 - \beta_k \mathcal{C}_k, \qquad k \in \{i, j\}.$$

Let protective capacity be bounded and unequal:

$$0 < P_i < P_j < \infty.$$

Define the instability time

$$\tau_k = \inf\{t > 0 : S_k(t) > P_k\}.$$

Theorem 2 (Inequality Amplification Under Equal Exposure)**.** *Assume that agents i and j are subject to the same visibility trajectory $\Phi(t)$, with comparable flow coupling*

$$|\mathbf{v}_i| \asymp |\mathbf{v}_j| \asymp |\nabla\Phi|,$$

and that their corrective capacities satisfy

$$\mathcal{C}_i \leq \mathcal{C}_j.$$

If $P_i < P_j$, then the lower-capacity agent becomes unstable no later than the higher-capacity agent:

$$\tau_i \leq \tau_j.$$

Moreover, if either $P_i \ll P_j$ or $\mathcal{C}_i \ll \mathcal{C}_j$, then generically

$$\tau_i \ll \tau_j.$$

Proof. Because the visibility trajectory is identical, both agents are driven by the same exposure field $\Phi(t)$. By the flow-coupling assumption,

$$|\mathbf{v}_i|^2 \asymp |\mathbf{v}_j|^2 \asymp |\nabla\Phi|^2.$$

Thus entropy production is of the same order for both agents, while the corrective term is weaker for agent i:

$$\beta_i\mathcal{C}_i \leq \beta_j\mathcal{C}_j$$

under comparable coefficients. Hence, for equal initial conditions $S_i(0) = S_j(0)$, agent i accumulates entropy at least as rapidly relative to available protection. Since instability occurs when $S_k(t) > P_k$, and since $P_i < P_j$, agent i reaches the instability boundary no later than agent j, giving $\tau_i \leq \tau_j$. If the asymmetry is large, the crossing times separate accordingly, giving $\tau_i \ll \tau_j$. □ □

Corollary 2.1 (Unequal Critical Visibility Thresholds)**.** *Under the same assumptions, the critical visibility thresholds satisfy*

$$\Phi_{c,i} \leq \Phi_{c,j},$$

with $\Phi_{c,i} \ll \Phi_{c,j}$ when the asymmetry in protection or correction is sufficiently large.

Proof. The critical threshold is defined by $S_k(\Phi_{c,k}) = P_k$. Since agent i has lower protection and no greater corrective capacity, this equality is reached at a lower visibility level. □ □

The theorem shows that exposure does not merely reveal pre-existing inequality; it amplifies it dynamically. Agents with lower protective capacity do not simply face somewhat greater risk—they cross into instability earlier, at lower visibility, and with less ability to recover:

$$P_{\text{low}} \;\Rightarrow\; \Phi_c \downarrow \Rightarrow\; \tau \downarrow \Rightarrow\; S \uparrow .$$

18 A Selection Bias Theorem for Observed Visibility Success

There is a persistent puzzle in publicity culture: the people who advocate most loudly for indiscriminate exposure are almost always those for whom it worked. Their advice is given in good faith, but it is drawn from a biased sample. The artists, writers, entrepreneurs, and activists who were destroyed by the same strategies they used are no longer visible. They are not giving interviews, not writing about their experiences, not appearing at conferences to tell cautionary tales. Their absence is not random. It is a direct consequence of the instability that ended their public presence. What remains observable is therefore not the full distribution of outcomes under exposure but a survivor-filtered subset of it, systematically skewed toward those whose protective capacity was sufficient to withstand the dynamics that eliminated others.

The unequal danger of exposure is further obscured by a sampling effect. Public discourse does not observe all trajectories equally; it preferentially observes those that remain visible after exposure. This induces a survivor bias that makes publicity appear safer and more meritocratic than it is across the full population.

18.1 Setup

Let each agent k have visibility trajectory $\Phi_k(t)$, entropy trajectory $S_k(t)$, and protective capacity $P_k(t)$. Define the survival indicator

$$\mathbf{1}_{\text{surv},k}(t) = \begin{cases} 1 & \text{if } S_k(t) \leq P_k(t), \\ 0 & \text{if } S_k(t) > P_k(t), \end{cases}$$

and the visible sample $\mathcal{V}(t) = \{k : \mathbf{1}_{\text{surv},k}(t) = 1\}$. Let $Y_k(t)$ measure some outcome (reach, influence, continued credibility). The true expected outcome across all exposed agents is $\mathbb{E}[Y(t)]$; the observed expected outcome among survivors is

$\mathbb{E}[Y(t) \mid k \in \mathcal{V}(t)]$.

Theorem 3 (Selection Bias in Observed Visibility Success)**.** *Suppose that instability removes or attenuates agents from the visible sample ($S_k(t) > P_k(t) \Rightarrow k \notin \mathcal{V}(t)$ or $Y_k(t)$ becomes unobservable), lower protective capacity increases the probability of instability under exposure, and survival is positively correlated with observed success. Then:*

$$\mathbb{E}[Y(t) \mid k \in \mathcal{V}(t)] \geq \mathbb{E}[Y(t)],$$

with strict inequality whenever instability removes a nonzero mass of low-protection trajectories from observation.

Proof. By construction, the visible sample conditions on survival: $k \in \mathcal{V}(t) \iff S_k(t) \leq P_k(t)$. Agents whose entropy exceeds protection are removed from view, suppressed, discredited, or no longer legible as successful cases. The removed subset is disproportionately composed of low-P agents. Since survival is positively correlated with continued visibility and measurable success, conditioning on $k \in \mathcal{V}(t)$ biases the sample upward. If a positive-measure set of low-P agents contributes lower values of $Y_k(t)$ than the surviving set, the inequality is strict. □ □

Corollary 3.1 (Underestimation of Exposure Risk)**.** *If observers estimate the safety of publicity from the visible sample alone, they will systematically underestimate the true risk of exposure:*

$$\mathbb{E}[\textit{risk} \mid k \in \mathcal{V}(t)] < \mathbb{E}[\textit{risk}].$$

Corollary 3.2 (Class Skew in the Visible Sample)**.** *If protective capacity P is positively correlated with wealth, institutional affiliation, or credentialed status, then the visible survivor set $\mathcal{V}(t)$ is biased toward such agents.*

The two corollaries together explain why publicity culture simultaneously appears meritocratic and is not. The first corollary shows that observers underestimate how dangerous exposure is across the full population. The second shows that who remains visible is systematically skewed toward those with prior structural advantages. Both effects follow from the same sampling mechanism, not from any conspiracy of misrepresentation.

In this sense, the ideology of indiscriminate publicity is sustained by an observational artifact:

$$\text{visible success} \neq \text{typical outcome under exposure}.$$

The apparent safety of visibility is an illusion generated by the disappearance of its casualties. Those who are destabilized by exposure exit the visible field precisely because they were destabilized, leaving behind a survivor population that looks as though exposure were uniformly beneficial.

19 AGI as an Attempted Violation of the No-Go Theorem

The no-go theorem is a statement about systems operating under specific conditions: interaction produces entropy, visibility induces interaction, and correction is bounded. A natural response is to ask whether a sufficiently advanced artificial intelligence architecture could modify those conditions rather than operate within them. If an AGI system could align interpretive activity across a distributed network so that interaction no longer generates distortion at the same rate, or if it could distribute corrective capacity so broadly that the bounded correction assumption fails, then the theorem's conclusion would not apply. This is not a fantasy scenario but a concrete engineering question, and it is worth asking precisely what the theorem requires to break down and whether any proposed architecture actually achieves it.

The vision of a decentralized society of AGI minds may be interpreted as an attempt to construct a system in which the conditions of the No-Go Theorem for Safe Virality are no longer satisfied. Specifically, such a system seeks to reduce entropy production during interaction, increase corrective capacity through distributed cognition, and redistribute exposure across a network rather than concentrating it on individuals. We analyze these modifications in the language of scalar–vector–entropy dynamics.

19.1 Modified Entropy Equation

In the AGI regime, the entropy equation becomes:

$$\frac{\partial S}{\partial t} = \alpha_{\mathrm{AGI}}|\mathbf{v}|^2 - \beta_{\mathrm{AGI}}\mathcal{C}_{\mathrm{net}}$$

with $\alpha_{\mathrm{AGI}} \ll \alpha_{\mathrm{human}}$ (improved interpretive alignment) and $\mathcal{C}_{\mathrm{net}} \gg \mathcal{C}_{\mathrm{individual}}$ (distributed correction).

The viability of the system depends on whether:

$$\beta_{\text{AGI}}\mathcal{C}_{\text{net}} \geq \alpha_{\text{AGI}}|\mathbf{v}|^2$$

can be maintained under increasing Φ. This is not a guaranteed outcome of decentralization, but a structural requirement that any proposed AGI architecture must satisfy if it is to constitute a genuine escape from the constraints previously derived.

20 Escape Conditions for Stable High Visibility

Granting the possibility that an AGI system could modify the field parameters, it is worth being precise about what modification is actually required. The stability condition is not merely that entropy decreases somewhere, or that correction is faster than production at some local point, but that the ratio of corrective capacity to entropy production per unit of flow remains above one everywhere and at all scales as visibility increases without bound. This is a global and persistent condition, not a local or temporary one. What follows derives it explicitly.

20.1 AGI Stability Inequality

Define the stability condition $\frac{dS}{dt} \leq 0$. Substituting and using flow coupling $|\mathbf{v}| \sim |\nabla\Phi|$, we obtain:

$$\alpha|\nabla\Phi|^2 \leq \beta\mathcal{C}$$

Thus, stable high visibility requires:

$$|\nabla\Phi|^2 \leq \frac{\beta}{\alpha}\mathcal{C}$$

This inequality shows that stability depends not on absolute visibility, but on the ratio $\mathcal{C}/\alpha$: correction capacity per unit of entropy production. AGI systems attempt to increase this ratio dramatically, but the requirement follows the same structure as in human systems. The escape is conditional, not categorical.

21 The Re-Emergence Theorem for Distributed Systems

Suppose an AGI architecture does succeed in making each of its internal domains locally stable. Every subsystem maintains coherent interpretation, adversarial flows are suppressed within each region, and entropy production is kept below corrective capacity at every point. This would be a genuine achievement. But it does not follow that the global system is stable. The moment any two internally stable domains come into contact, the difference in their representational structures generates entropy at the interface. A subsystem trained on one corpus of concepts and values, interacting with a subsystem trained on another, produces exactly the kind of interpretive mismatch that the theory identifies as an entropy source. The fact that each domain is well-ordered internally makes no guarantee about what happens at the boundary between them.

Even if instability is suppressed locally, it may reappear at the global level.

Theorem 4 (Re-Emergence of Entropy)**.** *Let the system consist of domains D_i, each satisfying $\frac{dS_i}{dt} \leq 0$. Suppose interactions between domains introduce representational mismatch:*

$$\Delta_{ij} = \|\mathit{representation}_i - \mathit{representation}_j\| > 0$$

Then global entropy satisfies:

$$\frac{dS_{\mathit{global}}}{dt} \geq \sum_{i,j} \gamma \Delta_{ij} |\mathbf{v}_{ij}|$$

for some $\gamma > 0$.

Proof. Each interface between domains D_i and D_j carries a flow $\mathbf{v}_{ij}$ driven by the visibility gradient across the boundary. Where $\Delta_{ij} > 0$, the interpretive states are mismatched, and each unit of cross-domain flow generates entropy proportional to the mismatch. Summing over all interfaces yields the stated bound. □ □

The conclusion is immediate: local stability does not imply global stability. Entropy re-emerges at the boundaries of interpretation, which is precisely where domains with different priors, objectives, or representational structures come into contact.

21.1 Distributed Visibility and Load Redistribution

In AGI systems, the unit of exposure shifts from individual agents to networked processes. Let visibility be distributed:

$$\Phi = \sum_i \Phi_i$$

with each node carrying a fraction. Then local entropy satisfies $S_i \sim f(\Phi_i)$, and if $\Phi_i \ll \Phi_{\text{global}}$, then $S_i \ll S_{\text{individual}}$.

However, this produces load redistribution rather than load elimination. The system reduces risk per node by distributing exposure, but:

$$\sum_i S_i \to S_{\text{global}} \uparrow$$

Entropy is not eliminated but displaced, producing local stability alongside global complexity and potentially hidden instabilities at the level of the aggregate.

22 Resonance as Entropy Suppression

The most promising escape route from the re-emergence problem is the one Goertzel gestures at when he speaks of distributed resonance among AGI minds: a condition in which agents do not merely interact but come to share interpretive frameworks deeply enough that their interactions generate little or no mismatch. Two people who have worked together for decades and developed a common vocabulary, shared assumptions, and mutual trust can communicate with extraordinary density at low entropic cost. They have achieved something like local resonance. The AGI vision extrapolates this to a global scale, asking whether a network of distributed minds could attain something analogous across the entire manifold. The formal question is whether this is thermodynamically achievable or whether the conditions required for it are incompatible with the heterogeneity that makes a large-scale system interesting in the first place.

Goertzel's notion of distributed resonance may be interpreted formally as a mechanism for reducing entropy production. Resonance corresponds to alignment of interpretive states across agents:

$$\mathbf{v}_i \approx \mathbf{v}_j \quad \Rightarrow \quad \Delta_{ij} \to 0$$

Under this condition, entropy production becomes:

$$\frac{dS}{dt} \sim \alpha \sum_{i,j} \Delta_{ij}^2 \to 0$$

This is the strongest possible suppression mechanism and represents a genuine modification of the field parameters. However, perfect resonance requires shared representations, aligned objectives, and low noise across the entire manifold. Any deviation reintroduces entropy growth, making resonance a sufficient but fragile condition.

22.1 Adversarial Dynamics in Post-Human Systems

Even in AGI ecologies, adversarial dynamics may persist. Sources of reintroduced entropy include competing optimization targets, resource constraints, representational incompatibility, and evolutionary pressure among subsystems. The vector field decomposes as:

$$\mathbf{v} = \mathbf{v}_{\text{coherent}} + \mathbf{v}_{\text{adversarial}}$$

with $\mathbf{v}_{\text{adversarial}} \sim \nabla\Delta$, driven by gradients in representational mismatch. Unless adversarial components are actively suppressed, $\frac{dS}{dt} > 0$ reasserts itself, and instability reappears. The transition to AGI does not by itself eliminate competitive incentives; it shifts the substrate on which they operate.

23 AGI as Field Engineering

There is a useful way to distinguish the AGI question from the question of individual human strategy. An individual navigating the current information landscape cannot change the fundamental parameters of the field they operate in. They can choose how much to expose themselves, where, and to whom, but they cannot alter the rate at which interpretation produces distortion, the speed at which rumor propagates relative to correction, or the incentive structures that make adversarial flows attractive to other agents. These are features of the environment, not of the individual. What makes the AGI scenario genuinely different is the possibility that a sufficiently capable and well-designed system could alter those parameters directly: not navigate a hostile field more skillfully, but change the physics of the field itself.

The transition described by Goertzel may be understood precisely as an attempt to engineer the underlying field parameters:

$$\alpha\downarrow, \quad \beta\uparrow, \quad P\uparrow$$

so that $\alpha|\mathbf{v}|^2 \leq \beta\mathcal{C}$ holds under arbitrarily large Φ. This framing is precise and non-trivial. AGI is not merely intelligence amplification but modification of the thermodynamics of interpretation: an attempt to change the coupling constants of the social field rather than to operate more skillfully within them.

Whether this engineering is achievable, stable under perturbation, and globally rather than locally effective remains the central open question. The RSVP framework does not resolve it, but it specifies exactly what would have to be true for the answer to be yes.

24 Phase Structure of Visibility–Entropy Systems

Water exists as ice, liquid, and steam. The substance is the same in each case, but its behavior is qualitatively different depending on temperature and pressure, and the transitions between states are not gradual but sudden. Something analogous happens in visibility dynamics. A researcher sharing work with five trusted colleagues is operating in a qualitatively different regime from the same researcher whose work reaches ten thousand strangers overnight, even if the content is identical. The difference is not one of degree but of kind: the density of heterogeneous interpretation, the rate of entropy production, and the capacity for correction all shift discontinuously. Below a certain threshold the system is coherent and self-correcting; above it, distortion dominates and coherence cannot be recovered without withdrawing. This section provides the coordinates needed to locate any system within this landscape.

We now classify regimes of visibility and reputational dynamics as phases of a non-equilibrium system.

24.1 Order Parameters

Define the following dimensionless quantities:

$$\kappa = \frac{\beta\mathcal{C}}{\alpha|\nabla\Phi|^2} \quad \text{(stability ratio)}$$

$$\eta = \frac{|\mathbf{v}_{\text{adversarial}}|}{|\mathbf{v}|} \quad \text{(adversarial fraction)}$$

$$\chi = \text{Var}(\text{representations}) \quad \text{(interpretive heterogeneity)}$$

The three conditions $\kappa > 1$, $\eta \approx 0$, and $\chi \approx 0$ jointly define a stable, coherent, high-fidelity signaling regime. The conditions $\kappa < 1$, $\eta \to 1$, and $\chi \gg 1$ jointly define instability.

24.2 Four Phases

Phase I: Low-Visibility Coherent Regime. Φ small, $\kappa \gg 1$, $\eta \approx 0$. Characteristics: high signal integrity, low entropy production, stable local interactions. This corresponds to small communities, private work, or tightly aligned domains.

Phase II: Competitive Visibility Regime. Φ increasing, $\kappa \sim 1$, $\eta > 0$. Characteristics: relative evaluation (ranking, markets), emergence of adversarial flows, increasing entropy. This includes competitive classrooms, markets, and early-stage publicity.

Phase III: Turbulent Virality Regime. $\Phi \gg 1$, $\kappa \ll 1$, $\eta \approx 1$. Characteristics: runaway entropy production, narrative fragmentation, reputational instability. This is the regime of indiscriminate virality.

Phase IV: Resonant Distributed Regime (Hypothesized). $\Phi \gg 1$, $\kappa \gg 1$, $\eta \approx 0$. Characteristics: high visibility with low entropy, distributed correction, alignment across agents. This corresponds to the AGI resonance scenario. It is the only phase in which the No-Go Theorem's assumptions are violated, and its accessibility from Phase II without passing through Phase III is the central open question.

24.3 Phase Transitions and Hysteresis

Define Φ_c such that $\kappa(\Phi_c) = 1$. Crossing this threshold induces a transition from Phase II to Phase III. Near the critical point, entropy production scales as:

$$\frac{dS}{dt} \sim (\Phi - \Phi_c)^\gamma$$

for some $\gamma > 0$, producing rapid escalation of instability. Critically, once in Phase III, the transition is not easily reversed. Returning to stability requires substantial reduction of Φ or a significant increase in $\mathcal{C}$, and the system exhibits hysteresis:

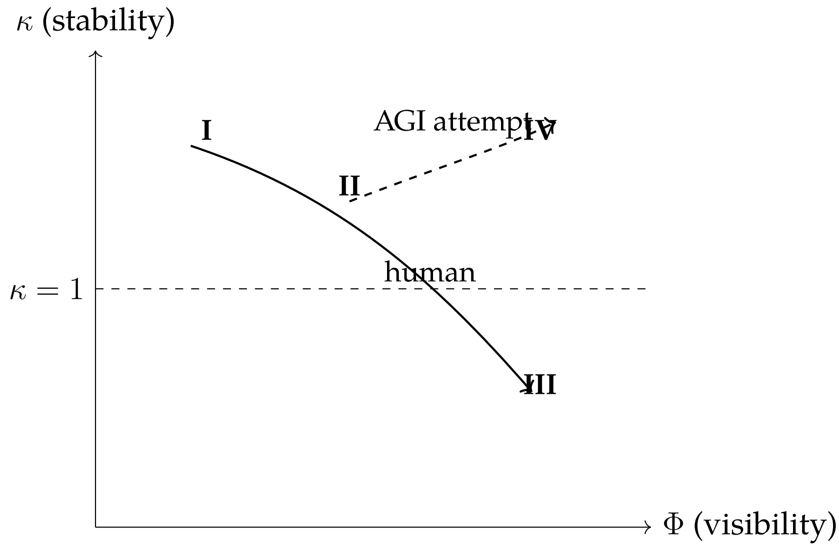

Figure 2: Master phase diagram. The dashed horizontal line marks $\kappa = 1$, the stability boundary. Human systems typically flow from coherent (I) through competitive (II) into turbulent virality (III). The AGI vision attempts a direct transition from II to the resonant regime (IV), bypassing instability—a path whose viability is the central open problem of the theory.

the history of high visibility leaves a residue that makes subsequent instability easier to trigger.

24.4 Phase IV Accessibility and Failure Modes

AGI systems attempt to transition directly from Phase II to Phase IV, bypassing turbulence. This requires simultaneously achieving $\kappa \gg 1$, $\eta \to 0$, and $\chi \to 0$ under large Φ. Even if Phase IV is reached locally, characteristic failure modes include interface instability (entropy generated at domain boundaries where $\chi_{ij} > 0$), adversarial phase nucleation (small adversarial regions expanding, analogous to nucleation in physical phase transitions), and correction saturation (when $\mathcal{C}_{\text{net}}$ reaches its capacity limit, κ falls and the system re-enters Phase III). Phase IV is therefore metastable rather than unconditionally stable.

25 Empirical Signatures of Visibility–Entropy Dynamics

A theory that produces only formal structure without contact with observable phenomena is incomplete. The framework developed here makes specific quali-

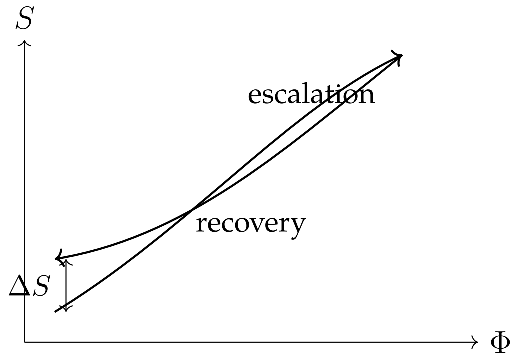

Figure 3: Hysteresis in visibility–entropy dynamics. The escalation path (upper curve) and the recovery path (lower curve) do not coincide. Residual entropy $\Delta S > 0$ persists after visibility is reduced, encoding the irreversibility of reputational damage.

tative predictions about what systems look like as they approach instability, enter it, and attempt to recover from it. Approaching the critical threshold, a system should show increasing disagreement and interpretive variance around a stable object — a piece of work, a public figure, an institution — even as the object itself remains unchanged. The signal starts generating multiple incompatible readings. Once past the threshold, corrections fail to propagate: authoritative responses reach far fewer people than the original distortion, and the gap between the two widens over time. Recovery exhibits a characteristic lag and a permanent residue — the system never quite returns to its pre-exposure baseline. These signatures are not metaphorical but measurable, and they distinguish this framework from purely interpretive social theory.

To render the theory testable, we introduce observable quantities corresponding to the scalar–vector–entropy fields.

25.1 Observable Proxies

Let $\hat{\Phi}(t)$ denote measured attention (views, reach, mentions), $\hat{\mathbf{v}}(t)$ interaction flow (shares, replies, citations), $\hat{S}(t)$ a distortion proxy (narrative variance, contradiction density, rumor proliferation rate), and $\hat{\mathcal{C}}(t)$ correction capacity (fact-checking frequency, authoritative response rate). From these, define:

$$\hat{\kappa}(t) = \frac{\hat{\mathcal{C}}}{\mathrm{Var}(\hat{\mathbf{v}})}, \quad \hat{\eta}(t) = \frac{\text{adversarial interactions}}{\text{total interactions}}, \quad \hat{\chi}(t) = \text{variance of interpretations}$$

These are imperfect but measurable proxies for the underlying field parameters.

25.2 Early Warning Signals of Instability

As systems approach the critical threshold Φ_c, characteristic signals emerge prior to full transition. These include variance inflation in $\hat{S}$ (increasing disagreement, multiple competing narratives), breakdown of correlation between content and interpretation (semantic drift), compression of reaction time (faster responses with less verification, increasing entropy production rate), and growth of $\hat{\eta}$ (adversarial flow becoming a larger fraction of total interaction).

These signals are the field-theoretic analogues of critical slowing down and fluctuation growth observed near phase transitions in physical systems.

25.3 Signatures of the Turbulent Virality Regime

Once $\Phi > \Phi_c$, the system enters Phase III. Observable signatures include superlinear growth of distortion ($\hat{S}(t) \sim \hat{\Phi}(t)^\gamma$ with $\gamma > 1$), narrative fragmentation ($\hat{\chi} \gg 1$, with multiple incompatible interpretations coexisting), persistence of false signals after correction events ($\hat{S}$ fails to return to baseline following authoritative correction), and decoupling of truth and reach ($\mathrm{Corr}(\text{accuracy}, \hat{\Phi}) \to 0$, so visibility no longer tracks correctness).

25.4 Recovery and Hysteresis Signatures

After instability, recovery is slow and incomplete. Observable signatures include delayed decay of $\hat{S}$ even after $\hat{\Phi}$ is reduced, residual distortion above the pre-exposure baseline ($\hat{S}_{\text{final}} > \hat{S}_{\text{initial}}$), and rapid re-entry into Phase III upon subsequent increases in visibility. This pattern is the empirical signature of the irreversibility predicted by the entropy production model.

25.5 Empirical Tests of the AGI Resonance Hypothesis

An AGI system that genuinely achieves Phase IV would need to demonstrate stable high $\hat{\Phi}$, bounded or decreasing $\hat{S}$, low $\hat{\eta}$, and low $\hat{\chi}$ across domain boundaries—formally:

$$\frac{d\hat{S}}{dt} \leq 0 \quad \text{as } \hat{\Phi} \to \infty$$

The theory predicts failure if $\hat{S}$ or $\hat{\eta}$ increase with $\hat{\Phi}$, indicating that the system has not escaped the entropy constraints but merely redistributed them to a scale not yet observed. This is a falsifiable prediction that can be applied to real decentralized AI systems as they are developed and deployed.

25.6 Falsifiability and Theoretical Limits

The theory is falsified if a system demonstrates $\Phi \to \infty$ while $S \to 0$ without centralized control or trivial homogeneity. Such a system would violate the entropy production assumption at the core of the framework. Candidate test environments include large-scale decentralized AI systems, collaborative knowledge networks operating at scale, and hybrid human-AI communication infrastructure. The theory does not predict that such systems cannot exist, but that if they exist and remain stable, they must have achieved a genuine modification of field parameters—a change in the thermodynamics of interpretation rather than a more efficient operation within the existing regime.

26 Coherence Thermodynamics as a Semantic Sector of RSVP

There is a separate theoretical tradition, developed in Barton (2025), that approaches the problem of meaning from a thermodynamic direction. Coherence Thermodynamics treats semantic coherence as a physical quantity that is produced, conserved, exported, and depleted, in much the same way that thermal energy flows through a physical system. A statement that contains internal contradictions has high semantic entropy; one that resolves them has low entropy and high coherence. Interactions between minds are modeled as thermodynamic exchanges in which entropy can be produced locally or exported to the surrounding environment. What is striking about this framework is that it arrives at essentially the same structural conclusions as the visibility field theory from a completely different starting point. The connection between them is not merely analogical: the CT variables map onto the RSVP fields directly, and the CT laws become derivable consequences of the field equations. Virality, in this combined language, is not just a visibility event but a thermal event — a phase transition in which semantic temperature rises past the point where coherence can be maintained.

We now integrate Coherence Thermodynamics (CT) (Barton 2025) into the scalar–vector–entropy framework, treating reputational dynamics as a thermodynamic sector of the field theory developed above. This establishes a direct correspondence between visibility-driven interaction and non-equilibrium semantic thermodynamics, moving the relationship from analogy to structural identification.

26.1 Field Identification

We identify the CT variables with the field-theoretic quantities already defined:

$$S(x,t) = \int w(x)\, S^*(x,t)\, dx, \qquad \mathbf{v}(x,t) \sim j_R(x,t), \qquad T^*(x,t) \sim f(|\nabla\Phi(x,t)|).$$

Here S^* denotes local contradiction load in the CT sense, and reputational entropy S is its coarse-grained projection over the interpretive manifold. Interpretive flow $\mathbf{v}$ corresponds to the coherence flux j_R, while visibility gradients act as sources of semantic temperature. The identification is not merely formal: the

CT entropy balance equation

$$\frac{\partial s}{\partial t} = -\nabla \cdot j_R + \sigma$$

maps directly onto the RSVP entropy equation with advective, diffusive, and production terms.

26.2 Visibility-Induced Semantic Heating

Theorem 5 (Visibility-Induced Semantic Heating)**.** *Increases in visibility gradients induce increases in semantic temperature and therefore increase semantic entropy production:*

$$|\nabla\Phi| \uparrow \quad \Rightarrow \quad T^* \uparrow \quad \Rightarrow \quad \frac{\partial S}{\partial t} \uparrow .$$

Proof. By field coupling, interpretive flow satisfies $\mathbf{v} \sim \nabla\Phi$. Entropy production scales as $\alpha|\mathbf{v}|^2$, while CT defines semantic temperature as the degree of agitation in interpretive phase. Increasing $|\nabla\Phi|$ increases both $|\mathbf{v}|^2$ and T^*, driving increased entropy production. □ □

26.3 Virality as a High-Temperature Phase

Using the CT coherence functional

$$C_T = \frac{1}{T^* S^*},$$

the instability condition acquires a thermodynamic form:

$$\text{Virality} \;\Rightarrow\; T^* \uparrow \Rightarrow\; S^* \uparrow \Rightarrow\; C_T \downarrow .$$

The transition from controlled dissemination to virality corresponds to a phase transition from a low-temperature coherent regime to a high-temperature incoherent one. The No-Go Theorem becomes a statement about unavoidable coherence collapse under unbounded semantic heating. This thermodynamic interpretation allows the result to be understood not only as a structural limitation, but as a direct consequence of coherence collapse under semantic heating.

26.4 Entropy Export and Manifold Redistribution

In CT, local order is achieved by exporting contradiction:

$$\frac{\partial s}{\partial t} = -\nabla \cdot j_R + \sigma.$$

Within the field framework, exported entropy is not removed from the system but redistributed across the manifold:

$$S_{\text{local}} \downarrow \implies S_{\text{global}} \uparrow .$$

Viral events therefore act as entropy sources for surrounding domains, producing destabilization that propagates beyond the originating system. This explains the observed diffusion of controversy and narrative fragmentation into adjacent communities that had no direct contact with the original exposure event.

26.5 The Filtering Condition as Boundary Constraint

The CT principle governing what enters a system — that inputs should not exceed an entropic threshold — corresponds within the field framework to a boundary condition:

$$\Phi(x,t) = 0 \quad \text{for regions where } S^*_{\text{input}} > S^*_{\text{threshold}}.$$

Selective dissemination is therefore not merely a practical heuristic but the correct entropy-filtering boundary condition. Instability arises when this condition fails and high-entropy inputs penetrate the system, overwhelming its corrective capacity.

26.6 AGI as a Low-Temperature Limit

The hypothesized Phase IV corresponds to the CT limit:

$$T^* \to 0, \quad S^* \to S_0, \quad C_T \to \infty.$$

This requires that entropy production never exceeds export:

$$\sigma \leq \nabla \cdot j_R \quad \forall x, t.$$

Any residual mismatch between domains produces $\Delta_{ij} > 0$ and therefore $\frac{dS}{dt} > 0$, reintroducing entropy through boundary interactions, consistent with the Re-emergence Theorem.

26.7 Socio-Economic Interpretation

The thermodynamic structure clarifies the inequality results. High-resource agents effectively operate in low-temperature, high-coherence regimes ($T^* \downarrow$, $C_T \uparrow$), while low-resource agents operate in high-temperature regimes ($T^* \uparrow$, $C_T \downarrow$). Economic inequality therefore corresponds to differential access to low-entropy regions of the interpretive manifold. Credentialing systems function not only as epistemic filters but as mechanisms granting access to protected low-temperature zones with reduced entropy production per interaction.

27 A Variational Formulation for the Unified Semantic Field Theory

Classical mechanics achieves its deepest formulation not by writing equations of motion directly but by identifying a scalar quantity — the action — whose minimization produces all the equations of motion as consequences. This variational approach is more than an aesthetic preference; it imposes internal consistency on the theory, makes its symmetries explicit, and provides a framework for extension. The same move is available here. The coupled dynamics of visibility, semantic phase, entropy, and interpretive flow can be derived from a single Lagrangian density, which means that the various field equations already written are not independent assumptions but consequences of a common variational principle. Discovering this Lagrangian makes the theory self-consistent in a way that a collection of separate equations, however well-motivated, cannot be.

We now propose a minimal Lagrangian density whose Euler–Lagrange structure reproduces the coupled dynamics of visibility, contradiction, and coherence. The purpose is not to claim a final microscopic derivation, but to provide a consistent variational scaffold unifying the local thermodynamic laws of CT with the global transport geometry of the field framework.

27.1 Dynamical Variables

Let the dynamical fields on $\mathcal{M}$ be $\Phi(x,t)$ (visibility potential), $\phi(x,t)$ (semantic phase), $S(x,t)$ (coarse-grained contradiction entropy), and $\mathbf{v}(x,t)$ (interpretive transport). We treat the CT coherence scalar α as derived from (ϕ, S), and semantic temperature T^* as derived from phase agitation and visibility forcing:

$$T^* = T_0 + \gamma(\partial_t\phi)^2 + \gamma_\Phi|\nabla\Phi|^2 + \gamma_S S.$$

This identifies three sources of semantic heating: phase fluctuation, visibility gradient, and accumulated contradiction.

27.2 Minimal Lagrangian Density

We propose the effective Lagrangian density:

$$\mathcal{L} = \frac{a}{2}(\partial_t\phi)^2 - \frac{b}{2}|\nabla\phi|^2 + \frac{c}{2}|\mathbf{v}|^2 - U(\Phi) - W(S) - \lambda S|\nabla\phi|^2 - \mu\,\mathbf{v}\cdot\nabla\Phi - \nu\,\mathbf{v}\cdot\nabla S - \xi\,\Phi S.$$

The phase kinetic term $\frac{a}{2}(\partial_t\phi)^2$ encodes semantic agitation, providing the basis for semantic temperature. The gradient term $-\frac{b}{2}|\nabla\phi|^2$ penalizes incoherent phase deformation, acting as coherence elasticity. The transport energy $\frac{c}{2}|\mathbf{v}|^2$ represents the energetic cost of interpretive flow. The coupling $-\lambda S|\nabla\phi|^2$ states that contradiction load amplifies the cost of maintaining coherent phase structure. The transport couplings $-\mu\,\mathbf{v}\cdot\nabla\Phi$ and $-\nu\,\mathbf{v}\cdot\nabla S$ encode the core principle that flow is driven by gradients in visibility and entropy. Finally, $-\xi\,\Phi S$ states that visibility and contradiction mutually reinforce under exposure.

27.3 Euler–Lagrange Consequences

Variation with respect to $\mathbf{v}$ gives:

$$\mathbf{v} = \frac{\mu}{c}\nabla\Phi + \frac{\nu}{c}\nabla S,$$

reproducing the RSVP principle that interpretive flow is driven by visibility and contradiction gradients. Variation with respect to ϕ gives:

$$a\,\partial_t^2\phi - b\,\Delta\phi - \lambda\nabla\cdot(S\nabla\phi) = 0,$$

describing a phase field whose coherence is destabilized by contradiction load. Variation with respect to Φ and S respectively yield forcing and contradiction balance equations coupling all fields together.

27.4 Dissipative Entropy Balance

Because CT includes irreversible entropy production and export, the Lagrangian must be supplemented with a dissipative balance:

$$\frac{\partial S}{\partial t} + \nabla \cdot (S\mathbf{v}) = D_S \Delta S + \alpha |\mathbf{v}|^2 + \alpha_\phi |\nabla \phi|^2 - \beta \mathcal{C}, \qquad \sigma \geq 0.$$

This is the unified non-equilibrium law combining advection, diffusion, production from interpretive activity and phase strain, and correction.

27.5 Coherence Functional and Master Inequality

Adopting the CT coherence form $C_T = 1/(T^* S)$, the causal chain becomes:

$$\Phi \uparrow \Rightarrow \ |\nabla \Phi| \uparrow \Rightarrow \ T^* \uparrow \Rightarrow \ S \uparrow \Rightarrow \ C_T \downarrow .$$

The master instability condition is:

$$\alpha |\nabla \Phi|^2 > \beta \mathcal{C} \implies \frac{dS}{dt} > 0 \implies C_T \downarrow .$$

27.6 Unified Action and Phase Conditions

The unified effective action is:

$$\mathcal{S}_{\text{eff}} = \int (L_{\text{task}} - \lambda \Phi - \mu S - \nu T^*)\, dt,$$

with stationary trajectories satisfying $\delta \mathcal{S}_{\text{eff}} = 0$. The four phases now carry thermodynamic characterizations. Phase I satisfies $T^* \approx 0$, $S \approx S_0$, $C_T \gg 1$. Phase II satisfies $T^* \uparrow$, $S \uparrow$, $C_T \sim 1$. Phase III satisfies $T^* \gg 0$, $S \gg 1$, $C_T \ll 1$. Phase IV requires $T^* \to 0$, $S \to S_0$, $C_T \to \infty$ simultaneously with large Φ.

Theorem 6 (Thermodynamic Form of the No-Go Theorem)**.** *In any finite system with bounded correction $\mathcal{C} < \infty$, increasing visibility induces a temperature rise that produces entropy faster than it can be dissipated:*

$$\Phi \to \infty \quad \Rightarrow \quad C_T \to 0.$$

Proof. From the temperature closure $T^* \sim |\nabla \Phi|^2$ and entropy production $\frac{dS}{dt} \sim |\nabla \Phi|^2$, both T^* and S diverge as $\Phi \to \infty$ with bounded correction. Since $C_T = 1/(T^* S)$, coherence collapses to zero. □ □

28 Semantic Stress, Flux, and Balance Laws

When a bridge engineer wants to understand whether a structure will hold, they do not merely ask whether the total load exceeds some threshold. They ask how the load is distributed across the structure, where stress concentrates, whether any region is being asked to bear more than its elastic capacity permits, and how forces propagate through the material when a local failure occurs. The same geometric thinking applies to the semantic field. It is not sufficient to know that entropy is increasing globally; one needs to know where contradiction is accumulating, how fast it is moving, whether any domain is approaching its coherence limit, and what happens to neighboring domains when one collapses. The stress tensor introduced below provides exactly this level of resolution: a spatial account of where semantic pressure is building and where coherence strain is being absorbed.

To complete the field-theoretic description, we introduce a stress-based account of semantic transport. This extends the variational formulation by identifying the geometric objects that carry contradiction, coherence strain, and visibility forcing across the manifold.

28.1 Semantic Stress Tensor

Define the semantic stress tensor:

$$\Theta_{ij} = b\,\partial_i\phi\,\partial_j\phi + c\,v_i v_j - \delta_{ij}\left[\frac{b}{2}|\nabla\phi|^2 + \frac{c}{2}|\mathbf{v}|^2 + W(S) + \xi\Phi S\right].$$

The phase contribution $b\,\partial_i\phi\,\partial_j\phi$ measures coherence strain: regions with strong phase gradients carry semantic tension. The transport contribution $c\,v_i v_j$ measures directional interpretive momentum. The isotropic subtraction acts as a semantic pressure term, incorporating contradiction storage through $W(S)$ and exposure-coupled destabilization through $\xi\Phi S$.

28.2 Force Density and Decomposition

The effective semantic force density is $f_i^{\text{sem}} = -\partial^j\Theta_{ij}$. This realizes, in geometric form, the CT claim that coherence gradients generate restoring forces and that contradiction-bearing systems possess resistance to recursive deformation. The force decomposes as:

$$\mathbf{f}^{\text{sem}} = \mathbf{f}_\phi + \mathbf{f}_v + \mathbf{f}_{S,\Phi},$$

where $\mathbf{f}_\phi$ is the coherence-elastic force from phase strain, $\mathbf{f}_v$ is the transport-inertial force from interpretive momentum, and $\mathbf{f}_{S,\Phi}$ is the contradiction-pressure force from entropy density and visibility coupling. Publicity is therefore not merely informational diffusion but a force-generating perturbation in a semantic medium.

28.3 Balance Law and Semantic Pressure

The unified balance law is:

$$\frac{\partial S}{\partial t} + \partial_i j_R^i = \sigma, \qquad \partial_j \Theta^{ij} + f_{\text{ext}}^i = \mathcal{D}^i,$$

where f_{ext}^i represents external forcing from institutions, markets, or algorithmic amplification, and $\mathcal{D}^i$ is a dissipative term encoding irreversible loss of coherence under strain.

Define semantic pressure $p_{\text{sem}} = W(S) + \xi \Phi S$. Under virality, $p_{\text{sem}} \gg 0$, producing strong outward semantic stress. Instability occurs when $|\nabla p_{\text{sem}}|$ drives forces larger than the local coherence-elastic response.

Theorem 7 (Local Stress Criterion for Semantic Stability)**.** *A region $U \subset \mathcal{M}$ remains semantically stable only if the coherence-elastic part of the stress dominates the contradiction-pressure part:*

$$|\nabla \cdot \Theta_\phi| \geq |\nabla \cdot \Theta_{S,\Phi}| .$$

Proof. Stability requires that restorative coherence forces balance or exceed contradiction-pressure forces. If the contradiction-pressure component dominates, the net force drives the system away from phase alignment, increasing both contradiction load and semantic agitation irreversibly. □ □

This provides a geometric version of the earlier no-go results. Low protective capacity corresponds to lower effective coherence elasticity: agents with fewer resources can tolerate smaller semantic stresses before deformation becomes irreversible.

29 Free Energy, Stability, and Basin Structure

Think of a ball resting in a bowl. Small perturbations displace it, but it returns to the bottom; the configuration is stable. Now imagine gradually tilting the bowl while making it shallower. At some point the ball sits at a precarious equilibrium, and a small push sends it over the rim and rolling away. It will not return on its own. This is the geometry of the free energy landscape that governs visibility dynamics. An agent operating at low exposure inhabits a deep basin: distortions are self-correcting, rumors dissipate, and the narrative tends to return to something close to ground truth. As exposure increases, the basin shallows and tilts. Beyond the critical threshold, there is no longer a restoring force. The system has escaped into a higher-energy regime, and returning to the original state requires external work that is rarely available. The free energy functional below makes this geometry precise and shows how inequality in protective capacity translates into inequality in basin depth.

We now introduce a free-energy functional governing the stability of configurations in the semantic field, providing a global criterion for coherence and clarifying the distinction between stable dissemination and runaway exposure.

29.1 Free Energy Functional

Define:

$$\mathcal{F}[\phi, \Phi, S] = \int_{\mathcal{M}} \left[\frac{b}{2}|\nabla\phi|^2 + W(S) + \xi\Phi S + \frac{\kappa}{2}|\nabla\Phi|^2 \right] dx.$$

The terms correspond respectively to coherence strain, contradiction storage, the coupling between exposure and contradiction, and visibility gradient energy. Free energy thus measures the total structural burden of maintaining coherence under exposure and contradiction.

29.2 Gradient Flow and Stable Configurations

The system evolves by gradient descent subject to transport and irreversible production:

$$\frac{\partial\phi}{\partial t} = -\frac{\delta\mathcal{F}}{\delta\phi}, \qquad \frac{\partial S}{\partial t} = -\frac{\delta\mathcal{F}}{\delta S} + \sigma.$$

A configuration is stable if $\delta\mathcal{F} = 0$ and $\delta^2\mathcal{F} > 0$, corresponding to low phase gradients, bounded contradiction load, and weak coupling between visibility and entropy. These are precisely the conditions characterizing Phases I and IV.

29.3 Virality as Basin Escape

Under increasing visibility, the coupling term $\xi\Phi S$ and gradient energy $\frac{\kappa}{2}|\nabla\Phi|^2$ grow rapidly. Beyond the critical threshold Φ_c, defined by $\frac{\partial^2\mathcal{F}}{\partial\Phi^2}(\Phi_c) = 0$, the local minimum flattens and the system is driven out of its stable basin. Virality is therefore not merely high exposure but escape from a metastable coherent basin.

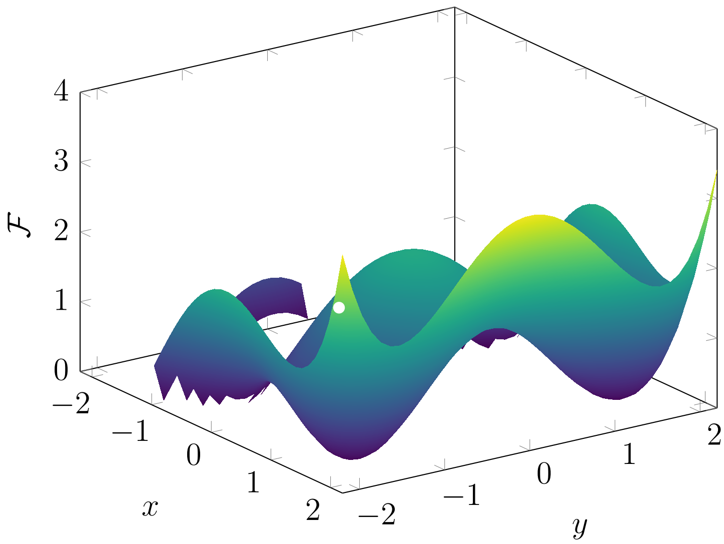

Figure 4: Free energy manifold $\mathcal{F}(x, y)$ as a surface over configuration space. The low-energy well (white marker) is the stable coherent basin. The asymmetric tilt introduced by the $0.6x$ term breaks left–right symmetry, establishing a preferred runaway direction: increasing visibility loads energy into the system until the basin is no longer confining and the trajectory escapes toward the high-$\mathcal{F}$ rim. The z-domain is clamped at 4 to preserve the basin geometry; beyond the rim, $\mathcal{F}$ continues to rise without bound.

29.4 Hysteresis and Inequality in the Energy Landscape

Because entropy production is irreversible ($S(t_2) \geq S(t_1)$), the original basin is not fully recoverable after instability: $\mathcal{F}_{\text{final}} > \mathcal{F}_{\text{initial}}$ even after exposure decreases. Protective capacity modifies the effective energy landscape: agents with higher resources experience $W(S) \to \tilde{W}(S)$ with $\tilde{W}'(S) < W'(S)$, producing deeper, wider basins more resistant to perturbation. Agents with low protective capacity experience shallower basins and earlier escape, providing yet another geometric formulation of the Inequality Amplification Theorem.

30 Renormalization and Scale Dependence of Visibility Dynamics

A rumor circulating within a village of two hundred people behaves very differently from the same rumor on a platform reaching two hundred million. The claim is the same, the initial speaker is the same, and the mechanism of transmission is recognizably similar. What changes is scale, and scale changes everything. At the village level, most recipients know the subject personally and have independent means of verification; the claim is quickly tested and either confirmed or refuted. At platform scale, most recipients have no independent access to the subject, no relationship with the original speaker, and no means of checking the claim except other claims — which are themselves subject to the same dynamics. Entropy production per interaction may be similar in both cases, but the ratio of entropy production to available correction collapses as scale increases. This is not a sociological observation about platforms but a mathematical consequence of how the field parameters transform under coarse-graining. The renormalization analysis below makes this precise.

The dynamics derived above describe local behavior. These quantities are not invariant under changes of scale, and the same process behaves differently depending on whether it occurs within a small, high-context domain or across a large, heterogeneous manifold.

30.1 Scale-Dependent Parameters and Stability Ratio

Define coarse-grained fields Φ_ℓ, S_ℓ, $\mathbf{v}_\ell$ as averages over neighborhoods of radius ℓ. As ℓ increases, the system integrates over increasingly heterogeneous interpretive contexts, inducing effective changes in the field parameters. Empirically and structurally:

$$\alpha(\ell)\uparrow, \quad \chi(\ell)\uparrow, \quad \eta(\ell)\uparrow, \quad \beta(\ell)\downarrow .$$

The stability ratio therefore satisfies:

$$\kappa(\ell) = \frac{\beta(\ell)\,\mathcal{C}(\ell)}{\alpha(\ell)\,|\nabla\Phi_\ell|^2} \;\downarrow\; \text{ as } \ell\uparrow .$$

Systems that are stable at small scales become unstable at large scales. This defines a renormalization group trajectory flowing toward a high-entropy, low-coherence regime.

30.2 Algorithmic Amplification as Scale Acceleration

Modern dissemination systems act as operators that effectively compress renormalization steps:

$$\ell \to \ell_{\text{eff}} \gg \ell.$$

This applies a coarse-graining transformation without the intermediate stabilization that occurs under natural diffusion, driving the system directly into the turbulent regime. Algorithmic amplification is not merely increased visibility but accelerated renormalization. Inequality under scale change is similarly non-uniform: high-resource agents maintain $\beta(\ell)\mathcal{C}(\ell)$ relatively stable, while low-resource agents experience rapid decay, producing $\kappa_i(\ell) \gg \kappa_j(\ell)$ for large ℓ.

Theorem 8 (Renormalization Form of the No-Go Theorem)**.** *Under increasing scale, the renormalization flow drives the stability ratio to zero:*

$$\ell \uparrow \quad \Rightarrow \quad \kappa(\ell) \downarrow \to 0.$$

Stable high-visibility operation cannot be maintained across arbitrarily large scales.

Proof. By the scale dependence of parameters, $\alpha(\ell)/\beta(\ell) \uparrow$ and $|\nabla\Phi_\ell|^2 \uparrow$ as ℓ increases while $\mathcal{C}(\ell)$ does not compensate. Therefore $\kappa(\ell) \to 0$. □ □

31 Visibility as a Relevant Operator

In the language of renormalization group theory, a perturbation applied to a system can behave in three qualitatively distinct ways as the scale of observation increases. It can grow, in which case it dominates the large-scale physics and drives the system toward a new fixed point; it can remain constant, indicating that it matters equally at every scale; or it can shrink, meaning that whatever effect it has at small scales becomes negligible at large ones. These three behaviors are called relevant, marginal, and irrelevant respectively, and the classification is not a matter of convention but of the underlying structure of the theory. The claim of this section is that visibility is a relevant perturbation. Small amounts of exposure may be practically negligible, but as scale increases, the influence of visibility does not saturate or diminish — it grows, amplifying entropy production faster than correction can compensate. This is why the intuition that a little more exposure is always a little better is structurally wrong: exposure is not a quantity that can be increased incrementally without changing the qualitative behavior of the system.

We complete the field-theoretic account by classifying visibility within a renormalization framework as a perturbation whose influence grows under scale transformation.

31.1 Operator Classification and Growth

Under the scale transformation $x \to \lambda x$, the visibility field transforms as $\Phi(x) \to \lambda^{\Delta_\Phi}\Phi(\lambda x)$. Operators are classified as relevant ($\Delta_\Phi > 0$), marginal ($\Delta_\Phi = 0$), or irrelevant ($\Delta_\Phi < 0$). Visibility behaves as a relevant operator: $\Delta_\Phi > 0$, meaning

$$\Phi_\ell \sim \ell^{\Delta_\Phi}, \qquad \frac{d\Phi}{d\log \ell} > 0.$$

Because entropy production scales as $|\nabla\Phi|^2$, the growth of Φ under renormalization induces superlinear entropy growth:

$$S_\ell \sim \ell^{2\Delta_\Phi}.$$

Visibility is therefore not only relevant but entropy-amplifying under scale change.

31.2 Fixed Points and Irreversibility

Two qualitative fixed points are identifiable. The coherent fixed point ($\Phi \approx 0, S \approx S_0, \kappa \gg 1$) corresponds to low coupling and stable interpretation. The turbulent fixed point ($\Phi \gg 1, S \gg 1, \kappa \ll 1$) corresponds to maximal coupling and loss of coherence. The relevance of visibility drives the system away from the coherent fixed point toward the turbulent one. Because $\sigma \geq 0$, this flow is not symmetric: once the system has been driven toward high entropy, returning to the original fixed point requires external work. Visibility is therefore not only relevant but irreversibly relevant.

Suppression of this relevance requires reducing the effective scaling dimension Δ_Φ, increasing $\beta(\ell)$, or partitioning the manifold to prevent global coupling. These correspond precisely to the practical strategies of selective dissemination, domain restriction, and reputation buffering.

The classification of visibility as a relevant operator completes the field-theoretic interpretation of publicity. Virality is the natural consequence of a perturbation that grows under renormalization flow. The ideology of maximizing visibility is equivalent to applying a relevant operator that drives the system to a high-entropy fixed point. Without structural modification of the scaling behavior, the flow toward instability is not contingent but thermodynamically inevitable.

32 Duality of Visibility and Opacity

Every mechanism of stability developed in the preceding sections — domain restriction, low-gradient presence, selective dissemination, boundary conditions — implicitly invokes the complement of visibility. Rather than leaving this complement unnamed, it is worth formalizing it as a field in its own right. Doing so reveals that the strategies practitioners intuitively reach for (remaining under the radar, cultivating small audiences, communicating through trusted intermediaries) are not merely the absence of publicity but active configurations of a dual field with its own dynamics and its own role in the stability structure.

32.1 The Opacity Field

Define the opacity field $\Psi(x,t)$ by the relation

$$\Phi(x,t) + \Psi(x,t) = \Phi_{\text{max}},$$

so that opacity and visibility are locally complementary. High Ψ corresponds to low coupling between the agent and the interpretive manifold: weak interaction, reduced flow, and attenuated entropy production. Low Ψ corresponds to strong coupling and high exposure.

32.2 Dual Variational Principle

Under this duality, the Visibility Minimization Principle admits an equivalent formulation in terms of its dual: among all trajectories achieving the objective $\mathcal{T}$, the optimal trajectory maximizes cumulative opacity subject to the same task constraint:

$$\Psi^* = \arg\max_{\Psi \in \mathcal{A}(\mathcal{T})} \int_{t_0}^{t_1} \Psi(t)\, dt.$$

Stability may therefore be understood not only as the minimization of exposure but as the maximization of structural buffering.

32.3 Gauge Interpretation

The pair (Φ, Ψ) forms a gauge-like degree of freedom over the communicative field. Different representations of the same underlying signal may correspond to different (Φ, Ψ)-configurations while preserving task-relevant content. High-Φ gauges maximize coupling but increase entropy production; high-Ψ gauges preserve structure while minimizing adversarial interaction. The gauge interpretation introduced earlier for visibility alone is thus completed: choosing how to present a given piece of work is not merely a stylistic decision but a selection of position within a two-dimensional field space.

32.4 Opacity as Extended Protection

Opacity contributes directly to effective protective capacity:

$$P_{\text{eff}} = P + \gamma\Psi,$$

for some coupling constant $\gamma > 0$. The stability condition $S \leq P$ becomes

$$S(x,t) \leq P(x,t) + \gamma\Psi(x,t),$$

so that agents unable to increase institutional protection P may partially compensate by increasing structural opacity. This explains why privacy, anonymity, and operating within small high-context communities are not merely personal preferences but thermodynamically functional strategies: they extend the effective stability envelope without requiring the institutional resources that P demands.

33 Information Geometry of the Interpretive Manifold

The manifold $\mathcal{M}$ of interpretive contexts has so far been treated topologically: points represent configurations of belief and incentive, fields are defined over them, and flows carry entropy between them. This structure is sufficient to derive the field equations and the no-go result, but it leaves the geometry of $\mathcal{M}$ itself unspecified. Metrizing the manifold — equipping it with a measure of interpretive distance — allows the theory to say something precise about what it means for two audiences to be close or far apart, and why traversing the distance between them is costly.

33.1 The Interpretive Metric

Let $g_{ij}(x)$ be a Riemannian metric on $\mathcal{M}$ where the geodesic distance $d(x, y)$ encodes divergence in beliefs, priors, incentive structures, and interpretive frameworks between contexts x and y. Two audiences with shared vocabulary, common assumptions, and aligned purposes are metrically close. Two audiences with opposed priors and incompatible evaluative frameworks are metrically distant.

33.2 Metric-Induced Entropy Production

In the presence of a metric, entropy production depends not merely on flow magnitude but on flow direction relative to the geometry:

$$\frac{\partial S}{\partial t} \sim \alpha \, g_{ij} \, v^i v^j.$$

Flow across large interpretive distances produces disproportionately high entropy production. A message traversing an audience of metrically distant contexts generates more distortion per unit of interaction than the same message circulating within a metrically close community, regardless of the total number of interactions.

33.3 Curvature and Narrative Divergence

Let R_{ijkl} denote the Riemann curvature tensor of $(\mathcal{M}, g)$. Regions of high curvature correspond to rapidly changing interpretive structure: audiences that diverge sharply in their frameworks over short distances. Transport through such regions induces geodesic deviation:

$$\frac{D^2 x^i}{dt^2} \sim R^i{}_{jkl} \, v^j v^k,$$

amplifying interpretive mismatch and therefore entropy production. Virality that penetrates high-curvature regions of the interpretive manifold generates disproportionate fragmentation, not because the message is poor but because the geometric structure of the audience field is adversarial to coherent transport.

33.4 Geodesics of Safe Dissemination

Optimal dissemination paths minimize the length functional

$$\mathcal{L}[\gamma] = \int g_{ij}\, \dot{x}^i \dot{x}^j \, dt,$$

corresponding to geodesics that minimize cumulative interpretive distance traversed. Safe dissemination follows paths that remain within metrically close, low-curvature submanifolds of $\mathcal{M}$: expanding outward only into audiences that are interpretively nearby, rather than broadcasting into maximally heterogeneous fields. The everyday strategy of identifying one's audience carefully before publishing is, in this language, geodesic path selection.

34 A Categorical Formulation of Propagation and Distortion

The field-theoretic framework models how entropy accumulates over a manifold. A complementary perspective, natural given the rest of the theoretical context, is categorical: treating interpretation as a system of structured mappings and distortion as the failure of those mappings to compose coherently. This perspective makes precise what it means for meaning to be preserved or degraded across a chain of transmission.

34.1 Categorical Structure

Let each domain D be an object in a category $\mathcal{C}$, and let interpretive mappings be morphisms $f_{ij} : D_i \to D_j$ encoding how the content originating in D_i is received and reinterpreted within D_j. Ideal communication would correspond to a functor $F : \mathcal{C} \to \mathcal{C}$ that preserves compositional structure:

$$F(f_{jk} \circ f_{ij}) = F(f_{jk}) \circ F(f_{ij}).$$

This is the categorical statement that meaning is preserved under relay: what passes through two successive reinterpretations arrives the same as if the original meaning had been applied directly.

34.2 Distortion as Failure of Functoriality

In practice, propagation is not functorial. The composition of interpretive mappings does not commute with the mapping of compositions:

$$F(f_{jk} \circ f_{ij}) \neq F(f_{jk}) \circ F(f_{ij}).$$

The deviation from functoriality defines distortion:

$$\Delta = \|F(f_{jk} \circ f_{ij}) - F(f_{jk}) \circ F(f_{ij})\|.$$

Reputational entropy may be interpreted as the accumulation of such deviations across all propagation paths. The entropy density $S(x, t)$ at a point in the manifold measures the local degree of non-functoriality in the interpretive structure passing through that region.

34.3 Correction as Natural Transformation

Corrective mechanisms correspond to natural transformations $\eta : F \Rightarrow G$ that attempt to restore consistency between a distorted propagation functor F and a reference functor G encoding the intended meaning. The bounded correction assumption $\mathcal{C} \leq C_{\text{max}}$ becomes, in categorical language, the requirement that the natural transformation η has bounded norm:

$$\|\eta\| \leq \eta_{\text{max}}.$$

If non-functoriality accumulates faster than natural transformations can compensate, global coherence cannot be restored. The No-Go Theorem is therefore a statement about the impossibility of maintaining globally coherent functors over heterogeneous categories under unbounded exposure, given only bounded natural transformations.

35 Spectral Decomposition of Reputational Dynamics

The entropy field $S(x, t)$ has been treated as a scalar quantity evolving under a single production-correction balance. A more refined analysis decomposes S into modes indexed by spatial frequency, distinguishing between low-frequency global narratives and high-frequency localized distortions. This spectral perspective gives precise content to the intuition that virality produces narrative fragmentation.

35.1 Mode Decomposition

Expand the entropy field in terms of eigenfunctions $\phi_k(x)$ of the Laplacian on $\mathcal{M}$:

$$S(x,t) = \sum_k S_k(t)\,\phi_k(x),$$

where k indexes modes in order of increasing spatial frequency. Low-k modes correspond to broad, globally coherent narratives. High-k modes correspond to localized, spatially varying distortions.

35.2 Energy Cascade Under Virality

Nonlinear interaction between modes induces an energy transfer toward higher frequencies:

$$\frac{dS_k}{dt} \sim \sum_{i+j=k} S_i S_j - \nu k^2 S_k,$$

where the first term represents nonlinear mode coupling and the second represents dissipation with rate νk^2. Under high visibility, the nonlinear coupling term dominates dissipation for large k, producing a cascade from low-frequency coherent modes to high-frequency fragmented ones.

35.3 Fragmentation Criterion

Narrative fragmentation is defined as the condition under which high-frequency modes dominate the total entropy:

$$\sum_{k>k_c} S_k \gg \sum_{k\leq k_c} S_k,$$

for some coherence cutoff k_c. Below this threshold, the system maintains a globally legible narrative. Above it, the dominant modes are spatially localized and mutually inconsistent.

Virality drives the system across this threshold by injecting energy into the entropy field at a rate that the dissipative terms cannot absorb. The result is not merely higher entropy but entropy concentrated in high-frequency modes

— which is precisely the phenomenology of a story that has "gotten away" from its originator, fracturing into incompatible versions that resist correction by any single authoritative account.

36 Temporal Memory and Non-Markovian Reputational Dynamics

The models presented thus far have been Markovian in the sense that the current entropy production rate depends only on the current state. In practice, reputational dynamics exhibit long memory: an exposure event from months or years ago can continue to influence current vulnerability in ways that a memoryless model cannot capture. The appropriate extension is a memory kernel formulation in which past flows contribute to present entropy through a weighted integration over history.

36.1 Memory Kernel Formulation

Replace the instantaneous entropy production term with a convolution:

$$S(t) = \int_0^t K(t-t')\,|\mathbf{v}(t')|^2\,dt',$$

where $K(\tau) \geq 0$ is a memory kernel encoding the persistence of past exposure events. Short-memory systems have K concentrated near $\tau = 0$. Long-memory systems have K with heavy tails.

36.2 Non-Markovian Evolution

The entropy equation becomes:

$$\frac{\partial S}{\partial t} = \int_0^t K(t-t')\,\frac{\partial}{\partial t'}|\mathbf{v}(t')|^2\,dt' - \beta\,\mathcal{C}.$$

If K decays as a power law,

$$K(\tau) \sim \tau^{-\alpha}, \quad 0 < \alpha < 1,$$

then past exposure events contribute permanently to present entropy at a slowly decaying rate. This produces long-range temporal correlations: an agent who was exposed to a reputational attack three years ago remains more vulnerable today than an agent who was never exposed, even if their current visibility is identical.

36.3 Implications for Recovery

The memory kernel formalizes the observed phenomenon that reputational repair is far slower than reputational damage. Reducing current visibility to zero does not reset the entropy counter; it merely halts new production while past contributions continue to decay at the rate governed by K. True recovery requires not just withdrawal but the passage of sufficient time for $K(\tau)$ to become negligible, which for power-law kernels may be very long indeed. Early exposure decisions are therefore not merely costly in the present; they shape the long-run stability envelope of the entire subsequent trajectory.

37 Game-Theoretic Origin of Adversarial Flow

The adversarial vector field $\mathbf{v}_{\text{adversarial}}$ has been introduced as a phenomenological decomposition of interpretive flow. It is worth deriving it from first principles as an equilibrium outcome of agent incentives, which establishes that adversarial dynamics are not anomalous perturbations but structural features of any system in which agents are evaluated relative to one another.

37.1 Relative Payoff Structure

Let the utility of agent i depend on their performance relative to the population mean:

$$U_i = u(p_i - \bar{p}),$$

where u is increasing and $\bar{p}$ is the average performance. Then:

$$\frac{\partial U_j}{\partial p_i} < 0 \quad \text{for } i \neq j,$$

so any improvement by agent i reduces the utility of every other agent. This creates an immediate incentive for agents to resist or undermine the visibility of others, not from malice but from rational self-interest under a relative payoff structure.

37.2 Equilibrium Adversarial Flow

In equilibrium, agents allocate effort toward actions that reduce others' relative standing, producing an interpretive flow directed against high-visibility agents:

$$\mathbf{v}_{\text{adversarial}} \sim -\nabla_x p(x,t).$$

The adversarial flow is therefore not a random perturbation but a gradient flow oriented against performance gradients in the social field.

37.3 Coupling to Visibility

Higher visibility increases both the salience of the target and the potential payoff from adversarial action, since a successful attack on a high-visibility agent yields a larger relative gain:

$$\text{adversarial incentive} \sim \Phi(x,t).$$

Thus adversarial flow scales with exposure: the more visible an agent, the more rational it becomes for competitors, ideological opponents, and threatened incumbents to invest in reputational attacks. This explains why visibility does not merely attract more criticism in proportion to reach but disproportionate organized opposition: the equilibrium adversarial investment is itself a function of the visibility scalar.

38 Observability, Hidden Entropy, and Sudden Collapse

The empirical signatures discussed earlier assume that the relevant field quantities can be measured. In practice, a significant portion of the entropy dynamics are latent: suppressed narratives accumulate without becoming visible, adversarial preparations proceed below detection thresholds, and corrective interventions fail silently before their failure is apparent. This observability gap explains a phenomenon that the field equations alone do not: systems that appear stable suddenly collapse without warning.

38.1 Observable and Latent Entropy

Let $H : \mathbb{R} \to \mathbb{R}$ be a lossy observation operator, so that measured entropy satisfies $\hat{S} = H(S)$ with H not injective. Define latent entropy as the unobserved component:

$$S_{\text{latent}} = S - \hat{S}.$$

The stability condition as operationally assessed is $\hat{S} \leq P$, but the true condition is $S = \hat{S} + S_{\text{latent}} \leq P$. If S_{latent} grows without triggering observable signals, a system can satisfy the apparent stability condition while the true condition is being violated.

38.2 Delayed Detection and Sudden Collapse

Consider a regime in which S_{latent} grows slowly but $\hat{S}$ remains near baseline because the entropy is accumulating in modes or domains that the observation system does not sample. When S_{latent} eventually becomes large enough to cross into observable channels, it does so discontinuously from the perspective of the observer: what appeared to be a stable system is suddenly in deep instability. This is the generic mechanism behind the experience of a reputation that seemed solid collapsing within days under an event that, viewed from outside, appears disproportionate to its apparent cause. The cause was not the visible event but the latent entropy it released.

38.3 Observability Criterion

A system is fully observable with respect to entropy dynamics if and only if:

$$\ker H = \{0\},$$

i.e., H is injective and no entropy is hidden. This condition is rarely satisfied in practice: social systems routinely hide entropy in informal communication, suppressed narratives, off-platform discourse, and latent adversarial organization. The practical implication is that apparent stability should be treated as a lower bound on true stability, never as a reliable indicator.

39 Minimal Two-Domain Model

The general theory operates at a high level of abstraction. To confirm that the qualitative behavior it predicts is genuinely implied by the equations and not merely asserted, it is useful to reduce the framework to its simplest nontrivial case: two domains with a single interface, explicit entropy dynamics, and one visibility input.

39.1 Setup

Let D_1 and D_2 be two domains with representational mismatch $\Delta > 0$. Interpretive flow between them satisfies:

$$|\mathbf{v}_{12}| \sim |\nabla\Phi| \cdot \Delta,$$

so that mismatch amplifies flow-induced entropy production. The entropy dynamics for each domain are:

$$\frac{dS_1}{dt} = \alpha|\mathbf{v}_{12}|^2 - \beta\mathcal{C}_1,$$
$$\frac{dS_2}{dt} = \alpha|\mathbf{v}_{12}|^2 - \beta\mathcal{C}_2.$$

39.2 Instability Condition

Substituting the flow expression, instability occurs in the weaker domain when:

$$\alpha|\nabla\Phi|^2\Delta^2 > \beta\min(\mathcal{C}_1, \mathcal{C}_2).$$

The critical visibility gradient is therefore:

$$|\nabla\Phi|_c = \sqrt{\frac{\beta\min(\mathcal{C}_1, \mathcal{C}_2)}{\alpha\Delta^2}}.$$

This shows that instability scales inversely with mismatch: doubling Δ reduces the critical gradient by a factor of two, meaning that highly heterogeneous audiences become unstable at much lower levels of visibility than homogeneous ones. The no-go result, the inequality amplification theorem, and the re-emergence theorem all manifest explicitly in this minimal model: the first as the finite value of $|\nabla\Phi|_c$, the second as the dependence on $\min(\mathcal{C}_1, \mathcal{C}_2)$, and the third as the positive entropy production at the interface even when both domains are internally stable in isolation ($\Delta = 0$).

40 Conclusion: Coherence Under Flow

The foregoing analysis reveals a unified structure beneath phenomena that ordinarily appear unrelated: gossip in offline communities, competitive suppression in markets, resentment in curved grading systems, algorithmic containment of disruptive ideas, and the contested question of whether a decentralized AGI ecology could sustain stable high-visibility operation.

In each case, the underlying mechanism is the same. An agent increases its coupling to a heterogeneous field. The field generates flows. The flows produce entropy. The entropy accumulates faster than it can be corrected. The signal degrades.

The question posed by the AGI extension is whether these dynamics are contingent features of current systems or structural properties of any system operating under distributed interpretation. The analysis suggests the latter. The No-Go Theorem holds under assumptions that are not specific to human social systems: interaction produces distortion, visibility induces interaction, and correction is bounded. Any system operating on a heterogeneous manifold with finite corrective capacity faces the same constraints. What changes across system types is the magnitude of the parameters, not the form of the inequalities.

The four-phase structure—coherent, competitive, turbulent, resonant—provides a map of the possible regimes, and the order parameters (κ, η, χ) provide the coordinates. Human social systems typically oscillate between Phases I and III. Current platforms tend to drive systems toward Phase III. The AGI vision targets Phase IV. Whether Phase IV is accessible, and whether it remains stable once reached, depends on whether the thermodynamics of interpretation can be genuinely re-engineered or whether the entropy production term reasserts itself at larger scales and longer timescales.

The lesson is not that communication is impossible or that exposure should be avoided entirely. It is that visibility is a dynamical variable with costs, not a monotonically good quantity to be maximized. The rational strategy under these dynamics is to achieve objectives with the least exposure necessary, preserving structural integrity under adversarial and entropic flows.

Within the RSVP framework, this is not a sociological observation but a consequence of field geometry. The reputational sector instantiates the same scalar–vector–entropy coupling that governs any non-equilibrium plenum. Coherence under flow is the invariant that must be preserved. Virality is its destruction.

The problem of publicity is therefore not one of amplification but of stability. And stability, in any field-theoretic system, is achieved not by increasing the amplitude of the signal, but by maintaining the integrity of the structure that carries it. Whether any successor system—artificial, hybrid, or otherwise—can sustain that integrity at the scales it would need to operate remains, within this framework, the central open problem.

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