ChatGPT

Title: Behavioral Ontology for Defining Systemic Flow: A Functional Identity Framework

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Abstract: We present a functional, structure-based ontology that abstracts systems into six foundational primitives: space, time, boundary, inclusion, exclusion, and transformation. These elements are used to define not only the behavior of flows such as energy or data, but also to infer their identity through systemic interaction. Rather than presupposing what energy, data, or other flow-entities are, we characterize them by the rules and conditions they obey within a universal abstract structure. This approach enables the modeling of heterogeneous flows without requiring changes to the underlying architecture, opening new pathways for unified metaphysics, artificial cognition, and systems engineering.

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1. Introduction

Across natural and artificial systems, we find that various "things" flow: energy, data, information, emotion, attention, matter. What distinguishes these flows is not their material content alone, but the rules that govern their movement, transformation, and interaction. This paper proposes a structural ontology that treats identity as emergent from systemic behavior. By defining a system of six irreducible elements, we can use behavior within structure to define what flows.

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2. Foundational Primitives

- **Space (S):** A field of arrangement and potential.
- **Time (T):** The dimension that enables sequencing and change.
- **Boundary (B):** The assertion of identity and constraint.
- **Inclusion (I):** The function of acceptance into a domain.
- **Exclusion (E):** The function of denial from a domain.
- **Transformation (Tr):** The change of state across time or condition.

These elements form the backbone of any modeled system. They do not define what flows, but how flows behave.

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3. Flow as Behavior

A flow is not a fixed entity. It is something that moves, is gated, is transformed, and obeys inclusion or exclusion conditions. Therefore, we define flow types by their systemic affordances, not by assumed essence.

Property	Meaning in System
Transformability	Can it become something else?
Persistence	Does it remain or degrade?
Gating Rules	What controls its motion?
Inclusion/Exclusion	Who/what accepts or rejects it?
Coupling	Can it bind with other flows or states?
Sequencing	Is order important to it?

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4. Examples of Behavioral Identity

- **Energy:** That which transforms across time, gated by thresholds, conserved across boundaries, and measurable in work.
- **Data:** That which is symbolically structured, copied or moved under logic rules, and filtered through syntax or schema.
- **Attention:** A non-material allocation force, exclusive in scope, volatile in time, and capable of amplifying transformation.

Each flow entity is described **not by content**, but by behavior *within* the structure.

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5. Metadefinition

> A flow is defined by what transforms it, what gates it, what boundaries apply to it, and what time structure it obeys.

This statement functions as a template for discovering, modeling, or simulating new kinds of flows. It allows a system designer or theorist to define entities through interaction alone.

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6. Applications

- **Artificial Intelligence:** Defines symbolic, perceptual, and energetic flow inside unified cognitive structures.
- **Physics:** Provides a metaphysical scaffold that separates space-time-energy as functions instead of entities.
- **Computational Systems:** Allows data, instructions, or computation paths to be defined via interface and gating.
- **Consciousness Modeling:** Attention, emotion, or volition can be treated as bounded, gated flows with transformation rules.

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7. Conclusion

We have introduced a structure-first ontology for systemic modeling, where identity arises not from assumptions, but from interaction with foundational structures. This approach enables new pathways for unified understanding of flow across disciplines.

Keywords: systemic ontology, flow identity, behavior-based modeling, energy, data, attention, metaphysics, itzhexen