# Culture and Structural Power:
# Mute Compulsion as a General Theory of Social Reproduction

Flyxion

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**Abstract**

This paper develops a formal theory of social power centered on structural constraint, survival, and reproduction. Building on the concept of *mute compulsion*, it argues that capitalist social order persists not through persuasion, legitimacy, or cultural hegemony, but through the alignment of survival with participation. Culture is treated not as a primary causal driver but as an adaptive coordination layer, selectively stabilized by material viability.

The argument is formalized using constraint fields, entropy functionals, and event-historical dynamics. Structural power is modeled as the continuous pruning of admissible futures, while reproduction occurs along low-entropy trajectories that coincide with ordinary survival behavior. Political change is shown to be a threshold phenomenon requiring counter-structures capable of temporarily decoupling survival from compliance.

The paper further introduces extraction fields to model attention-based platforms, demonstrating how advertising saturation constitutes a stable equilibrium of asymmetric value transfer that degrades cultural coherence while remaining structurally profitable. Universality is redefined as structural invariance across constraint fields, explaining the strategic efficacy of material demands over identity-fragmented claims.

By integrating materialist social theory with a field-theoretic and event-historical framework, the paper generalizes class analysis beyond political economy, offering a unified account of durability, resistance, and the conditions under which alternative futures become materially viable.

## 1 Introduction

This essay develops a structural account of social power centered on the concept of *mute compulsion*: the idea that systems may secure compliance not by persuasion, coercion, or legitimacy, but by organizing the conditions of survival themselves. The immediate object of analysis is capitalist society, but the argument generalizes beyond political economy to any system whose reproduction is coupled to agents' material viability.

Against theories that locate social order primarily in culture, discourse, or ideology, the approach developed here treats culture as an adaptive medium rather than a sovereign driver. Social structures persist when the actions required to reproduce them coincide with the actions required to remain alive within them.

The essay proceeds in four stages. First, it formalizes structural constraint and distinguishes it from agentic power. Second, it models culture as a filtered coordination layer. Third, it analyzes time, reproduction, and political change as threshold phenomena. Finally, it integrates these insights into a general field-theoretic and event-historical framework.

## 2 Constraint and Structural Power

Social power admits of two analytically distinct forms. The first is *agentic power*: the ability of an actor or institution to issue commands backed by sanctions. The second is *structural power*: the power exerted by the configuration of conditions within which action occurs.

**Definition 1** (Structural Constraint)**.** *A structural constraint is a condition $c \in \mathcal{C}$ such that failure to comply with $c$ results in loss of material viability.*

In capitalist societies, the central structural constraint is the absence of independent access to the means of subsistence. Agents lacking such access must sell their labor in order to secure food, shelter, and reproduction.

Let $\mathcal{S}$ denote the space of admissible agent states and $\mathcal{A}$ the space of actions available to an agent.

**Definition 2** (Survival Operator)**.** *Define the survival operator*

$$\mathsf{Surv} : \mathcal{S} \times \mathcal{A} \to \{0, 1\}$$

*such that* $\mathsf{Surv}(s, a) = 1$ *iff action $a$ taken in state $s$ preserves material viability.*

The defining feature of mute compulsion is that, for most states $s$,

$$\mathsf{Surv}(s, a) = 1 \quad \text{only if} \quad a \in \mathcal{A}_{\text{market}},$$

where $\mathcal{A}_{\text{market}}$ denotes participation in labor-mediated exchange.

No command is required. The constraint is enforced by the environment itself.

## 3 Binary Thresholds and Continuous Pressure

Structural constraint operates at two levels simultaneously.

**Lemma 1** (Survival Threshold)**.** *Material viability imposes a binary condition:*

$$\mathsf{Surv}(s, a) \in \{0, 1\}.$$

*An agent either survives or does not.*

However, the *experience* of constraint varies continuously.

**Definition 3** (Compulsion Gradient)**.** *Let $\mathcal{E}(s)$ denote the slack or buffer available to an agent in state $s$ (e.g. savings, welfare access, labor scarcity). Define the compulsion gradient*

$$\lambda(s) = -\nabla \mathcal{E}(s).$$

Higher slack corresponds to lower felt compulsion, but does not remove the underlying threshold. Even when $\lambda(s)$ is small, the survival condition remains binding.

This dual structure explains how systems can feel permissive while remaining structurally absolute.

## 4 Reproduction as Low-Maintenance Dynamics

Structural power is not self-propelling; it must be reproduced through action. However, reproduction may be *low-maintenance* if survival-aligned actions coincide with system reproduction.

**Definition 4** (Reproduction Operator)**.** *Define the reproduction operator*

$$\mathsf{Rep} : \mathcal{H} \to \mathcal{H}$$

*mapping histories to extended histories through ordinary survival actions.*

Capitalism is reproduced because:

$$\mathsf{Surv}(h_t, a_t) = 1 \quad \Rightarrow \quad \mathsf{Rep}(h_{t+1}),$$

for most admissible histories $h_t$.

Unlike systems requiring constant coercion or ideological reinforcement, this structure is robust because compliance is endogenous to survival.

## 5 Constraint as Boundary Condition

Structural constraint functions not as a force but as a boundary condition on admissible trajectories.

Let $\mathcal{H}$ denote the space of event histories. Define the admissible subset

$$\mathcal{H}_{\text{adm}} = \{h \in \mathcal{H} \mid \forall t,\ \mathsf{Surv}(h_t, a_t) = 1\}.$$

All large-scale social dynamics occur within $\mathcal{H}_{\text{adm}}$. Culture, politics, and ideology operate by selecting paths within this space, not by removing its boundaries.

This completes the foundational formalization of mute compulsion as structural constraint. The next section turns to culture as an adaptive coordination layer within these constraints.

## 6 Culture as an Adaptive Medium

All social action is mediated by meaning. Agents do not merely respond to constraints; they interpret, anticipate, and coordinate. The error of the cultural turn is not its attention to meaning, but its elevation of meaning to primary causal status. Culture does not generate structural persistence; it adapts to it.

**Definition 5** (Cultural Configuration)**.** *Let $\mathcal{K}$ denote the space of cultural configurations, understood as shared scripts, norms, expectations, and interpretive frames that guide action.*

Cultural configurations do not operate independently of structure. They are selected and stabilized insofar as they permit survival within existing constraints.

## 7 Cultural Scripts as Coordination Devices

Cultural scripts solve coordination problems under constraint. They reduce uncertainty about how others will behave and about which actions are viable.

Let $\pi_k(a \mid s)$ denote the probability of action $a$ in state $s$ under cultural configuration $k \in \mathcal{K}$.

**Definition 6** (Viable Culture)**.** *A cultural configuration $k$ is viable iff*

$$\mathbb{E}_{a\sim\pi_k}[\mathsf{Surv}(s,a)] = 1 \quad \textit{for a large measure of states } s.$$

Cultural configurations that systematically generate non-viable actions decay rapidly at scale. They may persist locally or temporarily, but cannot stabilize as mass phenomena.

This gives culture a selective environment: not all meanings are equally reproducible.

## 8 Selective Filtering and Structural Anchoring

Cultural innovation is constant. New norms, values, and identities emerge continuously. However, their persistence is governed by a filtering process.

**Proposition 1** (Material Filtering)**.** *Let $k_t$ be a cultural configuration at time $t$. If*

$$\mathbb{E}_{a\sim\pi_{k_t}}[\mathsf{Surv}(s,a)] < 1$$

*for a non-negligible set of states $s$, then*

$$\lim_{t\to\infty} \Pr(k_t \textit{ persists}) = 0.$$

This does not imply conscious calculation. Filtering occurs through differential attrition: agents and groups whose practices are incompatible with survival conditions exit, adapt, or shrink.

Over time, adaptive scripts harden into norms.

**Definition 7** (Internalized Norm)**.** *A cultural script $k$ is internalized when its associated actions are executed without explicit instrumental reasoning.*

Internalization produces the appearance of autonomy. However, anchoring remains. When the material conditions supporting a norm erode, the norm typically decays, albeit with lag.

## 9 Culture, Common Sense, and Apparent Autonomy

Internalized norms generate what appears as "common sense." These norms feel moral, natural, or inevitable precisely because they are aligned with survival.

Let $\mathcal{S}(k)$ denote the entropic cost of maintaining cultural configuration $k$ within structure $\mathcal{C}$.

**Lemma 2** (Low-Entropy Norms)**.** *Cultural norms with low $\mathcal{S}(k)$ relative to $\mathcal{C}$ are more stable than those requiring constant reinforcement.*

Capitalist workplace norms persist not because they are deeply believed, but because violating them is costly. The system does not require ideological saturation; it requires only that deviation be expensive.

## 10 When Culture Becomes Causally Operative

Culture becomes a primary causal factor only under specific conditions.

**Definition 8** (Coordination Gap)**.** *A coordination gap exists when no individually viable action yields a collectively viable outcome.*

Collective action problems instantiate coordination gaps. Here, culture can alter structure.

**Proposition 2** (Cultural Feedback Condition)**.** *Culture becomes a causal driver of structural change iff it enables coordinated action that alters $\mathcal{C}$ itself, such that*

$$\mathcal{C}_{t+1} \neq \mathcal{C}_t.$$

Unions, parties, and disciplined movements exemplify this condition. Their cultural forms matter not as symbols, but as mechanisms for synchronizing action across agents.

Absent this feedback, culture remains adaptive rather than generative.

## 11 Limits of Cultural Causality

Cultural frames that do not resolve coordination gaps may circulate indefinitely without altering constraints. Symbolic critique, expressive identity, and moral denunciation do not, by themselves, modify $\mathcal{H}_{\text{adm}}$.

This explains the persistence of high cultural volatility alongside remarkable structural stability. Culture churns; structure endures.

The next section turns to time, reproduction, and political strategy, examining how structural change occurs when adaptive coordination crosses critical thresholds.

## 12 Time, Reproduction, and Political Change

Structural systems persist not merely because they constrain action, but because they reproduce themselves over time through irreversible sequences of ordinary activity. Any adequate theory of social change must therefore model time not as a neutral parameter, but as a constitutive dimension of power.

Let $\mathcal{H} = \{h_0, h_1, \dots\}$ denote an event history, where each $h_t$ represents the cumulative state of the system at time $t$.

**Definition 9** (Irreversible Event)**.** *An event $e_t$ is irreversible if its effects on $\mathcal{H}$ cannot be undone without additional cost or intervention.*

Most survival-aligned actions—rent payments, work shifts, debt servicing—are irreversible in this sense. They accumulate history and progressively restrict future options.

## 13 Reproduction Through Ordinary Action

Capitalist reproduction occurs through actions that agents must perform in order to survive. Let $a_t$ be the action taken at time $t$.

$$h_{t+1} = h_t \cup \{a_t\}$$

When $a_t$ satisfies the survival condition, it simultaneously extends the history that sustains the structure.

**Proposition 3** (Daily Reproduction)**.** *If for most $t$,*

$$\mathsf{Surv}(h_t, a_t) = 1,$$

*then the structure $\mathcal{C}$ is reproduced without requiring extraordinary intervention.*

This gives capitalist systems a temporal advantage: they renew themselves continuously, while opposition must organize discontinuously.

## 14 Threshold Dynamics and Nonlinear Change

Political change does not occur smoothly. Organizational gains accumulate until they cross a threshold beyond which qualitatively new outcomes become possible.

Let $O(t)$ denote the organizational capacity of a movement at time $t$, measured in members, funds, discipline, or institutional presence.

**Definition 10** (Structural Threshold)**.** *A threshold $\theta$ exists such that*

$$O(t) < \theta \quad \Rightarrow \quad \Delta\mathcal{C} \approx 0,$$

*while*

$$O(t) \geq \theta \quad \Rightarrow \quad \Delta\mathcal{C} \neq 0.$$

Below the threshold, action is expressive. Above it, action becomes structural.

This explains why long periods of apparent stagnation can precede sudden shifts in power relations.

## 15 Counter-Structures and Temporal Leverage

Because reproduction is continuous, resistance must interrupt survival-aligned action long enough to stabilize alternative trajectories.

**Definition 11** (Counter-Structure)**.** *A counter-structure is an organized system that temporarily supplies survival conditions independently of $\mathcal{C}$.*

Examples include strike funds, mutual aid networks, legal defense, and political protections. Formally, a counter-structure modifies the survival operator:

$$\mathsf{Surv}'(s, a) = 1 \quad \text{even when} \quad a \notin \mathcal{A}_{\text{market}}.$$

**Lemma 3** (Cost Reduction)**.** *Counter-structures reduce the energetic and entropic cost of resistance, making noncompliance temporarily viable.*

Without counter-structures, resistance collapses into individual sacrifice rather than collective leverage.

## 16 Mediation and the Professional-Managerial Class

Large-scale organization requires mediation. Coordination channels, leadership roles, and interpretive frameworks must be maintained. This introduces a distinct stratum whose structural position differs from that of wage-dependent workers.

**Definition 12** (Professional-Managerial Class)**.** *The Professional-Managerial Class (PMC) consists of agents hired by capital to organize, supervise, or manage labor rather than directly perform it.*

The PMC occupies an intermediate position: dependent on wages, yet invested in autonomy, expertise, and status.

## 17 PMC as Control Surface

In movements, the PMC often functions as a control surface, translating material demands into administrable or culturally legible forms.

**Definition 13** (Control Surface)**.** *A control surface is a mediating layer that maps demands $D$ into actions $A$ via interpretive or organizational filters.*

Because PMC members possess more discretionary time, cultural capital, and access to coordination channels, they disproportionately influence this mapping.

**Proposition 4** (Displacement Risk)**.** *If the control surface prioritizes moral legitimacy or symbolic coherence over material leverage, then*

$$\Delta O(t) < 0 \quad \textit{relative to potential.}$$

This displacement weakens threshold accumulation and dissipates structural power.

## 18 Coalition Leadership and Failure Modes

Effective coalitions require heterogeneous participation. However, leadership cannot be neutral.

**Lemma 4** (Leadership Constraint)**.** *A coalition must be led by agents whose structural position grants maximal leverage over* $\mathcal{C}$*.*

Wage-dependent workers possess such leverage through their capacity to disrupt production. The PMC contributes skills and coordination capacity, but failure occurs when managerial logics override survival-driven priorities.

This completes the analysis of time, reproduction, and mediation. The final section integrates these dynamics into a generalized field-theoretic and event-historical framework.

## 19 Advertising Saturation as Structural Degradation

Before turning to formal constraint dynamics, it is necessary to confront a phenomenon often treated as peripheral but which in fact exemplifies the moral and structural logic under analysis: the saturation of everyday life by advertising.

Consider the contemporary social media feed, in which approximately every third post is an advertisement. This is not merely intrusive; it is structurally corrosive. Advertising of this form bypasses nearly all traditional methods by which economic activity historically established legitimacy or value. There is no apprenticeship, no reputation, no local trust, no craft, no demonstrated competence. Instead, visibility is purchased directly. Whoever is willing to pay is elevated, regardless of substance, relevance, or merit.

This represents a profound inversion of social signaling. The feed no longer reflects the interests one has cultivated, the communities one has joined, or the local networks one inhabits. Years of curating one's social and intellectual environment—finding peers in one's area, sharing practices, building relationships—are undone by the indiscriminate insertion of gaudy, incoherent, and frequently fraudulent solicitations every few seconds.

The moral pathology is especially stark under conditions of scarcity. When the user has no money, advertising does not merely fail to serve them; it actively harms them. It incessantly reframes success in terms of acquisition that is materially impossible, producing a constant contrast between lived constraint and advertised fantasy. This is not neutral persuasion but a systematic manipulation of aspiration under conditions where aspiration cannot be realized.

Moreover, much of this advertising promotes forms of grueling materialism and voyeuristic tourism: curated experiences, luxury lifestyles, extractive travel, and aestheticized consumption that detach desire from any stable form of social participation or productive agency. The user is invited to look, envy, and desire—but never to belong or build.

The economic structure underpinning this system reveals its ethical character. Most advertisers in these ecosystems do not profit. They are small operators, drop-shippers, spam farms, or speculative entrepreneurs who lack the capacity to produce genuinely valuable goods or meaningful content, but who are nonetheless willing to pay for exposure. Their failure is not incidental; it is systemic.

The platform extracts money from those least able to afford it, aggregating these losses upward into vast rents captured by the already wealthy owners of the advertising infrastructure. In this sense, the system functions as a *reverse Robin Hood*: it steals from the poor, the desperate, and the gullible, and redistributes upward to the ultra-rich, all while presenting itself as neutral market mediation.

This is not a cultural accident. It is a direct expression of structural constraint. Advertising thrives precisely because survival under capitalism forces participation in attention markets regardless of their quality or moral standing. The result is not merely annoyance, but the active degradation of social meaning, trust, and orientation.

The advertising-saturated feed thus provides a concrete, everyday illustration of mute compulsion at work: individuals endure an environment they despise not because they consent to it, but because exit carries unacceptable social and material costs. What appears as cultural noise is in fact structural violence rendered banal.

With this in view, the subsequent formal analysis of constraint, culture, and reproduction should be read not as abstraction, but as an attempt to explain why such an environment is not only possible, but profitable—and why moral appeal alone is powerless to stop it.

## 20 Why Moral Critique Fails Under Structural Constraint

The persistence of advertising saturation despite widespread resentment is not a paradox, nor a failure of moral clarity. It is a predictable outcome of a system in which harm is profitable precisely because it is structurally embedded. Moral critique presupposes an addressee capable of choice: an agent who could do otherwise if properly persuaded. Structural power nullifies this presupposition.

In environments governed by survival-conditioned participation, the relevant decision variables are not values or intentions but costs, gradients, and thresholds. Platforms do not optimize for legitimacy, coherence, or social well-being; they optimize for extraction subject to retention constraints. Advertising persists because it satisfies these constraints, not because anyone believes it is good.

This renders moral appeal strategically impotent. Condemnation, exposure, and normative argument may circulate indefinitely without altering outcomes so long as they fail to modify the underlying constraint field. Even universal disgust does not translate into change if exit is costly and coordination is fragmented. In such cases, outrage becomes another low-energy dissipation

channel: expressive but non-intervening.

The appropriate analytic response is therefore not ethical intensification but structural redescription. To intervene in a system that reproduces itself through ordinary survival activity, one must identify the variables that govern reproduction itself. This requires abandoning agent-centered explanations in favor of field-level analysis: mapping viability regions, extraction gradients, entropy flows, and admissible futures.

The formal analysis that follows should thus be read as a shift in explanatory register. Where moral critique asks whether a practice is justified, structural analysis asks whether it is stable. Where ethical discourse seeks better reasons, constraint analysis seeks leverage. Only the latter can explain why practices that are widely hated nonetheless endure—and what it would take, in concrete terms, for them to stop.

# 21 Constraint as Field Boundary Condition

The dynamics analyzed thus far admit a more general formulation. Structural constraints function as boundary conditions on an underlying field of possible social trajectories. Capitalism is not merely a system of rules or institutions, but a configuration of conditions that defines which paths through social space are viable.

Let $\Phi$ denote a scalar constraint field over state space $\mathcal{S}$.

**Definition 14** (Constraint Field)**.** *The constraint field $\Phi : \mathcal{S} \to \mathbb{R}$ assigns to each state $s$ the cost of maintaining material viability.*

Survival corresponds to remaining within a bounded region of this field.

$$\mathsf{Surv}(s, a) = 1 \quad \Leftrightarrow \quad \Phi(s') \leq \Phi_{\max},$$

where $s'$ is the successor state induced by action $a$.

Mute compulsion arises when the gradient of this field strongly penalizes actions outside a narrow corridor of admissible behavior.

## 21.1 Extraction Fields and Attention Gradients

Not all constraint fields merely delimit viability. Some actively extract value from agents by shaping the distribution of attention itself. Contemporary advertising platforms instantiate such an *extraction field*.

Let  denote a finite attentional budget available to an agent over a time interval, and let $E$ denote an extraction operator acting on attention.

**Definition 15** (Extraction Field)**.** *An extraction field is a scalar field*

$$\Psi : \mathcal{S} \to \mathbb{R}$$

*whose gradient induces a net transfer of value from agents to the field's operators by capturing attention independently of agent interest or benefit.*

Unlike productive fields, which exchange value symmetrically, extraction fields operate by imposing involuntary exposure. The relevant dynamic is not persuasion but capture.

Let $a_t$ be an attentional allocation at time $t$. The extraction rate is given by

$$\mathcal{X}(s) = \nabla\Psi(s) \cdot a_t,$$

which measures the rate at which attention is diverted away from agent-chosen trajectories.

In advertising-saturated environments, this diversion is decoupled from relevance, quality, or trust. Visibility is allocated not by informational value but by payment, yielding a monotonic relationship between capital and exposure.

**Proposition 5** (Asymmetric Loss)**.** *For most agents $s$, the expected return on extracted attention satisfies*

$$\mathbb{E}[\textit{value gained} \mid \mathcal{X}(s)] < \mathbb{E}[\textit{value lost}],$$

*while the aggregate surplus is captured upstream by platform owners.*

This asymmetry explains why extraction fields persist even when most advertisers fail. The system does not optimize for mutual benefit, but for maximal aggregate extraction under survival-conditioned participation.

Crucially, extraction fields interfere with cultural adaptation. They overwrite locally curated interest structures with incoherent, externally imposed signals, thereby increasing entropic load while preserving structural profitability.

Advertising saturation is thus not a market imperfection but a stable equilibrium: a low-maintenance extraction regime nested within the broader constraint field of capitalism.

## 22 Entropic Reproduction and Stability

The reproduction of structure can be understood entropically. Actions aligned with survival tend to minimize energetic and organizational expenditure.

Let $\mathcal{S}(h)$ denote the entropy associated with maintaining history $h$.

**Proposition 6** (Low-Entropy Reproduction)**.** *Structures persist when*

$$\mathcal{S}(h_{t+1}) - \mathcal{S}(h_t) \approx 0$$

*for survival-aligned actions.*

Capitalism is stable because its reproduction coincides with low-entropy behavior: working, paying rent, and complying with institutional routines requires less energy than sustained deviation.

Resistance, by contrast, is initially high-entropy. It demands coordination, sacrifice, and sustained deviation from default paths. This explains why counter-structures are necessary to reduce entropic cost during periods of conflict.

## 23 Event-Historical Trajectories

Social systems evolve through irreversible event sequences. Each action updates the space of possible futures.

Let $\mathsf{Fut}(h_t)$ denote the set of admissible futures following history $h_t$.

**Definition 16** (Admissible Future)**.** *A future history $h_{t+1}$ is admissible iff*

$$h_{t+1} \in \mathcal{H}_{adm}.$$

Structural power operates by continuously pruning $\mathsf{Fut}(h_t)$, narrowing the range of viable trajectories. Ordinary survival actions incrementally lock in paths that reproduce the existing field.

Political intervention, therefore, is not merely oppositional but path-constructive: it seeks to expand $\mathsf{Fut}(h_t)$ by altering constraint conditions.

## 24 Universality as Structural Invariance

Within this framework, universality acquires a precise meaning. Universal demands correspond to invariants across the constraint field.

**Definition 17** (Structural Invariant)**.** *A demand $D$ is structurally universal if it targets a feature of $\Phi$ shared across a wide measure of states $s \in \mathcal{S}$.*

Healthcare, housing, and wages are universal because they attach to survival thresholds rather than contingent identities. They intersect the same boundary conditions for heterogeneous agents.

Identity-fragmented demands, by contrast, attach to local features of the field and therefore fail to aggregate pressure at scale.

## 25 Decoupling Survival and the Limits of Compulsion

The mute-compulsion thesis admits a clear limit case.

**Proposition 7** (Decoupling Condition)**.** *If survival becomes independent of market participation for a large population, then the constraint field $\Phi$ flattens:*

$$\nabla\Phi \approx 0.$$

Under such conditions, structural power weakens dramatically. Order must then be maintained through ideological saturation or direct coercion, both of which are costly and unstable.

This provides a falsifiability condition for the framework and a diagnostic for future political possibilities.

## 26 Conclusion

This essay has reconstructed a materialist theory of social power centered on constraint, survival, and reproduction. Capitalist domination persists not because it persuades, but because it organizes the conditions under which action remains viable.

Culture adapts to these conditions, coordinating action within constrained spaces. The advertising-saturated feed is therefore not incidental but diagnostic: it is the visible trace of an extraction field that monetizes attention precisely where exit is costly, redistributing losses upward while presenting the result as neutral exchange.

Political change occurs when coordination accumulates beyond thresholds and interrupts reproduction through counter-structures. Mediation introduces failure modes when symbolic legitimacy displaces material leverage.

Integrated into a field-theoretic and event-historical framework, these dynamics generalize beyond political economy. Systems endure when compliance coincides with survival; they destabilize only when alternative trajectories become materially viable.

Politics, in this view, is not primarily a struggle over meaning. It is a struggle over which futures can exist.

# A Formal Constraint Fields

## A.1 State Space and Actions

Let $\mathcal{S}$ be a measurable state space and $\mathcal{A}$ a set of admissible actions.

Let

$$T : \mathcal{S} \times \mathcal{A} \to \mathcal{S}$$

be the state transition operator.

## A.2 Constraint Field

Define the constraint field

$$\Phi : \mathcal{S} \to \mathbb{R}$$

with upper viability bound $\Phi_{\max} \in \mathbb{R}$.

**Definition 18** (Viability Region)**.** *The viability region is*

$$\mathcal{S}_{viable} = \{s \in \mathcal{S} \mid \Phi(s) \leq \Phi_{\max}\}.$$

## A.3 Survival Operator

Define the survival operator

$$\mathsf{Surv}(s, a) = \begin{cases} 1 & \text{if } T(s, a) \in \mathcal{S}_{\text{viable}}, \\ 0 & \text{otherwise.} \end{cases}$$

## A.4 Admissible Actions

For a given state $s$, define the admissible action set

$$\mathcal{A}_{\text{adm}}(s) = \{a \in \mathcal{A} \mid \mathsf{Surv}(s, a) = 1\}.$$

## A.5 Mute Compulsion Condition

**Definition 19** (Mute Compulsion)**.** *Mute compulsion holds at $s$ if*

$$|\mathcal{A}_{adm}(s)| \ll |\mathcal{A}|.$$

Equivalently, mute compulsion holds when the gradient

$$\|\nabla \Phi(s)\|$$

is large relative to action-induced displacement in $\mathcal{S}$.

### A.6 Slack Parameter

Define slack

$$\mathcal{E}(s) = \Phi_{\max} - \Phi(s).$$

Then

$$\nabla\mathcal{E}(s) = -\nabla\Phi(s).$$

High slack corresponds to weak felt compulsion without altering admissibility.

### A.7 Boundary Dynamics

Let $\gamma : [0, T] \to \mathcal{S}$ be a trajectory.

Then $\gamma$ is viable iff

$$\forall t \in [0, T], \quad \gamma(t) \in \mathcal{S}_{\text{viable}}.$$

Violation at any $t$ yields trajectory termination.

### A.8 Structural Robustness

**Proposition 8** (Low-Maintenance Structure)**.** *If for almost all $s \in \mathcal{S}_{viable}$,*

$$\exists a \in \mathcal{A}_{adm}(s) \quad \textit{such that} \quad \mathsf{Rep}(s, a) = 1,$$

*then the structure is self-reproducing under survival dynamics.*

## B Entropic Reproduction Dynamics

### B.1 Event Histories

Let

$$\mathcal{H} = \{h_0, h_1, \ldots, h_T\}$$

denote a finite event history, where each $h_t$ is the cumulative system state at time $t$.

Let $e_t$ denote the event occurring at time $t$ such that

$$h_{t+1} = h_t \cup \{e_t\}.$$

### B.2 Entropy Functional

Define an entropy functional

$$\mathcal{S} : \mathcal{H} \to \mathbb{R}_{\geq 0}$$

measuring the organizational, energetic, or coordination cost of maintaining history $h$.

### B.3 Incremental Entropy

Define the incremental entropy

$$\Delta\mathcal{S}_t = \mathcal{S}(h_{t+1}) - \mathcal{S}(h_t).$$

**Definition 20** (Low-Entropy Action)**.** *An action $a_t$ is low-entropy at $h_t$ if*

$$\Delta\mathcal{S}_t \approx 0.$$

### B.4 Reproduction Operator

Define the reproduction indicator

$$\mathsf{Rep}(h_t, a_t) = \begin{cases} 1 & \text{if } h_{t+1} \text{ preserves } \mathcal{C}, \\ 0 & \text{otherwise.} \end{cases}$$

### B.5 Reproductive Stability

**Proposition 9** (Entropic Stability)**.** *A structure $\mathcal{C}$ is entropically stable if for almost all viable histories $h_t$,*

$$\exists a_t \in \mathcal{A}_{adm}(h_t) \quad \textit{such that} \quad \Delta\mathcal{S}_t \approx 0 \ \textit{ and } \ \mathsf{Rep}(h_t, a_t) = 1.$$

### B.6 Survival-Aligned Actions

Define the survival-aligned action set

$$\mathcal{A}_{\text{surv}}(h_t) = \{a \in \mathcal{A}_{\text{adm}}(h_t) \mid \mathsf{Surv}(h_t, a) = 1\}.$$

**Lemma 5** (Entropy Minimization)**.** *For most $h_t$,*

$$\arg\min_{a \in \mathcal{A}_{surv}(h_t)} \Delta\mathcal{S}_t \subseteq \mathcal{A}_{market}.$$

### B.7 High-Entropy Resistance

Define resistance actions

$$\mathcal{A}_{\text{res}}(h_t) = \mathcal{A}_{\text{adm}}(h_t) \setminus \mathcal{A}_{\text{market}}.$$

Then typically

$$\mathbb{E}_{a \in \mathcal{A}_{\text{res}}}[\Delta\mathcal{S}_t] \gg \mathbb{E}_{a \in \mathcal{A}_{\text{market}}}[\Delta\mathcal{S}_t].$$

### B.8 Counter-Structures

Let $C$ denote a counter-structure.

Define the modified entropy

$$\mathcal{S}_C(h) = \mathcal{S}(h) - \Delta_C(h),$$

where $\Delta_C(h) \geq 0$ captures entropic support supplied by $C$.

**Proposition 10** (Entropy Reduction)**.** *If*

$$\Delta_C(h) \geq \mathbb{E}_{a \in \mathcal{A}_{res}}[\Delta \mathcal{S}],$$

*then resistance trajectories become entropically viable.*

### B.9 Phase Preference

Define the preferred phase

$$\mathcal{P}(h_t) = \arg \min_{a \in \mathcal{A}_{\text{adm}}(h_t)} \Delta \mathcal{S}_t.$$

Structural persistence follows when

$$\mathcal{P}(h_t) \subseteq \mathcal{A}_{\text{market}} \quad \forall t.$$

## C Extraction Fields and Attention Dynamics

### C.1 Attention Budget

Let  denote a finite attentional budget per agent over a time interval $[t, t+1]$.

$$= \int_t^{t+1} a(\tau)\, d\tau, \quad a(\tau) \geq 0.$$

### C.2 Extraction Field

Define an extraction field

$$\Psi : \mathcal{S} \to \mathbb{R}$$

with associated gradient $\nabla \Psi(s)$.

**Definition 21** (Extraction Gradient)**.** *The extraction gradient at state $s$ is*

$$\mathbf{g}_\Psi(s) = \nabla \Psi(s),$$

*representing directional pressure on attentional allocation.*

### C.3 Attention Allocation Operator

Let

$$\mathcal{A} : \mathcal{S} \to \Delta()$$

map states to probability distributions over attention allocation.

### C.4 Extraction Operator

Define the extraction operator

$$E_\Psi(s, a) = \mathbf{g}_\Psi(s) \cdot a,$$

measuring involuntary diversion of attention under allocation $a$.

### C.5 Involuntary Capture Condition

**Definition 22** (Involuntary Attention Capture)**.** *Capture occurs at state $s$ if*

$$E_\Psi(s, a) > 0 \quad \textit{for all admissible } a.$$

This condition holds when attention diversion is unavoidable regardless of agent preference.

### C.6 Value Transfer

Let $V_u$ denote user value and $V_p$ platform value.

Define expected transfers:

$$\Delta V_u(s) = -\mathbb{E}[E_\Psi(s, a)], \quad \Delta V_p(s) = \mathbb{E}[E_\Psi(s, a)].$$

### C.7 Asymmetric Extraction

**Proposition 11** (Reverse Redistribution)**.** *If*

$$\mathbb{E}[\Delta V_u(s)] < 0 \quad \textit{and} \quad \mathbb{E}[\Delta V_p(s)] > 0$$

*for almost all $s$, then the extraction field induces net upward redistribution.*

### C.8 Advertiser Failure Regime

Let $A_i$ index advertisers.

Define advertiser return

$$R_i = V_i^{\text{out}} - V_i^{\text{in}}.$$

Empirically typical:

$$\Pr(R_i < 0) \gg \Pr(R_i > 0).$$

### C.9 Platform Profitability

Platform profit satisfies

$$\Pi_{\text{platform}} = \sum_i V_i^{\text{in}} - C_{\text{infra}},$$

where $C_{\text{infra}}$ is sublinear in advertiser count.

**Lemma 6** (Failure-Compatible Profit)**.** *Platform profitability does not require advertiser success:*

$$\frac{\partial \Pi_{platform}}{\partial R_i} \approx 0.$$

### C.10 Interference with Cultural Filtering

Let $\mathcal{K}$ be the endogenous cultural configuration and $\mathcal{K}_\Psi$ the post-extraction configuration.

Define distortion:

$$D(\mathcal{K}, \mathcal{K}_\Psi) = \mathcal{S}(\mathcal{K}_\Psi) - \mathcal{S}(\mathcal{K}).$$

**Proposition 12** (Cultural Entropy Increase)**.** *Under involuntary extraction,*

$$D(\mathcal{K}, \mathcal{K}_\Psi) > 0.$$

### C.11 Stability of Extraction Fields

Extraction fields are stable if

$$\nabla\Psi \neq 0 \quad \text{and} \quad \mathsf{Surv}(s, a) = 1 \ \ \forall s \text{ in platform domain.}$$

Thus extraction persists whenever exit is costly.

## D Event-Historical Dynamics and Admissible Futures

### D.1 Event Space

Let $\mathcal{E}$ denote the space of atomic events.

An event history is a finite sequence

$$h_t = (e_0, e_1, \ldots, e_t), \quad e_i \in \mathcal{E}.$$

### D.2 Prefix Order

Define the prefix order $\preceq$ on histories:

$$h_t \preceq h_{t'} \iff t \leq t' \text{ and } h_t \text{ is a prefix of } h_{t'}.$$

This induces a partial order on $\mathcal{H}$.

### D.3 Transition Operator

Define the transition operator

$$\mathcal{T} : \mathcal{H} \times \mathcal{A} \to \mathcal{H}, \quad \mathcal{T}(h_t, a_t) = h_{t+1}.$$

### D.4 Admissibility Constraint

Let $\mathcal{H}_{\text{adm}} \subseteq \mathcal{H}$ denote admissible histories.

**Definition 23** (Admissible History)**.** *A history $h_t$ is admissible iff*

$$\forall i \leq t, \quad \mathsf{Surv}(h_i, a_i) = 1.$$

### D.5 Future Operator

Define the future operator

$$\mathsf{Fut}(h_t) = \{h_{t'} \in \mathcal{H}_{\text{adm}} \mid h_t \preceq h_{t'}\}.$$

### D.6 Pruning Operator

Define the pruning operator

$$\mathcal{P} : \mathcal{P}(\mathcal{H}) \to \mathcal{P}(\mathcal{H}), \quad \mathcal{P}(X) = X \cap \mathcal{H}_{\text{adm}}.$$

### D.7 Structural Power as Pruning

**Definition 24** (Structural Pruning)**.** *Structural power acts by repeated application of $\mathcal{P}$ at each time step:*

$$\mathsf{Fut}(h_{t+1}) = \mathcal{P}(\mathsf{Fut}(h_t)).$$

This process monotonically reduces the cardinality of admissible futures.

### D.8 Irreversibility

Define reversibility of an event $e_t$:

$$e_t \text{ is reversible} \iff \exists e_t' \text{ such that } \mathcal{T}(\mathcal{T}(h_{t-1}, e_t), e_t') = h_{t-1}.$$

**Lemma 7** (Generic Irreversibility)**.** *For most survival-aligned events $e_t$,*

$$e_t \textit{ is irreversible.}$$

Examples include debt accumulation, rent payment, credential aging, and skill obsolescence.

### D.9 Path Dependence

Define path dependence:

**Definition 25** (Path Dependence)**.** *A history $h_t$ is path-dependent if*

$$|\mathsf{Fut}(h_t)| < |\mathsf{Fut}(h_{t-1})|.$$

Structural reproduction increases path dependence monotonically.

### D.10 Intervention

Define an intervention $I$ as an operator

$$I : \mathcal{H} \to \mathcal{H}$$

such that

$$|\mathsf{Fut}(I(h_t))| > |\mathsf{Fut}(h_t)|.$$

**Proposition 13** (Counter-Structural Intervention)**.** *An intervention alters structure iff it expands admissible futures:*

$$\Delta|\mathsf{Fut}| > 0.$$

Symbolic or discursive actions that do not modify admissibility leave $\mathsf{Fut}$ unchanged.

### D.11 Terminal Histories

Define terminal histories:

$$\mathcal{H}_{\text{term}} = \{h \in \mathcal{H} \mid \mathsf{Fut}(h) = \varnothing\}.$$

Terminal histories correspond to system exit (death, exclusion, collapse).

## E Thresholds, Coalitions, and Structural Phase Change

### E.1 Organizational Capacity

Let $O(t) \in \mathbb{R}_{\geq 0}$ denote organizational capacity at time $t$.

Components of $O(t)$ may include membership count, financial reserves, coordination efficiency, institutional presence, and strike readiness.

### E.2 Accumulation Dynamics

Define accumulation dynamics:

$$O(t+1) = O(t) + \Delta O(t),$$

where $\Delta O(t)$ may be positive or negative.

### E.3 Threshold Parameter

Let $\theta \in \mathbb{R}_{>0}$ denote a structural threshold.

**Definition 26** (Effective Capacity)**.** *Organizational capacity is effective iff*

$$O(t) \geq \theta.$$

### E.4 Below-Threshold Regime

For $O(t) < \theta$,

$$\Delta\mathcal{C}(t) \approx 0.$$

Actions in this regime have expressive or symbolic effect but do not alter constraint fields.

### E.5 Above-Threshold Regime

For $O(t) \geq \theta$,

$$\exists a_t \in \mathcal{A}_{\text{res}} \text{ such that } \Delta\mathcal{C}(t) \neq 0.$$

This defines the onset of structural leverage.

### E.6 Phase Transition

Define a phase transition at time $t^*$ iff

$$O(t^* - 1) < \theta \quad \text{and} \quad O(t^*) \geq \theta.$$

**Proposition 14** (Nonlinearity)**.** *Structural change is nonlinear in $O(t)$ at $\theta$:*

$$\frac{d\mathcal{C}}{dO}\Big|_{O=\theta^-} \ll \frac{d\mathcal{C}}{dO}\Big|_{O=\theta^+}.$$

### E.7 Coalition Composition

Let a coalition be a partition

$$\mathcal{Q} = \{Q_1, Q_2, \ldots, Q_n\},$$

where each $Q_i$ denotes a participating group.

### E.8 Leverage Function

Define leverage contribution

$$\ell : \mathcal{Q} \to \mathbb{R}_{\geq 0}.$$

Working-class groups satisfy

$$\ell(Q_i) \gg \ell(Q_j) \quad \text{for most non-disruptive groups } Q_j.$$

### E.9 Leadership Condition

**Definition 27** (Leadership Constraint)**.** *A coalition satisfies the leadership constraint iff*

$$\arg\max_{Q_i \in \mathcal{Q}} \ell(Q_i)$$

*determines strategic priorities.*

### E.10 PMC Mediation Operator

Define mediation

$$M : D \to A,$$

mapping demands $D$ to actions $A$.

### E.11 Displacement Condition

Displacement occurs if

$$\ell(M(D)) < \ell(D).$$

**Proposition 15** (Coalition Failure Mode)**.** *If displacement persists, then*

$$\lim_{t\to\infty} O(t) < \theta.$$

### E.12 Counter-Structural Support

Let $C$ denote counter-structures.

Define supported capacity

$$O_C(t) = O(t) + \sigma(C),$$

where $\sigma(C) \geq 0$ measures support magnitude.

### E.13 Threshold Crossing with Support

**Lemma 8** (Support-Induced Transition)**.** *If*

$$O(t) < \theta \quad \textit{and} \quad O_C(t) \geq \theta,$$

*then a phase transition occurs.*

### E.14 Hysteresis

Define post-transition capacity decay

$$O(t+1) = O(t) - \delta, \quad \delta > 0.$$

Structural gains persist iff

$$O(t) - \delta \geq \theta.$$

Otherwise, regression occurs.

### E.15 Critical Slowing

Near $\theta$, accumulation dynamics satisfy

$$\Delta O(t) \to 0,$$

producing apparent stagnation prior to transition.

### E.16 Terminal Coalitions

Define terminal coalition states:

$$\mathcal{Q}_{\text{term}} = \{\mathcal{Q} \mid \forall t,\ O(t) < \theta\}.$$

Terminal coalitions exhaust resources without inducing phase change.

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