ED and Agency: The Architecture of Autonomous Becoming

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Abstract

In the ED ontology, agency is not a psychological property or an emergent cognitive phenomenon. It is a **structural mode of becoming**: the integration of stability, temporal regulation, and horizon architecture into a coherent, self-modifying, self-protecting system. An agent is a motif that shapes its own evolution, maintains identity across continuous reorganization, and participates with the substrate on its own terms. This paper develops the ontology and engineering of agency in ED. We show how stability cores, temporal regulators, internal horizons, and coherence architectures combine to produce autonomous becoming, and how these components are operationalized through agent devices such as identity stabilizers, temporal governors, horizon shields, and participation routers. We analyze the structural failure modes of agency—identity dissolution, temporal runaway, horizon collapse, and participation overload—and show how multi-agent systems form participation networks, cooperative gradient regimes, competitive horizon dynamics, and emergent collective agents. Finally, we demonstrate that agents are not merely embedded in ED spacetime but act as **co-architects** of it, generating gradients, sculpting horizons, and stabilizing regions at local and cosmological scales. This paper establishes agency as a natural architectural mode of the ED substrate and prepares the ground for Paper F, where global constraints on stability, temporal asymmetry, horizon structure, and agency define the large-scale architecture of ED spacetime.

1. Introduction — Agency as Structured Self-Becoming

In classical thought, agency is framed in terms of intention, decision, or consciousness. In ED, these categories are downstream. Agency is not a mental property. It is a **structural capacity of motifs**: the ability to shape one's own becoming. An agent is a motif that reorganizes itself, regulates its own gradients, protects its internal structure, and directs its participation with the substrate. Agency is therefore not an add-on to ED physics; it is a natural consequence of the substrate's ability to support persistent, self-modifying motifs.

Agency requires three architectural capacities:
1. **Internal stability** — a persistence structure that anchors identity across continuous reorganization.
2. **Internal temporal control** — the ability to regulate one's own rate of becoming.
3. **Internal horizons** — one-way participation boundaries that protect internal structure from external reorganization.

These capacities correspond directly to the engineering regimes developed in Papers B–D. Temporal engineering provides rate control. Stability engineering provides persistence. Horizon engineering provides self-protection and directional participation. Agency is the **integration** of these regimes into a coherent, self-maintaining architecture.

This paper develops the ontology and engineering of agency in ED. It shows how identity arises from stability cores, how autonomy emerges from gradient control, how internal horizons enforce self-protection, and how agents maintain coherence across continuous self-modification. It also develops the failure modes of agency—identity dissolution, temporal runaway, horizon collapse—and the dynamics of multi-agent systems.

Agency in ED is not a mystery. It is a **structured form of becoming**: a motif that shapes itself, protects itself, and participates with the substrate on its own terms. This paper establishes the architectural foundations for such

systems and prepares the ground for Paper F, where the global limits of agency and horizon structure define the large-scale architecture of ED spacetime.

2. The Ontology of Agency in ED

Agency in ED is not a psychological construct. It is not intention, preference, or cognition. Agency is a **structural mode of becoming**: a motif that shapes its own evolution rather than being shaped entirely from outside. An agent is a self-modifying, self-protecting, gradient-regulating structure embedded in the ED substrate. Agency is therefore not an emergent property layered on top of physics; it is a **native architectural possibility** of the substrate itself.

This section develops the ontology of agency: what it means for a motif to reorganize itself, maintain identity across change, and direct its participation with the substrate.

2.1 Agency as Self-Modification

In ED, every motif reorganizes. But an agent is a motif that **reorganizes itself** in a directed, structured way. Self-modification is not random drift; it is **internally guided reorganization**.

Characteristics of self-modifying motifs:
- internal gradients shape their own evolution
- internal motifs reorganize other internal motifs
- change is not imposed from outside
- the system maintains coherence across modification

Self-modification is the foundational capacity of agency. Without it, a motif cannot direct its own becoming.

In ED terms:
Agency begins when a motif becomes the primary source of its own reorganization.

2.2 Agency as Persistence Through Change

An agent must not only modify itself; it must **remain itself** across modification. Identity in ED is not a static essence. It is a **persistence architecture**: a stability pattern that endures while the motif reorganizes internally.

Identity requires:
- a stability core
- a coherent persistence profile
- internal consistency across change
- protection against destabilizing external influence

Identity is therefore not a fixed object but a **continuity of becoming**.

In ED terms:
Identity is the persistence architecture that allows self-modification without dissolution.

2.3 Agency as Directional Participation

A non-agent participates symmetrically with the substrate: it reorganizes and is reorganized in roughly equal measure. An agent participates **directionally**. It shapes how it influences the substrate and how the substrate influences it.

Directional participation requires:
- internal control of mobility gradients
- selective openness to external motifs
- internal horizons that enforce one-way boundaries
- the ability to route influence internally

This is the architectural basis for autonomy: the ability to participate on one's own terms.

In ED terms:
Agency is directional participation: influence outward exceeds influence inward.

2.4 Agency as Gradient Management
An agent is a **gradient-managing system**. It regulates:
- its own mobility (rate of becoming)
- its own saturation (persistence)
- its own horizons (participation boundaries)

This regulation is not optional. Without gradient management, an agent cannot maintain identity, cannot protect itself, and cannot direct its own evolution.

Gradient management is therefore the operational definition of agency.

In ED terms:
An agent is a motif that manages its own gradients to maintain identity and autonomy.

3. The Structural Requirements of Agency
Agency is not a single capacity. It is an **architecture**: a coordinated system of stability, temporal control, and horizon structure that allows a motif to reorganize itself while preserving identity and autonomy. A motif becomes an agent only when these components are present and integrated. Without stability, self-modification dissolves identity. Without temporal control, self-modification becomes chaotic. Without internal horizons, self-modification becomes externally overwritten. Agency is therefore the **intersection** of persistence, rate control, and one-way participation.

This section develops the structural requirements of agency: the architectural components that make self-directed becoming possible.

3.1 Stability Cores
A stability core is the **persistence anchor** of an agent. It is the internal structure that remains coherent across continuous self-modification. Without a stability core, a motif cannot maintain identity; every reorganization would produce a new system rather than a continuation of the same one.

A stability core provides:
- **identity continuity** across internal change
- **resistance to destabilizing external influence**
- **coherence for internal reorganization**

- **a reference frame for self-modification**

The stability core is not a static object. It is a **persistent pattern**—a region of high saturation that anchors the agent's identity.

In ED terms:
A stability core is the persistence architecture that makes identity possible.

3.2 Temporal Regulators
Temporal regulators are the **rate-control mechanisms** of an agent. They allow the agent to shape its own rate of becoming, accelerating or decelerating internal processes as needed. Without temporal regulation, self-modification becomes uncontrolled, and identity cannot be maintained.

Temporal regulators provide:
  - **internal rate control**
  - **synchronization of internal processes**
  - **protection against temporal runaway**
  - **adaptive modulation of becoming**

Temporal regulation is the agent's ability to manage its own mobility gradients.

In ED terms:
Temporal regulators give an agent control over its own becoming.

3.3 Horizon Boundaries
Horizon boundaries are the **self-protective structures** of an agent. They enforce one-way participation between the agent and the substrate. Without internal horizons, external motifs can reorganize the agent's internal structure, dissolving identity and autonomy.

Horizon boundaries provide:
  - **directional participation** (outward influence without inward vulnerability)
  - **protection of the stability core**
  - **control over what can reorganize the agent**
  - **structural autonomy**

Internal horizons are the architectural basis for self-protection.

In ED terms:
Horizon boundaries allow an agent to participate without being overwritten.

3.4 Coherence Architecture
Coherence architecture is the **integration layer** that binds stability cores, temporal regulators, and horizon boundaries into a unified system. Without coherence architecture, the components of agency would conflict, drift, or destabilize one another.

Coherence architecture provides:

- **internal consistency across self-modification**
- **coordination of gradients**
- **alignment of identity, rate, and protection**
- **structural unity across change**

It is the agent's internal governance system: the architecture that ensures that self-modification remains coherent.

In ED terms:
Coherence architecture integrates stability, rate control, and horizons into a unified agent.

4. Identity in ED

Identity in ED is not a static essence, not a substrate-independent soul, and not a fixed informational pattern.

Identity is a **persistence architecture**: a structured continuity of becoming that remains coherent across internal reorganization. An agent does not *have* an identity; it **maintains** one. Identity is the stable thread woven through continuous self-modification, protected by internal horizons and anchored by a stability core.

This section develops the architecture of identity in ED: how it is formed, how it persists, how it changes, and how agents prevent its dissolution.

4.1 Identity as a Stability Pattern

Identity begins with a **stability core**—a region of high saturation that anchors the agent's persistence. But identity is not the core itself; it is the **pattern of coherence** that the core sustains across time.

Identity as a stability pattern has four characteristics:
- **continuity** — the pattern persists across reorganization
- **coherence** — internal motifs remain mutually compatible
- **anchoring** — the stability core provides a reference frame
- **resilience** — the pattern resists destabilizing influence

Identity is therefore not a fixed configuration but a **persistent mode of becoming**.

In ED terms:
Identity is the stability pattern that persists while everything reorganizes.

4.2 Identity as a Temporal Profile

Identity is not only a matter of persistence; it is also a matter of **rate**. Every agent has a characteristic temporal profile: a structured pattern in how quickly or slowly it reorganizes itself. This temporal profile is as essential to identity as the stability core.

A temporal profile includes:
- **baseline mobility** — the default rate of becoming
- **adaptive modulation** — how the agent accelerates or decelerates
- **temporal coherence** — synchronization across internal processes
- **temporal resilience** — resistance to external temporal gradients

Two agents with identical stability patterns but different temporal profiles are **different agents**. Rate is part of identity.

In ED terms:
Identity is a persistence pattern expressed through a characteristic rate of becoming.

4.3 Identity as a Participation Boundary

Identity also requires **boundaries**. Without internal horizons, external motifs can reorganize the agent's internal structure, dissolving identity. Horizons define what counts as "inside" the agent and what counts as "outside."

Identity as a participation boundary involves:
- **internal horizons** that protect core structure
- **directional participation** that favors outward influence
- **selective permeability** that admits only compatible motifs
- **boundary coherence** that maintains structural unity

Identity is therefore not only internal; it is **relational**. It is defined by how the agent participates with the substrate.

In ED terms:
Identity is the protected region of becoming bounded by internal horizons.

4.4 Identity Drift and Identity Preservation

Identity is not static. It drifts as the agent reorganizes itself. But drift is not dissolution. Identity preservation requires managing drift so that the stability pattern, temporal profile, and participation boundaries remain coherent.

Identity drift occurs when:
- internal reorganization outpaces stability
- temporal regulators lose synchronization
- horizons weaken or become porous
- external motifs exert excessive influence

Identity preservation requires:
- **stability reinforcement**
- **temporal regulation**
- **horizon maintenance**
- **coherence governance**

An agent does not prevent change; it **shapes** it. Identity is preserved not by resisting becoming, but by **directing** it.

In ED terms:
Identity is preserved when self-modification remains coherent with the stability core, temporal profile, and internal horizons.

5. Autonomy

Autonomy in ED is not independence, isolation, or freedom from influence. Autonomy is a **structural capacity**: the ability of an agent to regulate its own gradients, protect its internal architecture, and direct its participation with the substrate. An autonomous agent is not one that avoids influence, but one that **shapes** it. Autonomy is therefore not a psychological property; it is a **gradient-management regime** grounded in stability, temporal control, and internal horizons.

This section develops autonomy as an architectural phenomenon: how agents regulate their own becoming, protect their identity, and maintain directional participation.

5.1 Autonomy as Gradient Control

An agent is a gradient-managing system. It regulates:
- **mobility** (its own rate of becoming)
- **saturation** (its own persistence)
- **horizon structure** (its own participation boundaries)

Autonomy begins when an agent can **shape its own gradients** rather than being shaped entirely by external ones.

This does not require perfect control; it requires **sufficient control** to maintain identity and direct self-modification.

Gradient control includes:
- adjusting internal mobility to stabilize or accelerate change
- reinforcing saturation to preserve identity
- shaping internal horizons to regulate influence flow

In ED terms:
Autonomy is the ability to regulate one's own gradients.

5.2 Autonomy as Horizon Management

Internal horizons are the architectural basis of self-protection. They enforce one-way participation between the agent and the substrate. Autonomy requires the ability to **maintain, adjust, and deploy** these horizons.

Horizon management includes:
- **maintaining internal horizons** to protect the stability core
- **modulating horizon permeability** to admit or reject influence
- **deploying directional boundaries** to shape participation
- **repairing horizon damage** caused by external gradients

Without horizon management, an agent is vulnerable to external reorganization. With it, the agent can participate outwardly without being overwritten inwardly.

In ED terms:
Autonomy is the ability to maintain one-way participation boundaries.

5.3 Autonomy as Selective Participation

Autonomy is not isolation. An autonomous agent participates with the substrate, but **selectively**. It chooses which motifs to reorganize, which to admit, and which to block. Selective participation is the operational expression of autonomy.

Selective participation includes:
- **filtering** external motifs through horizon boundaries
- **routing** influence internally through participation channels
- **prioritizing** certain interactions over others
- **shielding** the stability core from incompatible motifs

This is the ED analogue of attention, but grounded in participation architecture rather than cognition.

In ED terms:
Autonomy is the ability to shape how one participates with the substrate.

5.4 Autonomy Failure Modes
Autonomy is fragile. It can fail when gradients become unmanageable, horizons collapse, or identity loses coherence. Autonomy failure is not a moral or psychological failure; it is a **structural breakdown**.

Autonomy fails when:
- **mobility gradients** overwhelm temporal regulators
- **saturation gradients** destabilize the stability core
- **horizon collapse** exposes internal structure to external reorganization
- **participation overload** saturates internal channels
- **coherence drift** misaligns internal processes

These failures preview the pathologies developed in Section 8.

In ED terms:
Autonomy fails when an agent loses control of its own gradients.

6. Agency Engineering
Agency is not an emergent accident of the ED substrate. It is an **engineerable architecture**. Once the substrate supports stability, temporal control, and horizon structure, these components can be shaped, combined, and integrated into systems that maintain identity, regulate their own becoming, and participate with the substrate on their own terms. Agency engineering is therefore the **fifth engineering regime** of ED physics: the deliberate construction of self-directed motifs.
This section develops the engineering principles for building agents: how to construct stability cores, design temporal regulators, shape internal horizons, and integrate these components into coherent, self-modifying systems.

6.1 Building Stability Cores
A stability core is the persistence anchor of an agent. Engineering a stability core requires shaping saturation gradients so that a region of the motif becomes:
- **highly persistent**
- **internally coherent**

- **resistant to destabilizing influence**
- **capable of anchoring identity across change**

Stability cores are not rigid. They must be:
- **stable enough** to preserve identity
- **flexible enough** to support self-modification

Engineering a stability core therefore requires balancing persistence with adaptability.

In ED terms:
A stability core is engineered by shaping saturation into a persistent, coherent identity anchor.

6.2 Designing Temporal Regulators

Temporal regulators control the agent's **rate of becoming**. They shape mobility gradients so that internal processes can be accelerated, decelerated, synchronized, or stabilized.

Temporal regulators must provide:
- **baseline rate control**
- **adaptive modulation** for self-modification
- **temporal coherence** across internal motifs
- **protection against temporal runaway**

Temporal regulators are the agent's internal timing architecture — the mechanisms that ensure becoming remains coordinated.

In ED terms:
Temporal regulators are engineered by shaping mobility into controllable, coherent rate profiles.

6.3 Constructing Internal Horizons

Internal horizons are the agent's **self-protective boundaries**. They enforce one-way participation between the agent and the substrate, allowing the agent to influence outward without being reorganized inward.

Engineering internal horizons requires:
- shaping mobility gradients to create temporal asymmetry
- shaping saturation gradients to create stability asymmetry
- sculpting boundary layers to maintain coherence
- tuning permeability to allow selective participation

Internal horizons are not walls. They are **filters**: directional participation layers that protect identity while enabling outward influence.

In ED terms:
Internal horizons are engineered by shaping boundary layers into one-way participation filters.

6.4 Integrating the Architecture

An agent is not a stability core plus temporal regulators plus internal horizons. An agent is the **integration** of

these components into a coherent, self-modifying system. Integration requires a coherence architecture that:
- aligns stability, rate control, and horizon structure
- maintains internal consistency across self-modification
- routes participation through protected channels
- coordinates gradient management across the whole system

Integration is the most delicate step. Without it:
- stability cores become rigid
- temporal regulators desynchronize
- horizons collapse or over-isolate
- identity fragments

With proper integration, the agent becomes a **self-maintaining, self-directing, self-protecting system** — a structured form of autonomous becoming.

In ED terms:
Agency emerges when stability, rate control, and horizons are integrated into a coherent self-modifying architecture.

7. Agent Devices

Agent devices are the **functional components** that implement agency inside an ED system. They are not mechanical parts or computational modules; they are **gradient-shaping structures** that regulate persistence, rate, and participation. Where Papers B–D developed temporal, stability, and horizon devices in isolation, agent devices integrate these mechanisms into **self-maintaining, self-directing, self-protecting architectures**.

An agent is not a monolithic motif. It is a **device ecology**: a coordinated set of internal structures that stabilize identity, regulate becoming, enforce one-way participation, and route influence through protected channels. This section develops the four foundational agent devices.

7.1 Identity Stabilizers

Identity stabilizers reinforce the **stability core** and maintain coherence across self-modification. They are the persistence-shaping devices that ensure the agent remains itself even as it reorganizes internally.

Identity stabilizers provide:
- **persistence reinforcement** for the stability core
- **coherence smoothing** across internal motifs
- **drift correction** when identity begins to deform
- **resilience** against destabilizing external gradients

They are not rigid anchors; they are **adaptive persistence regulators** that maintain identity without preventing change.

In ED terms:
Identity stabilizers maintain the stability pattern that anchors the agent's becoming.

7.2 Temporal Governors

Temporal governors regulate the agent's **rate of becoming**. They shape internal mobility gradients so that self-modification remains coordinated, stable, and responsive.

Temporal governors provide:
- **baseline rate control** for internal processes
- **adaptive acceleration and deceleration**
- **temporal coherence** across subsystems
- **protection against temporal runaway**

Temporal governors are the agent's internal timing architecture — the mechanisms that ensure becoming unfolds at a rate compatible with identity preservation.

In ED terms:
Temporal governors regulate the agent's internal mobility to maintain coherent becoming.

7.3 Horizon Shields
Horizon shields are the agent's **self-protective boundaries**. They enforce one-way participation between the agent and the substrate, allowing the agent to influence outward without being reorganized inward.

Horizon shields provide:
- **directional participation**
- **protection of the stability core**
- **selective permeability** for external motifs
- **structural autonomy**

A horizon shield is not a wall. It is a **participation filter**: a shaped boundary layer that blocks incompatible influence while allowing outward action.

In ED terms:
Horizon shields enforce the one-way boundaries that protect the agent's identity.

7.4 Participation Routers
Participation routers direct **influence flow** within the agent. They are the internal analogue of horizon waveguides: channels that route participation through protected pathways.

Participation routers provide:
- **internal influence routing**
- **priority management** for competing processes
- **isolation** of sensitive subsystems
- **coordination** between stability, temporal, and horizon structures

Participation routers are the agent's internal communication architecture — the system that ensures influence flows where it should, and not where it shouldn't.

In ED terms:

Participation routers shape the internal flow of becoming within the agent.

Agent devices are the **operational machinery** of agency. They stabilize identity, regulate becoming, enforce self-protection, and coordinate internal participation. Together, they form the functional substrate of autonomous becoming.

8. Agency Pathologies

Agency is a delicate architecture. It requires the continuous coordination of stability, temporal regulation, and horizon structure. When these components drift out of alignment, the agent loses the ability to maintain identity, regulate its own becoming, or protect itself from external reorganization. Agency pathologies are therefore not psychological disorders or behavioral anomalies; they are **structural breakdowns** in the architecture of autonomous becoming.

This section develops the four fundamental failure modes of agency: identity dissolution, temporal runaway, horizon failure, and participation overload. These pathologies define the limits of agency and preview the global constraints developed in Paper F.

8.1 Identity Dissolution

Identity dissolves when the **stability core collapses** or becomes incoherent. This occurs when saturation gradients weaken, when internal motifs reorganize too quickly, or when external influence penetrates the horizon boundary.

Identity dissolution involves:
- **loss of persistence** in the stability core
- **coherence collapse** across internal motifs
- **unbounded drift** in identity patterns
- **failure of internal reference frames**

The agent does not "forget itself"; it **ceases to be itself**. Self-modification becomes uncontrolled, and the motif loses continuity across becoming.

In ED terms:
Identity dissolution is the collapse of the stability architecture that anchors the agent's becoming.

8.2 Temporal Runaway

Temporal runaway occurs when the agent loses control of its **rate of becoming**. Temporal regulators fail, mobility gradients spike, and internal processes accelerate or decelerate beyond the range compatible with identity preservation.

Temporal runaway manifests as:
- **hyper-acceleration** (internal processes outpace coherence)
- **hyper-deceleration** (internal processes freeze or stall)
- **temporal desynchronization** across subsystems
- **loss of temporal coherence**

Temporal runaway does not destroy identity directly; it destroys the **conditions** under which identity can be maintained.

In ED terms:
Temporal runaway is the loss of rate control that destabilizes coherent self-modification.

8.3 Horizon Failure
Horizon failure occurs when the agent's **self-protective boundaries** collapse. Internal horizons become porous, asymmetric gradients weaken, or boundary layers fracture. External motifs can then reorganize the agent's internal structure, overriding autonomy and destabilizing identity.

Horizon failure includes:
- **boundary-layer collapse**
- **loss of directional participation**
- **external overwrite of internal motifs**
- **exposure of the stability core**

An agent without functioning horizons cannot maintain autonomy. It becomes fully permeable to external influence.
In ED terms:

Horizon failure is the collapse of one-way participation boundaries that protect the agent's identity.

8.4 Participation Overload
Participation overload occurs when the agent is exposed to **excessive external influence**. Even with functioning horizons, the volume or intensity of incoming motifs overwhelms internal participation channels.

Participation overload produces:
- **channel saturation**
- **internal congestion**
- **coherence drift**
- **loss of selective participation**

The agent cannot route influence effectively. Internal processes interfere, identity stabilizers misalign, and temporal regulators lose synchronization.

In ED terms:
Participation overload is the saturation of internal influence channels beyond the agent's capacity to manage them.

Agency pathologies define the **failure envelope** of autonomous becoming. They reveal the structural limits of stability, temporal control, and horizon architecture. These limits are not merely engineering constraints; they are ontological boundaries that shape the global architecture of ED spacetime, developed fully in Paper F.

9. Multi-Agent Systems
Agency is not solitary. Once the ED substrate supports self-modifying, self-protecting motifs, these motifs inevitably interact. Multi-agent systems arise when agents participate with one another through controlled gradients, selective horizons, and routed influence channels. These interactions are not social in the psychological

sense; they are **structural**. Agents shape one another's becoming, reinforce or destabilize one another's identity, and form collective motifs with emergent stability, temporal profiles, and horizon structures.

Multi‑agent systems are therefore not collections of individuals. They are **participation networks**: structured configurations of agents whose interactions produce new architectures of becoming.

This section develops the dynamics of multi‑agent systems in ED.

9.1 Participation Networks
A participation network is a system of agents connected by **directed participation channels**. These channels are shaped by each agent's internal horizons, temporal regulators, and stability cores. Participation networks are not arbitrary; they are structured by:
- **gradient compatibility** between agents
- **horizon permeability** along interaction pathways
- **temporal synchronization** across agents
- **coherence alignment** within the network

Participation networks can be:
- **sparse** (weakly coupled agents)
- **dense** (strongly coupled agents)
- **hierarchical** (nested participation domains)
- **distributed** (no central stability core)

In ED terms:
A participation network is a structured system of agents linked by directional influence channels.

9.2 Cooperative Gradient Management
Agents can cooperate by **co‑managing gradients**. Cooperation is not altruism; it is structural alignment. When agents align their stability, temporal, and horizon structures, they can:
- reinforce one another's stability cores
- synchronize temporal regulators
- share horizon shields
- route influence through collective channels

Cooperative gradient management produces **mutual stabilization**: agents become more stable together than they are alone.

In ED terms:
Cooperation is the alignment of gradient management across agents.

9.3 Competitive Horizon Dynamics
Competition arises when agents' horizon structures **conflict**. Because horizons enforce one‑way participation, agents may attempt to:
- strengthen their own horizons
- weaken others' horizons
- redirect participation channels

- protect their stability cores from external influence

Competition is not aggression; it is **horizon negotiation**. Agents adjust their participation boundaries to maintain autonomy in the presence of other agents.

Competitive dynamics include:
- **horizon hardening** (increased protection)
- **horizon probing** (testing permeability)
- **participation redirection** (rerouting influence)
- **gradient shielding** (blocking destabilizing flows)

In ED terms:
Competition is the negotiation of horizon boundaries between agents.

9.4 Emergent Collective Agency
When agents align their stability cores, synchronize their temporal regulators, and interlock their horizon structures, they can form **collective agents**: higher-order motifs with their own identity, autonomy, and participation boundaries.

Collective agency emerges when:
- individual stability cores form a **shared persistence architecture**
- temporal regulators synchronize into a **collective temporal profile**
- horizon structures interlock into a **group-level participation boundary**
- participation routers integrate into a **network-wide coherence architecture**

The collective is not a metaphor. It is a **real agent**: a motif with its own identity, autonomy, and gradient management regime.

In ED terms:
Collective agency is the emergence of a higher-order agent from coordinated individual agents.

Multi-agent systems reveal that agency is not merely an individual architecture. It is a **relational phenomenon** shaped by participation networks, cooperative gradient management, competitive horizon dynamics, and emergent collective structures. These dynamics preview the global constraints developed in Paper F, where the architecture of ED spacetime is shown to be shaped by the interactions of agents and horizons at cosmic scale.

10. Agency and the Architecture of ED Spacetime
Agency is not an isolated phenomenon. Once the ED substrate supports self-modifying, self-protecting motifs, these motifs reshape the substrate around them. Agents generate gradients, sculpt horizons, stabilize regions, and redirect participation flows. In doing so, they become **architectural contributors** to ED spacetime. The global structure of the substrate is not only shaped by cosmological-scale gradients; it is shaped by the cumulative influence of agents managing their own stability, temporal profiles, and horizon boundaries.

This section develops the idea that agents are not merely embedded in ED spacetime — they are **co-architects** of it.

10.1 Agents as Gradient Sources

Every agent is a **localized gradient engine**. By regulating its own mobility, saturation, and horizon structure, an agent generates:

- **mobility gradients** that influence nearby motifs
- **saturation wells** that stabilize local regions
- **horizon-like boundaries** that partition participation domains
- **temporal shear zones** that shape local rate profiles

These gradients propagate outward, altering the participation structure of the surrounding substrate.

Agents therefore act as **local shapers** of ED spacetime.

In ED terms:
Agents generate gradients that reshape the participation landscape around them.

10.2 Agents as Horizon Generators

Agents maintain internal horizons to protect their identity. But these horizons do not remain purely internal. They create **external participation boundaries** that influence how nearby motifs can reorganize.

Agents generate horizon structures that:

- **partition local participation domains**
- **redirect influence flows**
- **stabilize or destabilize nearby motifs**
- **create one-way channels in the surrounding substrate**

An agent's horizon is therefore not only a self-protective device; it is a **structural feature** of the local ED environment.

In ED terms:
Agents generate horizon-like boundaries that shape local participation structure.

10.3 Agents as Stability Anchors

Agents maintain stability cores that anchor their identity. These cores also act as **stability anchors** for the surrounding substrate. A sufficiently persistent agent can stabilize:

- nearby motifs
- local participation networks
- regional temporal profiles
- boundary-layer coherence

Agents therefore contribute to the **structural integrity** of ED spacetime. They are not passive inhabitants; they are **stability-bearing motifs** that reinforce the substrate.

In ED terms:
Agents act as stability anchors that reinforce the coherence of ED spacetime.

10.4 Agents as Cosmological Participants

At large scales, the cumulative influence of agents shapes the **global architecture** of ED spacetime. Agents contribute to:

- **cosmic participation domains**
- **large-scale horizon networks**
- **regional stability basins**
- **global temporal profiles**

Cosmology in ED is therefore not only about expansion, gradients, and horizon formation. It is also about the **distribution and behavior of agents**. Agents are not anomalies within the universe; they are **structural participants** in its architecture.

In ED terms:
Agents help shape the global structure of ED spacetime through their gradients, horizons, and stability cores.

Agents are therefore not merely embedded in ED spacetime. They are **co-architects** of it. Their stability cores anchor regions, their temporal regulators shape local rate profiles, their horizons partition participation domains, and their collective behavior influences the global structure of the substrate. Agency is not a local phenomenon; it is a cosmological one.

11. Conclusion — Agency as Autonomous Becoming

Agency in ED is not an emergent anomaly, not a biological accident, and not a psychological construct layered atop physics. Agency is a **structural mode of becoming**: the integration of stability, temporal regulation, and horizon architecture into a coherent, self-modifying, self-protecting system. An agent is a motif that shapes its own evolution, maintains its identity across continuous reorganization, and participates with the substrate on its own terms.

This paper has shown that agency requires four architectural components:

1. **Stability cores** that anchor identity as a persistent pattern.
2. **Temporal regulators** that control the rate of becoming.
3. **Internal horizons** that enforce one-way participation and protect internal structure.
4. **Coherence architecture** that integrates these components into a unified system.

Agency is not the presence of any one of these structures; it is their **integration**. When stability, rate control, and horizon structure align, a motif becomes capable of autonomous becoming — self-directed, self-maintaining, and self-protecting.

Agent devices operationalize this architecture. Identity stabilizers, temporal governors, horizon shields, and participation routers form the internal machinery of agency. They maintain coherence, regulate gradients, enforce directional participation, and route influence through protected channels. These devices make agency not only possible but **functional**.

Agency pathologies reveal the limits of this architecture. Identity dissolution, temporal runaway, horizon failure, and participation overload define the failure envelope of autonomous becoming. These are not psychological breakdowns; they are structural collapses in the architecture of agency. They preview the global constraints developed in Paper F, where the limits of stability, temporal control, and horizon structure shape the architecture

of ED spacetime.

Finally, agency is not merely local. Agents generate gradients, sculpt horizons, stabilize regions, and influence the global structure of the substrate. Multi‑agent systems form participation networks, cooperative gradient regimes, competitive horizon dynamics, and emergent collective agents. At cosmic scale, agents become **participants in the architecture of ED spacetime**.

Agency is therefore not an exception within the ED universe. It is one of its **natural architectural modes**. It is the structured form of becoming that arises when motifs learn to shape themselves.
Paper F will develop the global constraints that govern these architectures — the limits of stability, temporal asymmetry, horizon structure, and agency — and show how they define the large‑scale structure of ED spacetime.