Roads Not Taken: Encoding Ratchets in Cinema, Computation, and Cosmology

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Abstract

Histories of cinema, computation, and cosmology often appear as linear progressions, yet their trajectories are shaped by encoding ratchetsarbitrary representational choices that, once standardized, scale efficiently and suppress alternatives. This essay examines how cinemas 2D frame, computations ASCII and von Neumann architecture, and cosmologys ΛCDM model became dominant not through inevitability but through scalability. Drawing on recent effective-fluid models in cosmology [**?**] and the Relativistic Scalar Vector Plenum (RSVP), it argues that scaling amplifies early encodings, potentially obscuring richer alternatives. An appendix explores how RSVPs field dynamics align with effective-fluid cosmology and how computational architectures like dataflow and neuromorphic systems represent suppressed roads in computing.

1 Introduction

The development of cinema, computation, and cosmology is often narrated as a sequence of inevitable advancements: from reels to digital projection, teletypes to neural networks, and Einsteins relativity to the ΛCDM model. However, these paths reflect encoding ratchetsrepresentational choices that, once adopted, scaled efficiently and marginalized alternatives. As Richard Suttons Bitter Lesson [**?**] suggests, scaling favors general methods, but it entrenches early encodings, not necessarily those best suited to reality. This essay explores three domainscinema, computation, and cosmologyto argue that scaling conceals deeper alternatives. Recent work by **?**] on effective-fluid cosmology highlights how mainstream physics is converging toward entropic and structural insights formalized in the Relativistic Scalar Vector Plenum (RSVP) [**?**].

2 Cinemas Encoding Ratchet

2.1 The Frame Standard

Cinema standardized on 2D frames on reels, chosen for their ease of duplication and projection. This encoding enabled a global monoculture: one film, one set of actors, identical everywhere [**? ?**].

2.2 Suppressed Alternatives

Volumetric cinema, rooted in early stereoscopic systems, could have encoded films as three-dimensional scenes, allowing theaters to project unique perspectives [?]. Similarly, parallel-language films in the 1930s, re-shot with local casts, suggested a distributed theater model: global plots, local embodiments [?]. Frames scaled best, dominating the medium.

3 Computations Encoding Ratchet

3.1 ASCII and the Keyboard

Computation ratcheted into ASCII and keyboards for military and telecommunication compatibility, encoding machines as linear text processorsa paradigm inherited by tokenized AI models [?].

3.2 Suppressed Alternatives

Handwriting recognizers (IBM, 1950s) and Apples Newton (1990s) proposed cursive input/output, while Vannevar Bushs Memex and B. F. Skinners teaching devices envisioned modular, card-based computation [?]. ASCIIs scalability prevailed.

4 Cosmologys Encoding Ratchet

4.1 The ΛCDM Paradigm

Modern cosmology adopted the ΛCDM model, treating non-linear structures as negligible perturbations on a homogeneous background [?]. This choice aligned with perturbation theory and computational scaling.

> **Sidebar 1 (Backreaction in plain terms):** Imagine stirring a pot of thick soup. Some regions clump into denser lumps; others thin into bubbles. Treating the soup as uniform misestimates its heating and circulation. Backreaction recognizes that lumps and voids affect global behavior.

4.2 Suppressed Alternatives

Backreaction models, such as Buchert averaging, suggested that collapsing clusters and expanding voids influence global expansion [?]. Recent effective-fluid models by ?] represent these as two fluids with non-zero equations of state, easing Hubble and σ_8 tensions [? ?]. RSVP cosmology derives these as intrinsic scalarvectorentropy dynamics: compressive modes (θ_c), expansive modes (θ_v), and lamphronlamphrodyne couplings [?].

4.3 A Convergence of Intuitions

Effective-fluid models reveal that dark energys apparent weakening is an entropic footprint of structure formation, a prediction of RSVP [? ?]. The Hubble tension shrinks when voids and clusters are treated as active components, not perturbations [?]. Similarly, σ_8 tensions ease with effective collapse and void terms.

> **Note 1 (Dark energy weakening):** In ΛCDM, dark energy is constant. Ignoring voids and clusters makes it appear variable. RSVP suggests apparent acceleration is an entropic redistribution, not literal expansion [?].

> **Note 2 (Hubble tension in plain terms):** The Hubble tension is a mismatch between early-universe (CMB) and late-universe (supernovae, BAO) measurements. Accounting for voids and clusters adjusts the ruler, reducing the mismatch [?].

5 Scaling and the Bitter Lesson

Suttons Bitter Lesson [?] posits that general methods plus scaling outperform specialized designs. Yet, scaling amplifies early encodings: ASCII over cursive, frames over volumetric cinema, ΛCDM over backreaction. These were not uniquely correct, only most scalable at the time [?].

6 RSVP as a Counter-Ratchet

RSVP resists single encodings by supporting multiple representations: scalarvectorentropy fields in cognition, entropic dynamics in cosmology, and concurrent computational modes in science [?]. Unlike Suttons scaling inevitability, RSVP emphasizes representational choice.

7 Conclusion

Cinema, computation, and cosmology demonstrate that what scaled was not necessarily most true, only most compatible with early infrastructure. Effective-fluid models [?] and RSVP [?] reopen suppressed encodings, suggesting that intelligence and cosmology depend on choosing robust encodings before scaling.

A Alternative Encodings in Cosmology and Computation

A.1 Effective Fluids and RSVP Field Dynamics

The effective-fluid model [?] encodes collapsing regions (θ_c) and voids (θ_v) as fluids with non-zero equations of state:

$$w_{\text{tot}} = \frac{\rho_c w_c + \rho_v w_v}{\rho_{\text{tot}}}.$$

RSVP derives these dynamically: θ_c (negative divergence, negentropic compression), θ_v (positive divergence, entropic expansion), and couplings (λ) as lamphronlamphrodyne transfers [?]. This convergence validates RSVPs microphysical approach.

A.2 Ratchets in Computational Architecture

The von Neumann architecturesingle memory for code and data, sequential execution-scaled efficiently but was not inevitable [? ?].

A.2.1 The von Neumann Ratchet

Advantages: Simplicity, symbolic programming compatibility, transistor scalability. **Consequences:** Memory bandwidth bottlenecks, sequential processing bias, reinforcement of ASCII [?].

A.2.2 Suppressed Alternatives

- **Dataflow Architectures**: Programs as dependency graphs, firing asynchronously when inputs are ready. MITs Tagged Token Machine (1970s) and Manchesters Dataflow Computer (1980s) promised parallelism but were outscaled by hardware complexity [?].
- **Analog and Neuromorphic Computing**: Vannevar Bushs Differential Analyzer (1930s) solved equations mechanically; Carver Meads silicon neurons (1980s) mimicked brain-like parallelism. Digital logics manufacturability prevailed [?].
- **Associative Memory**: Content-based retrieval (e.g., 1960s associative memories) suited AI but remained niche due to silicon costs [?].
- **Stack and Functional Machines**: The Burroughs B5000 (1961) supported ALGOL natively, aligning hardware with high-level reasoning. C and von Neumann architectures outscaled it [?].

A.3 RSVP and Architectural Counterfactuals

RSVP parallels these alternatives: von Neumann aligns with ΛCDMs rigid encoding, dataflow with backreactions non-linearity, neuromorphic with RSVPs continuous fields, and associative memory with TARTANs semantic tilings [?].

A.4 Polycomputational Futures

Ratchets lock in scalable encodings, but RSVP enables polycomputation: multiple representations (field, token, associative) scaling together. In cosmology, this means backreaction alongside ΛCDM; in computation, dataflow and neuromorphic systems alongside von Neumann [?].