Mowsie: Metabolic Wallets

Stateless Economic Regulation for Zero-Knowledge Monetary Fabrics

"Hickory Dickory Dock"

Abstract

This paper defines the metabolic subsystem of Mowsie — a stateless, zero-knowledge monetary fabric for Bitcoin.

Because the system retains no history, timestamps, fees, or ledgers, it cannot price computation using clocks or external oracles. Instead, it regulates computational cost internally through a biological mechanism composed of:

- crumbs (value input)
- blinks (compute output)
- wallets (cells)
- epochs (short-term metabolic cycles)
- kalpas (long-term structural adjustments)
- a Reserve (internal metabolic gauge)
- a Compute Tank (refueled at boundaries)

Crumbs enter the organism from Bitcoin.
Blinks are consumed inside the fabric
The Reserve measures fullness and scarcity.
Epochs and Kalpas adjust metabolic ratios endogenously.
Wallets "live" 2 years, mirroring the natural lifespan of a mouse.

The result is a self-correcting, self pruning, economic engine requiring no timestamps, no external inputs, and no global coordination — only endogenous scarcity and abundance.

1. Overview

Mowsie maintains no ledger.
It tracks no balances, no timestamps, and no fee markets.
It records only a global state root.

Because nothing resembling a blockchain exists, the cost of computation cannot be determined by:

- block space
- market competition
- gas bidding
- validators
- temporal measurements

- fee auctions

A stateless fabric must regulate its own metabolism.

This paper defines the metabolic layer that enables Mowsie to operate without time or history. The framework relies on internal pressure — fullness or emptiness of the Reserve — to adjust computational cost and replenish resources at deterministic boundaries.

Metabolism replaces monetization.

2. Primitive Units: Crumbs, Blinks, Reserve, and Compute Tank

The metabolic engine is built from four primitive components.

2.1 Crumbs

A crumb is one satoshi.
Crumbs are burned when entering the fabric.
They become internal value inside the Reserve.
They are never mapped to a user account or stored as BTC.

2.2 Blinks

A blink is the smallest compute unit consumed by wallets.
All operations inside the fabric cost blinks.
A wallet's blink balance is its metabolic life force.

2.3 The Reserve

The Reserve:

- accumulates only burned crumbs
- determines whether the organism is starved or overfed
- drives epoch and kalpa transitions
- provides value for BTC→SOL conversions at boundaries

The Reserve is not a treasury.
It holds no spendable BTC.
It is a gauge.

2.4 The Compute Tank

The Compute Tank stores SOL fuel used to pay for Solana computation.
It is refilled at every boundary where BTC→SOL conversions occur.

Crumbs → Reserve → conversion → Compute Tank → blinks → metabolic pressure.

This cycle defines the organism's breathing.

3. Wallets: Birth, Life, Death, and Resurrection

Wallets are the cells of the organism.

3.1 Gift of Life

A wallet is created by burning a single satoshi — the Naming Crumb.

This:

- initializes the wallet
- adds one crumb to the Reserve
- yields G – 1 blinks
- assigns a unique cryptographic identity

3.2 Life: Blink Metabolism

All wallet activity costs blinks.
When blinks run low, the cell approaches death.

3.3 TTL: Two-Year Maximum Lifespan

Every wallet has a hard TTL of two years —
the lifespan of an actual mouse.

This automatically prunes stale commitments and maintains statelessness.

3.4 Soft Death

If the wallet pre-burned a Resurrection Crumb:

- TTL expiry or blink zero triggers a soft death
- Identity and commitments persist
- Blink balance becomes previous + 1
- The Resurrection slot empties

Soft deaths are light prunings.
They preserve continuity.

3.5 Hard Death

If no Resurrection Crumb is present:

- Wallet is fully pruned
- Identity removed
- Commitments deleted
- Internal-value burns flow into the Reserve
- Real BTC dust swept into The Feast of Crumbs (DAO wallet)

Hard death maintains statelessness and clears the global tree.

4. Epochs: Short-Term Metabolic Cycles

Epochs are not time-based.
They conclude only after E blinks have been spent globally.

4.1 The Epoch Ladder

Epoch sizes follow a geometric sequence:

$$E \in \{4, 8, 16, 32, 64, 128, ...\}$$

This ladder determines how quickly the organism breathes.

4.2 Epoch Boundary Event

Every epoch ends with:

1. **BTC→SOL conversion**
   Burned crumbs in the Reserve are converted into SOL, refueling the Compute Tank.
2. **Metabolic adjustment**
   E and G shift based on Reserve fullness.

4.3 Growth Epoch (Reserve ≥ 2E)

- E doubles (E → 2E)
- G increases by exactly +1
- The organism becomes more generous

4.4 Weak Epoch (Reserve < 1E)

- E halves (E → E/2)
- G decreases by exactly −1
- The organism becomes more greedy

4.5 Stable Epoch (1E ≤ Reserve < 2E)

- No change to E
- No change to G

Epochs provide short-range metabolic homeostasis.

5. Kalpas: Long-Wave Structural Adjustments

Kalpas represent extreme metabolic states.

5.1 Golden Kalpa (Extreme Abundance)

Triggered when the Reserve becomes deeply overfull (e.g., >4E).

- Crumb cost halves
- Next epoch grows
- G increases by exactly +1
- BTC→SOL conversion occurs at boundary

Generosity expands during abundance.

5.2 Famine Kalpa (Extreme Scarcity)

Triggered the moment the Reserve hits zero.

- Epoch ends instantly
- Crumb cost doubles
- Next epoch shrinks
- G decreases by exactly −1
- Immediate BTC→SOL conversion
- Network enters an Eclipse Pause

Scarcity tightens the organism.

6. The Eclipse Pause: Natural Refueling in a Stateless Fabric

A Famine Kalpa may drain the Compute Tank before SOL is replenished.
Because computation requires fuel, the network must pause while the Bitcoin transaction confirming the conversion is mined.

This pause:

- lasts a single BTC confirmation
- introduces no backlog
- introduces no reordering
- stores no history
- causes no forks
- loses no state

The organism simply "holds its breath" and resumes activity once refueled.

Eclipse events are rare but inevitable — the stateless equivalent of a solar eclipse.

7. Endogenous Pricing: No BTC Treasury Required

Mowsie maintains no BTC reserve.
None is needed.

Because:

- Scarcity lowers G
- Lower G makes crumbs produce fewer blinks
- Fewer blinks cause the Reserve to fill faster
- A full Reserve triggers BTC→SOL conversion
- Conversion refuels the Compute Tank
- Compute consumption resumes normally

Conversely:

- Abundance raises G
- Crumb cost falls
- More blinks circulate
- The Reserve fills more slowly
- Abundance returns to equilibrium

This self-adjusting cycle ensures the system can always afford its next BTC transaction, even if fees fluctuate.
The crumb→blink ratio is the treasury — not a vault.

8. The Feast of Crumbs: DAO Treasury

All real BTC dust from Hard Death wallets accumulates in a separate DAO wallet known as the Feast of Crumbs.

The Feast:

- stores real Bitcoin
- has no role in metabolic adjustment
- does not influence epochs or Kalpas
- can be withdrawn at meaningful thresholds

It is a side effect of pruning — never a dependency.

The Reserve is internal.
The Feast is external.

9. Metabolic Synthesis

Mowsie's metabolic engine forms a closed loop:

- Crumbs enter via burns
- Reserve fills
- BTC→SOL conversions refuel the Compute Tank
- Blinks are consumed
- Scarcity or abundance emerges naturally
- Epochs adjust short-term metabolism
- Kalpas adjust long-term structure
- Wallets live, die, and resurrect
- Statelessness is preserved

No timestamps, schedules, or oracles are needed.

The organism self-regulates.

10. Conclusion

Metabolic regulation enables a stateless monetary fabric to function without time, fees, markets, ledgers, or block producers.

Crumbs become blinks through a biological exchange system that expands and contracts in response to internal fullness.

Epochs breathe.
Kalpas adapt.
Wallets metabolize.
The Reserve measures truth.
The Compute Tank fuels motion.
The Feast of Crumbs preserves entropy.

This paper completes the triad:

1. **Paper 1:** Monetary Fabric
2. **Paper 2:** Mass-Based Ordering
3. **Paper 3:** Metabolic Wallets

Together, they define a stateless, zero-knowledge universe where value moves without memory.