Why the Thermodynamic Cost of Erasing History Matters

I want readers to understand something that many academic circles are only beginning to explore: erasing history is not just a moral or cultural loss — it is a calculable act of destruction. There is a cost associated

with it. And that cost is societal or ideological. It is physical. It is thermodynamic.

This idea struck me deeply one morning, following an overnight reflection on a study I conducted the previous spring.

Drawing from Shannon entropy, Huffman coding, and Rolf Landauer’s thermodynamic theory of

information, I realized that every attempt to delete a fact — to erase even a single bit of truth — carries an

irreversible energy cost. This isn't a metaphor. It's physics.

In the digital and algorithmic age, erasure is no longer the mere rewriting of textbooks or the suppression

of dissenting memory. It is code. It is automation. It is a recursive feedback loop where certain dominant groups — in this context, the White-Christian nationalist right — not only reshape the narrative, but

structurally optimize its deletion. They believe they were ordained to control our voices and reframe our collective memory. That belief system is being programmed into history.

My book does not merely challenge that system — it quantifies its violence. When data is deliberately destroyed or marginalized, histories are stripped from the record, and an entropy change occurs. According to

Landauer’s principle states that the erasure of each bit of information costs at least kT ln(2) joules of energy, where k is Boltzmann’s constant and T is temperature in Kelvin. In short: there is a measurable, thermodynamic price to authoritarian memory control.

\begin{figure}[h] \centering \includegraphics[width=0.8\textwidth]{assets/entropy\_erasure\_plot.png}

\caption{Minimum energy cost of erasing 1 bit of information, per Landauer's Principle.} \end{figure}

This isn't a metaphor. It’s a reckoning.

I know these concepts are dense. I struggled to “dumb them down” without dumbing down the truth. But I trust my readers. The facts are solid. The research is fundamental. And the implications are vast.

So, when I speak of erasure, I do so as a systems scientist — and as someone who knows the stakes. The deletion of truth is not a clean process. It is not free. It is entropy in action, and it demands our resistance — with precision, data, and moral clarity.

\begin{figure}[h] \centering \includegraphics[width=0.8\textwidth]{assets/entropy\_erasure\_feedback.png}

\caption{Authoritarian memory control loop: erasure of historical data as a thermodynamic act.}

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Emin = kT ln(2)

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