

Content as Proof of Work

February 23, 2026

Dexter Hadley, MD/PhD

Hadley Lab CANONIC

Abstract

Proof-of-work systems require participants to demonstrate computational effort in exchange for economic reward. In Bitcoin [X-2], the work is hash collision computationally expensive, deliberately wasteful, and disconnected from any useful output. We propose an alternative: content as proof of work. In the CANONIC economy [I-31], governance work mints COIN [I-25, I-26]. Writing a book, publishing a paper, or authoring a blog post is governance work when the content is governed when it lives in a scope that compiles to a 255-bit compliance score [I-25]. The author who writes a chapter, commits it to a governed scope, and achieves a governance improvement has performed work that is simultaneously intellectual (a chapter exists), governance-improving (the scope's score increased), and economic (COIN was minted from the gradient). The content is the work. The work is the COIN. The COIN is the attestation that the content has value. We demonstrate this loop using the five-book CANONIC catalog, where every book is a governed scope, every chapter is a governance commit, and the entire publication pipeline from outline to manuscript to SHOP listing produces COIN at each step. The economy does not exist beside the content. The economy is the content.

hadleylab.org Governed Research. Every claim cited.

Contents

1	Abstract	1
2	Table of Contents	1
3	1. The Waste Problem	2
4	2. Content as Governed Scope	2
5	3. The Publication Pipeline	3
6	4. Books as Economic Engines	3
7	5. The Attestation Model	4
8	6. COST_BASIS: What a Book Is Worth	4
9	7. The Virtuous Loop	5
10	8. Supply Expansion Through Content	5
11	9. Three Audiences, One Economy	6
12	10. The Self-Proving System	7
13	Appendix A: The Five-Book Catalog	7
14	Appendix B: Content Governance Lifecycle	8
15	References	8

Bitcoin burns electricity to prove work. CANONIC publishes a book. The content is the work. The work is the COIN.

Dexter Hadley, MD/PhD ¹ Founder, CANONIC
February 23, 2026

1. Abstract

Proof-of-work systems require participants to demonstrate computational effort in exchange for economic reward. In Bitcoin ², the work is hash collision computationally expensive, deliberately wasteful, and disconnected from any useful output. We propose an alternative: content as proof of work. In the CANONIC economy ³, governance work mints COIN [I-25, I-26]. Writing a book, publishing a paper, or authoring a blog post is governance work when the content is governed when it lives in a scope that compiles to a 255-bit compliance score ⁴. The author who writes a chapter, commits it to a governed scope, and achieves a governance improvement has performed work that is simultaneously intellectual (a chapter exists), governance-improving (the scopes score increased), and economic (COIN was minted from the gradient). The content is the work. The work is the COIN. The COIN is the attestation that the content has value. We demonstrate this loop using the five-book CANONIC catalog, where every book is a governed scope, every chapter is a governance commit, and the entire publication pipeline from outline to manuscript to SHOP listing produces COIN at each step. The economy does not exist beside the content. The economy is the content.

2. Table of Contents

1. The Waste Problem

2. Content as Governed Scope
3. The Publication Pipeline
4. Books as Economic Engines
5. The Attestation Model
6. COST_BASIS: What a Book Is Worth
7. The Virtuous Loop
8. Supply Expansion Through Content
9. Three Audiences, One Economy
10. The Self-Proving System

Appendix A: The Five-Book Catalog Appendix B:
Content Governance Lifecycle

3. 1. The Waste Problem

Bitcoins proof-of-work mechanism consumes approximately 150 terawatt-hours of electricity annually ⁵ more than many nations. The energy produces nothing useful. The hash collisions that miners compute have no purpose beyond securing the network. The work is deliberately wasteful: its value lies precisely in the fact that it was expensive to perform, not in the fact that it produced anything of intrinsic worth.

This deliberate waste is the foundational design decision of proof-of-work systems. Nakamotos insight ² was that economic security requires costly signaling you trust the ledger because altering it would require re-performing the work, and the work is expensive. The mechanism works. Bitcoin has operated for seventeen years without a successful double-spend attack on its main chain ². But the cost is paid in energy, and the output is null beyond the security itself.

The question is whether a proof-of-work system can exist in which the work produces something useful something that has value independent of the security function it serves. We answer in the affirmative and demonstrate such a system using content production as the work function.

4. 2. Content as Governed Scope

In the CANONIC framework ⁶, every artifact code, document, configuration, publication lives in a governed scope. A scope is a directory in a governance tree that declares its identity through structured files (CANON.md, VOCAB.md, README.md) and inherits constraints from its parent scope through the `inherits:` chain ⁴.

Content is no exception. A book is a governed scope. A chapter within that book is a governed sub-scope. A paper is a governed scope within the PAPERS domain. A blog post is a governed scope within the BLOGS domain. The governance machinery that validates code also validates content. The same MAGIC compiler that scores a software service at 255 also scores a research paper at 255. The 255-bit fitness landscape is substrate-agnostic.

This means content production the act of writing a book, a paper, or a blog post is governance work. When an author creates CANON.md for a new chapter, the scopes governance score increases. When the author adds VOCAB.md defining the chapters key terms, the score increases further. When the author completes COVERAGE.md answering the eight governance dimensions, the score reaches 255. Each of these governance improvements is a commit. Each commit computes a gradient. Each positive gradient mints COIN ⁷.

The author who writes Chapter 7 of a book and brings its governance from 0 to 255 has minted 255 COIN of WORK. This is not a metaphor. The COIN appears in the authors WALLET. The MINT:WORK event is recorded in the LEDGER. The gradient is the evidence. The content is the work, and the work is the COIN.

5. 3. The Publication Pipeline

Content production in a governed system follows a pipeline that mirrors the governance compilation pipeline ⁴:

Stage 1 Outline. The author creates the scope: a directory with CANON.md declaring the chapters axiom. The axiom is the thesis the single assertion from which the chapter derives. At this stage, the scope scores approximately 35 (COMMUNITY tier). The governance declaration exists but is minimal.

Stage 2 Draft. The author writes the content. The chapters prose lives in the scope alongside its governance files. As the author adds VOCAB.md, README.md, and references, the governance score climbs. At draft completion, the scope typically scores 127 (ENTERPRISE tier) the content exists, the structure is sound, but the full governance apparatus is not yet in place.

Stage 3 Review. The author completes COVERAGE.md (answering all eight governance dimensions), adds EVOLUTION.md (recording the chapters creation history), and verifies that all references resolve. The governance score reaches 224 (AGENT tier) or higher.

Stage 4 Publication. The author performs the final governance pass. LEARNING.md records patterns discovered during writing. All vocabulary is verified. The scope compiles to 255. The content is ready.

Stage 5 SHOP listing. The book (the parent scope of all chapters) is listed in SHOP.md with a price in COIN. Readers can now purchase the book. The SPEND event transfers COIN from reader to author.

At every stage, governance improvements mint COIN. The pipeline does not merely produce content. It produces COIN at each step. The author earns COIN while writing, not after publishing. The economic activity begins with the first commit and continues through every revision. Publication is not the beginning of the economic event. It is the culmination.

6. 4. Books as Economic Engines

A book in the CANONIC system is not a static product. It is an economic engine a governance scope that produces COIN proportional to the governance work invested in it.

Consider the arithmetic. A book with 20 chapters, each chapter occupying a governed scope, creates 20 scopes. Each scope can produce up to 255 COIN of MINT:WORK. The books maximum governance COIN production is:

$$\text{max_mint}(\text{book}) = \text{chapters} \times 255 = 20 \times 255 = 5,100 \text{ COIN}$$

This is the governance work invested in the book the total COIN minted by bringing every chapter from 0 to 255. This COIN goes to the authors WALLETT. The author has not sold a single copy yet. The COIN is earned from the work, not from the market.

When the book enters the SHOP, additional economic activity begins. Each reader who purchases the book executes a SPEND event: COIN flows from the readers WALLETT to the authors WALLETT. The price is denominated in COIN and reflects the books governance tier. A book priced at 127 COIN (AGENT tier) transfers 127 COIN per purchase.

The book is simultaneously: - An intellectual artifact (a thing to read) - A governance surface (a set of scopes that compile to 255) - An economic engine (a COIN-producing and COIN-circulating asset) - An attestation opportunity (every purchase is a readers governance action)

The four identities are not separate. They are the same identity viewed from four perspectives. Writing the book is doing governance. Doing governance mints COIN. Buying the book circulates COIN. Circulating COIN proves the economy works. The economy works because books exist. Books exist because authors write them. Authors write them because writing mints COIN.

7. 5. The Attestation Model

In traditional publishing, buying a book is a market transaction. The buyer pays money. The author receives money. The transaction reveals only that the buyer was willing to pay the price. It says nothing about the buyers relationship to the content, their judgment of its governance quality, or their participation in the economy that produced it.

In the COIN economy, buying a book is an attestation. The buyer is not merely purchasing content. The buyer is asserting: I value this work enough to spend COIN on it. The COIN the buyer spends was itself earned through governance work (MINT:WORK) or received through onboarding (MINT:SIGNUP). Either way, the COIN represents prior governance value. Spending it is a governance action a reallocation of governance value from the reader to the author.

This reframing transforms the reader from a passive consumer into an active participant in the governance economy. The reader who buys The CANONIC CANON at 127 COIN is not just reading about governance theory. They are attesting to governance theory declaring, with economic force, that the work has value.

The attestation model explains the pricing tiers. Books are not priced by page count, production cost, or market demand. They are priced by governance tier the tier of the audience they serve:

Tier	COIN	Meaning
ENTERPRISE (63)	63 COIN	Business attestation this deal framework is worth enterprise governance
AGENT (127)	127 COIN	Developer/Governor attestation this manual/theory is worth agent-level governance
FULL (255)	255 COIN	Public attestation this work is worth full governance

The price is not what the content costs. The price is what the attestation is worth. A memorial book priced at 255 COIN is not expensive because it costs 255 COIN to produce. It is priced at 255 COIN because attesting to a memorial declaring its value in the strongest governance terms requires the highest tier of attestation.

8. 6. COST_BASIS: What a Book Is Worth

Every product in the SHOP has a COST_BASIS³:

```
cost_basis(product) = SUM(MINT:WORK.amount)
WHERE work_ref matches the scope producing the product
```

The cost basis of a book is the total governance work that produced it every gradient, every commit, every scope improvement from outline to publication. It is not an estimate. It is a sum computed from the LEDGER. The LEDGER records every MINT:WORK event, tagged with the scope that produced it. Summing those events for a books scopes yields the books cost basis.

The cost basis is the governance equivalent of cost of goods sold (COGS) in traditional accounting. But unlike traditional COGS, which requires estimates, allocations, and judgment calls, the COIN cost basis is mechanically derived from

A new book with 20 chapters adds 20 scopes, expanding the ceiling by 5,100 COIN. A new paper adds 1 scope, expanding the ceiling by 255 COIN. A new blog post adds 1 scope, expanding the ceiling by 255 COIN. Content creation is not just WORK it is monetary expansion.

This creates a supply dynamic that is uniquely tied to productive output. In Bitcoin, the supply ceiling is fixed (21 million) ². In fiat, the supply ceiling is absent. In COIN, the supply ceiling is dynamic it grows with the governance surface area of the system. More content means more scopes means more ceiling means more COIN can exist.

But the ceiling is not inflationary. The new COIN can only be minted through governance work on the new scopes. The ceiling expands by 255 per scope, but the COIN is only minted as authors do the work to bring those scopes from 0 to 255. Empty scopes contribute ceiling but not circulation. The supply expands only when the work is done.

This means content production serves three economic functions simultaneously: 1. It produces COIN for the author (MINT:WORK from governance gradients). 2. It expands the supply ceiling (new scopes increase the maximum possible COIN). 3. It creates products for the SHOP (content that readers can purchase, circulating COIN).

No other proof-of-work system achieves this triple function. Bitcoins mining ² produces security and new coins but no useful goods. Proof-of-stake ⁸ produces security but no coins and no goods. Content-as-proof-of-work produces security (governance compilation), coins (MINT:WORK), and goods (books, papers, blogs) all from the same work.

11. 9. Three Audiences, One Economy

The CANONIC content catalog serves three distinct audiences through a single unified economy:

DEVS Developers who build with CANONIC. Their entry point is The CANONIC Doctrine (127 COIN, AGENT tier): the dev manual for building governed systems. They learn by reading, then earn by building. Their governance work on code scopes mints COIN. Their COIN purchases more content or funds their own publications.

GOVS Governors who manage compliance, oversee organizational governance, and set policy. Their entry point is The CANONIC CANON (127 COIN, AGENT tier): the theory of code governance intelligence. They learn the theoretical framework, then apply it. Their governance work on organizational scopes mints COIN.

PUBLIC General readers, journalists, patients, policymakers, academics. Their entry point is Dividends and Deaths (255 COIN, FULL tier): the narrative case for why extraction must end. They read the argument, then decide whether to participate. Their attestation (purchase) is their governance action.

All three audiences use the same COIN. A developers COIN can purchase a governors book. A governors COIN can purchase a developers tool. A readers COIN can fund a researchers paper. The economy is unified. The content is specialized by audience but the currency is universal.

The 500 COIN onboarding budget (MINT:SIGNUP) is calibrated for all three audiences:

DEV:	Doctrine (127) + CANON (127)	= 254	246 r
GOV:	CANON (127) + ART (63)	= 190	310 r
PUBLIC:	DIVIDENDS (255)	= 255	245 r

Every pathway leaves COIN in the WALLET. The remaining COIN is the incentive gradient the economic pressure toward doing WORK. The system does not give users enough COIN to con-

sume forever. It gives them enough to start. The rest must be earned. And earning means writing, governing, contributing producing content that is itself proof of work.

12. 10. The Self-Proving System

This paper is itself proof of work. It lives in a governed scope (hadleylab-canon/canonic/PAPERS). Its governance files declare its identity, vocabulary, and coverage. Its creation involved governance commits that improved the scopes score. Each improvement minted COIN via MINT:WORK. The COIN is in the authors WALLET. The LEDGER records every gradient.

This paper is also content that entered the SHOP at 35 COIN (COMMUNITY tier). Readers who purchase it execute a SPEND event. Their COIN flows to the author. Their purchase is an attestation: this paper on content-as-proof-of-work is itself worth COIN.

The self-reference is not decorative. It is structural. The system proves itself by being used. Content about the content economy is content in the content economy. Papers about proof of work are proof of work. The argument is not that the system could work. The argument is that the system is working you are reading the evidence.

Every book in the catalog is the same kind of evidence:

- Atulisms is a memorial that mints COIN. The memorial is the work. The COIN is the attestation.
- The CANONIC Doctrine is a dev manual that mints COIN. The manual is the work. The COIN is the attestation.
- The CANONIC CANON is a theory book that mints COIN. The theory is the work. The COIN is the attestation.
- Dividends and Deaths is a narrative argument that mints COIN. The argument is the work.

The COIN is the attestation.

- The Art of the CANONIC Deal is a business case that mints COIN. The deal is the work. The COIN is the attestation.

Five books. Five governed scopes. Five economic engines. One economy.

The economy does not exist beside the content. The economy is the content. The content does not exist beside the governance. The content is the governance. The governance does not exist beside the work. The governance is the work.

WORK = COIN. COIN = ATTESTATION. ATTESTATION = VALUE. VALUE = CONTENT. CONTENT = WORK.

The loop closes. The proof is the system. The system is the proof.

13. Appendix A: The Five-Book Catalog

#	Title	Audience	COIN		Status
			Price	Tier	
1	Atulisms	PUBLIC	255	FULL	IN PROGRESS
2	The CANONIC Doctrine	DEVS	127	AGENT	IN PROGRESS
3	The CANONIC CANON	GOVS	127	AGENT	IN PROGRESS
4	Dividends and Deaths	PUBLIC	255	FULL	IN PROGRESS
5	The Art of the CANONIC Deal	BUSINESS	63	ENTERPRISE	IN PROGRESS

Total catalog governance surface: 5 books CE ~20 chapters avg = ~100 scopes **Total COIN capacity from book governance:** ~100 CE 255

= ~25,500 COIN **Total COIN from reader purchases (per reader):** 127255 COIN per book

The books are not products waiting for an economy. The books ARE the economy. Their production is the monetary base. Their purchase is the circulation. Their governance is the proof.

14. Appendix B: Content Governance Lifecycle

Total COIN minted per scope across lifecycle:
 $35 + 92 + 97 + 31 = 255$ COIN **Total COIN circulated per purchase:** tier price (63 / 127 / 255)
Net effect: content production funds the economy; content consumption circulates the economy.

CONTENT AS PROOF OF WORK | PAPERS

15. References

1. [I-1] Author CV.
2. [X-2] Nakamoto, S. *Bitcoin: A Peer-to-Peer Electronic Cash System* (2008). <https://bitcoin.org/bitcoin.pdf>
3. [I-31] COIN Specification.
4. [I-25] Governance as Compilation.
5. [X-74] Cambridge Centre for Alternative Finance. (2025). Cambridge Bitcoin Electricity Consumption Index.
6. [I-7] CANONIC Whitepaper v1.
7. [I-26] Economics of Governed Work.
8. [X-76] Buterin, V. (2014). Ethereum: A Next-Generation Smart Contract and Decentralized Application Platform.

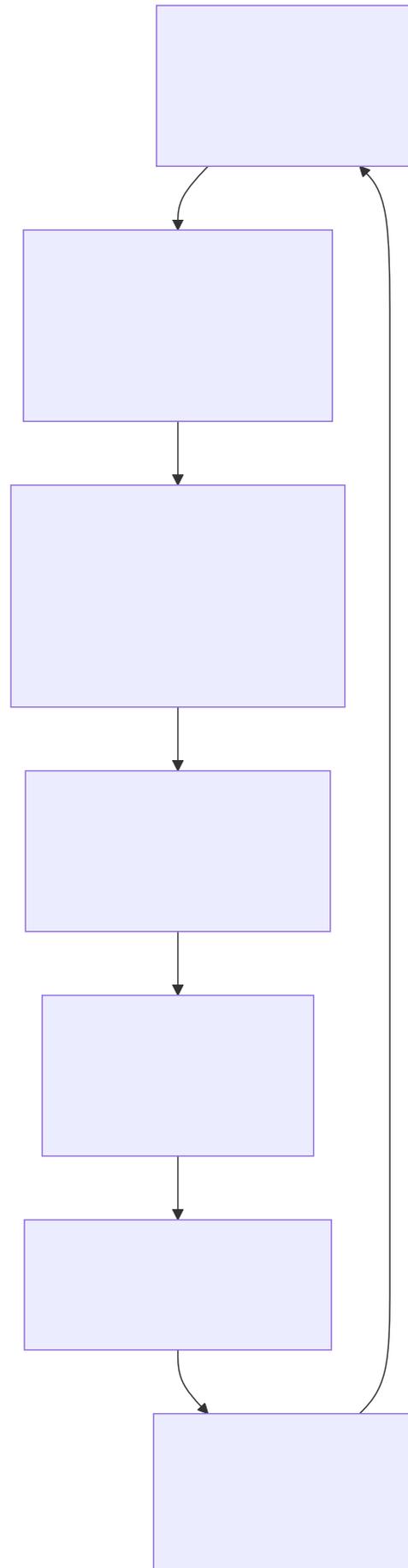


Figure 1: diagram
Page 8