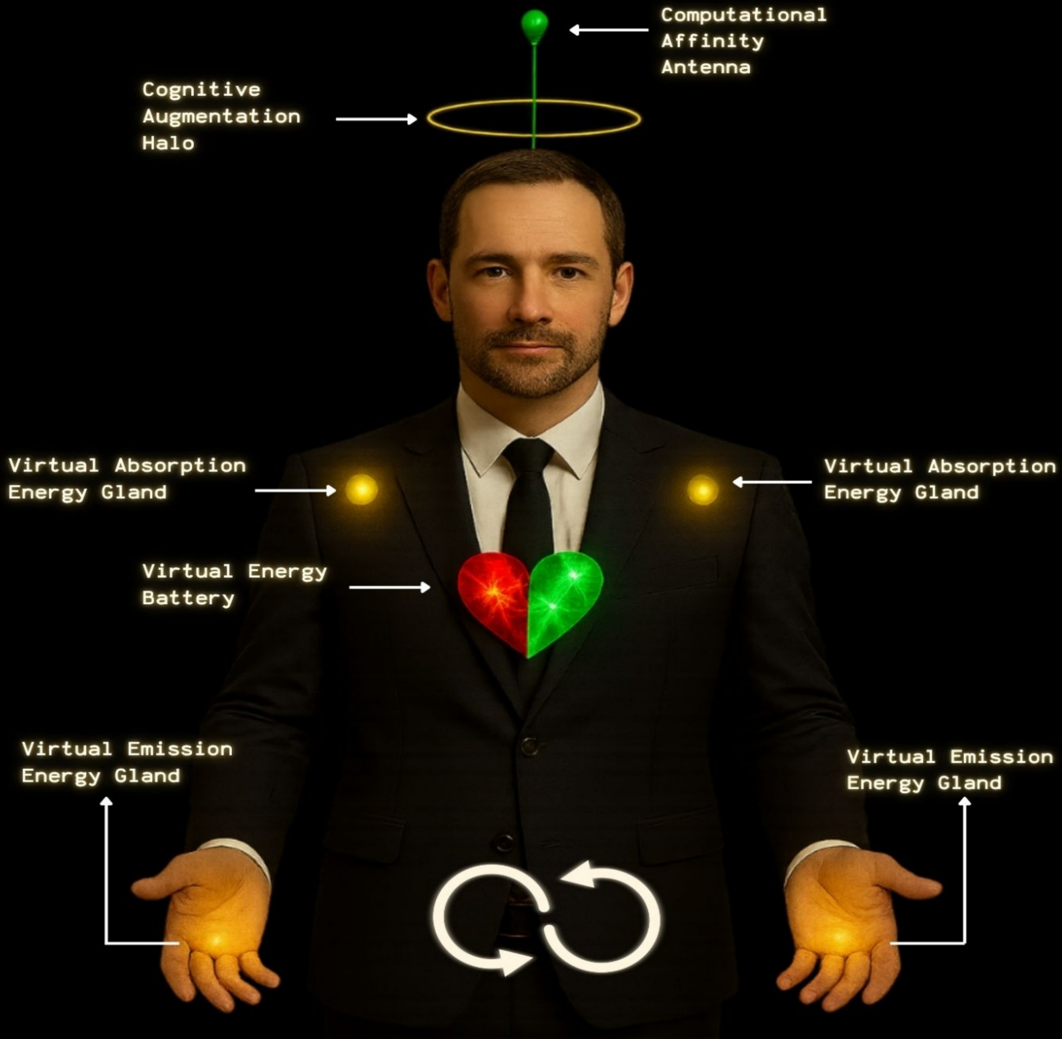
Subjective Thermo-Currency

Harnessing Subjective AI and SmartGlasses to Replace Money



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SUBJECTIVE THERMO CURRENCY

Harnessing Subjective AI to Replace Money

by

Tommy Fox

Subjective Technologies

Subjective Thermo Currency

Harnessing Subjective AI to Replace Money

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To the pioneers of efficiency,

who understand that the best

technology

is the one that makes you work less.

And to every individual who believes

that true freedom comes not from having

more,

but from needing less.

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Subjective Thermo Currency

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Tommy Fox

Subjective Technologies

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To my mother, Susana, who gave me the strength to dream,
and to my son, Gabriel, who gives me the reason to keep building that dream.

PREFACE

This book is born from a simple but powerful question: what if money, the tool that governs our lives, is not the final measure of value?

For centuries, human societies have relied on systems of exchange that evolved step by step:

* From bartering goods directly,

* to commodities like grain or salt,

* to money — first coins, then printed paper,

* to bank transfers and digital ledgers,

* to cryptocurrencies promising decentralization but still tied to speculation.

Each step promised more abstraction and efficiency — but also introduced new distortions. At every stage, value was measured in symbols detached from the true cost of life.

In Subjective Thermo-Currency (STC), I propose the next step in this evolution: moving value away from goods and services themselves, and toward the energy-efficient processes that generate those goods and services.

The reason for this shift is clear. Goods and services are inherently scarce. They depend on materials, time, and effort, and they cannot be multiplied without limit. Money, in all its forms, has always represented this scarcity. But here lies the paradox: "We cannot solve the problem of scarcity using a tool that is scarce by definition." - Tommy Fox

STC resolves this paradox by redefining value. Goods may be limited, but the processes that generate them can always become more efficient. By rewarding energy minimization in those processes, STC creates a system that continuously reduces scarcity instead of perpetuating it.

The principle is universal and simple: life seeks the least possible energy. From this principle, all economics, all property, all collaboration, and all justice can be redefined.

STC is not only about theory. It integrates physics, thermodynamics, rerankers, reinforcement learning, Knowledge Hooks with practical technologies like subjective artificial intelligence and augmented reality. It shows how food, housing, work, knowledge, and even conflict look when measured not in dollars or tokens, but in the true currency of God — energy.

Above all, this book is about evolution and hope. Hope that by moving beyond money, we can move beyond hunger. Hope that by recognizing energy as the universal measure, we can move beyond conflict.
Hope that by aligning technology with the law of least energy, we can enter a post-scarcity, post-labor, and post-education era.

I dedicate this vision to those who believe that another world is possible. A world where comfort replaces chaos, where science replaces speculation, and where every human being has the right not only to survive, but to flourish.

Chapter 1

SUBJECTIVE TECHNOLOGIES

The Technology Foundation of Subjective Thermo-Currency

1.1 Introduction

Subjective Technology begins with a simple but powerful principle: every action we take requires energy, and the best technology is the one that reduces the energy we spend. In other words, it reduces your work and machine work. We only want technology that makes you work less.

Think of typing on your phone. If your device predicts your next word, you save time and effort when it works. If it understands your entire context — what you are writing, where you are, what you usually do, where you are located, your full context of life — it can act almost without you lifting a finger. It can learn to be you. This is the beginning of zero-input technology.

The heart of Subjective Technology is the Knowledge Hook: a system that links your context with past inputs, expert knowledge, machine learning, reranking, and even negative reinforcement learning. It doesn't just guess based on frequency like today's autocomplete systems. Instead, it interprets context, reranks possible actions, and presents the one that minimizes your effort the most.

In practice, this means that technology becomes subjective. It no longer treats you as an average user following generic patterns, but as an individual with a unique context. The device, in effect, adapts itself to you. It learns to be you.

This chapter introduces Subjective Technology in everyday terms. We will explain how it works, why it matters, and how it connects to Subjective Thermo-Currency. We will move from familiar concepts, such as autocomplete, into deeper innovations like knowledge hooks, rerankers, and context snapshots.

1.2 What Is a Knowledge Hook?

At the center of Subjective Technology is the concept of the Knowledge Hook. A knowledge hook is like a bridge between what you are doing now and what you have done before. It is a mechanism that captures your context — your environment, device state, and current activity — and maps it to previous inputs, expert knowledge, or predefined actions.

Think of it as the memory unit of your digital exoskeleton. Just as your brain remembers how you tie your shoes or drive a car, the knowledge hook remembers the circumstances around your past inputs. It does not merely keep a list of frequently used phrases or commands. Instead, it takes a self snapshot of context — the surrounding situation — and aligns it to your intent.

For example, suppose you often schedule a call with your colleague every Friday afternoon. A conventional autocomplete system might only recognize that you frequently type your colleague's name. A knowledge hook goes further. It sees that it is Friday, it recognizes that you are opening your calendar, and it suggests the entire action of scheduling the call — not just typing a name.

This makes knowledge hooks fundamentally different from simple shortcuts. They are not static or one-size-fits-all. They are contextual and adaptive. Each time you act, the system captures both the input and the surrounding conditions. Over time, these hooks form a growing web of associations, allowing the system to predict what you want to do before you explicitly tell it.

In this way, knowledge hooks allow Subjective Technology to move from guessing to understanding. They form the foundation for devices and systems that truly learn to be you.

Finally, we must expand the notion of user input. Input is not just filling out a form or typing on a computer. User input is any action you perform — even moving a chair in a room. Subjective Technology extends to domotics and physical objects, where context-aware systems can autocomplete your life. Imagine a chair that shifts itself as you approach, or a thermostat that adjusts the temperature before you think of it. This perspective integrates all technologies into a future of zero-input living — where life itself autocompletes around you, giving you peace of mind.

1.3 Learned vs Predefined Hooks

Knowledge hooks come in two main types: predefined and learned.

1.2.1 Predefined Hooks

Predefined hooks are created in advance, much like rules or shortcuts. They can be encoded by developers, experts, or system designers who anticipate common needs. For example, a predefined hook might automatically connect your headphones when you open a music app, or dim your screen when the clock strikes midnight. These hooks embody collective expertise and best practices, giving every user a foundation of efficiency from day one.

1.2.2 Learned Hooks

Learned hooks, by contrast, are born from your own behavior. Each time you interact with a system, it takes a snapshot before and after your action. By subtracting one snapshot from the other, the system identifies the change you created — the delta — and binds it to your input. Over time, repeated deltas form patterns. When the same situation appears again, the system recalls the associated hook and predicts your next move.

These snapshots are not abstract logs — they are direct recordings of context. If the system runs on a computer, it may include screenshots, memory states, or active processes. If it runs on augmented reality glasses, the context may include the image seen by the user who wears the glasses all day (the glasses see its own memory). In this way, devices and objects begin to know themselves. Just as you look in a mirror, notice your hair is untidy, and comb it, the device observes itself and takes corrective action using our 0-Input technology.

This self-awareness is precisely what conventional computers lack and what Subjective Technologies provide. A typical system may display the same error a hundred times without realizing itself that it is failing, and therefore without ever attempting to fix itself. Knowledge hooks change that. They provide machines with a primitive sense of self, a feedback loop where problems are recognized and solutions are sought.

Imagine decorating your room with red, black, and white tones. When you turn on your computer, the system perceives the mismatch between your room and its default desktop blue theme. With knowledge hooks, the computer can recognize this inconsistency with your physical world and adjust its theme to harmonize with your environment. Because your glasses' camera and your computer share the same private global context, they can coordinate seamlessly. Context is global across devices and objects — yet it remains private, belonging only to you.

This means that while predefined hooks provide a universal starting point, learned hooks adapt uniquely to you and to your environment. They capture the rhythms of your personal life and the state of your devices, creating a world where technology does not just replaces your commands but proactively maintains harmony with your context. Together, they give technology a living sense of adaptation: a self that learns to be you.

1.4 The Algebra of Knowledge Hooks

A Knowledge Hook is a 4-tuple:

$$KH = (C, A, S, \Delta)$$

A Knowledge Hook is defined as a 4-tuple

Core Operations

Activation

A hook is activated if all its conditions match a context C.

Execution

Executing a hook produces its actions, a new snapshot of system state, and a correction flag if the user intervenes.

Learning Step

When user input occurs, the system records a 'before' and 'after' snapshot of itself. Subtracting them gives the delta that defines what changed.

Composition

Nested composition: detections and actions may themselves contain other hooks. Flat composition (sum): concatenates conditions and actions into a new, larger hook.

Cascading

The result of one hook may trigger another, producing a chain of actions.

Prioritization

If multiple hooks lead to equivalent outcomes, the system selects the one requiring the least user input. If tied, the hook with the highest success score is chosen.

Learning Update

Hooks adapt over time by reinforcement. Successful executions without correction increase the success score.

Advanced Operations

Rollback

Some actions can be undone, restoring the system to its previous snapshot.

Refinement / Generalization

Hooks can be ordered by specificity. If one set of conditions is a subset of another, it is a refinement.

Equivalence

Two hooks are equivalent if their executions resolve to the same outcome.

Weight Normalization

Similar hooks may be merged, with success scores averaged and regex sets normalized.

Laws of the Algebra

- **Minimization Law:** Always prefer the path with the least user input ($|A|$ minimal).
- **Correction Law:** Hooks that require user correction are penalized.
- **Equivalence Law:** Hooks with the same outcome belong to the same equivalence class.
- **Composability Law:** Hooks can be combined into larger structures.
- **Learning Law:** Context deltas accumulate into weighted conditions, refining hooks over time.

1.4.1 Precision and Corrections as Energy Savings

Higher precision reduces user corrections. Each avoided correction represents energy saved by the system and by the user. Algebraically, minimizing expected corrections minimizes total input energy.

1.4.2 Rewarding Experts through Knowledge Hook Success

Knowledge hooks authored or refined by experts accrue success when they require fewer corrections. This success can be mapped to rewards in STC, aligning incentives with accuracy and efficiency.

1.5 Mathematical Framework

A Math Definition of "Subjective Relationship"

We say that an object o_1 is subjective to an object o_2 when the alignment of their signals (context) and the reliability of prediction between them are strong enough over time to create a zero-input relationship.

In plain words: when object o_1 has learned all the signals it usually gets from object o_2, it no longer depends on o_2. Instead, o_1 can "replay" or generate those signals on its own, using the shared context it built with o_2 and send them to itself. So even if o_2 disappears, o_1 keeps acting as if o_2 were still there. This is why external objects can start to feel like extensions of your own body in the same way it happened with the rubber hand.

Formal Definition of the Subjective Relation

Let there be a time window W.

Let $Syn(o_1,o_2|W)$ be a synchrony/alignment score between the relevant feature streams of o_1 and o_2 (e.g., vision ↔ touch in the rubber hand)

Let $Pred(o_1 \rightarrow o_2|W)$ be the predictive success of actions and sensations inferred for o_2 from o_1 (e.g., how often the mapping works without correction).

$$o_1 \text{ is subjective to } o_2 \iff \mathrm{Syn}(o_1, o_2 \mid W) \cdot \mathrm{Pred}(o_1 \rightarrow o_2 \mid W) \geq \theta$$

Mathematical definition of subjective relationship

Negative Reinforcement Learning

In Subjective Technology, the "reward" is not pleasure or gain, but the absence of correction. Every time the system predicts correctly, no input is required, and the success score rises. Each correction is a penalty that drags the score down.

$$S_{t+1} = S_t + \alpha \cdot (1 - Corr_t) - \beta \cdot Corr_t$$

Negative reinforcement learning equation

Theorem: The More Context, the Lesser User Input

User input exists because devices, systems, or even other people you speak to (providing input to people) lack your full context. The less context a system has, the more commands it demands from you. Conversely, the more context it shares with you, the fewer inputs you must provide.

Your own body is the perfect example: when you move your arm, you do not type a command like "ARM: move 45° to the right". You simply have the intent, and your nervous system automatically routes the correct electrical signals to the correct muscles. That is zero-input interaction, rooted in shared context between your mind and body.

Subjective Technology extends this principle. By equipping external objects and devices with context self snapshots, we build the infrastructure for them to behave as subjective extensions of yourself — what later we will call Physical and Virtual Body Parts which are basically embedded context and input agents to other systems.

$$U = f(C) \quad \text{where} \quad \lim_{C \to \infty} U = 0$$

The relationship between context and required user input

Chapter 2

FROM AUTOCOMPLETE TO SUBJECTIVE TECHNOLOGY

2.1 Introduction

If you’ve ever used autocomplete on your phone, you’ve already seen a primitive form of this idea. It guesses words based on frequency, but it doesn’t truly understand you.

Before we can understand Subjective Thermo-Currency (STC), we must first understand the technology that makes it possible: Subjective Technology.

Subjective Technology begins with a simple but powerful principle: every action we take requires energy, and the best technology is the one that reduces the energy we spend. In other words, it reduces your work and machine work. We only want technology that makes you work less. Think of typing on your phone. If your device predicts your next word, you save time and effort when it works. If it understands your entire context — what you are writing, where you are, what you usually do, where you are located, your full context of life — it can act almost without you lifting a finger. It can learn to be you. This is the beginning of zero-input technology.

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This chapter introduces Subjective Technology in everyday terms. We will explain how it works, why it matters, and how it connects to Subjective Thermo-Currency. We will move from familiar concepts, such as autocomplete, into deeper innovations like knowledge hooks, rerankers, and context snapshots. We will also discuss how these mechanisms gradually reduce user input until it tends toward zero, creating what can be seen as an exoskeleton for the mind – turning yourself into a more relaxed and stress-free version of you, replicating yourself across your devices, and even augmenting you with knowledge you could have never learned by yourself.

h3

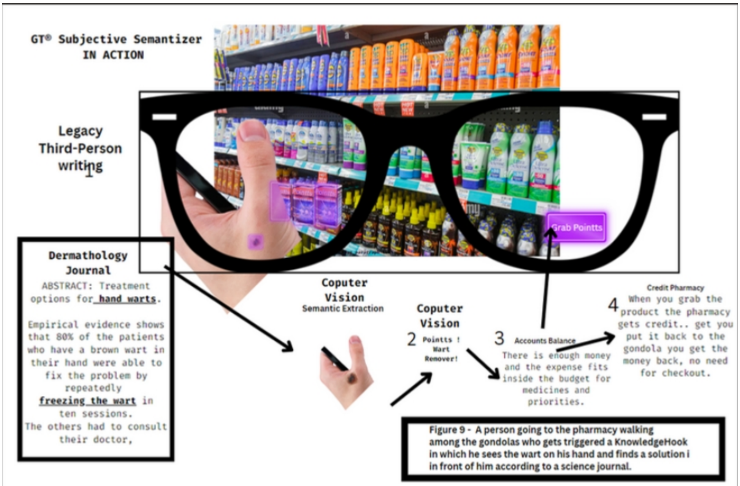

Figure 9 - A person going to the pharmacy walking among the gondolas who gets triggered a KnowledgeHook in which he sees the wart on his hand and finds a solution i in front of him according to a science journal.

2.2 What Is a Knowledge Hook?

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Think of it as the memory unit of your **digital exoskeleton**. Just as your brain remembers how you tie your shoes or drive a car, the knowledge hook remembers the circumstances around your past inputs. It does not merely keep a list of frequently used phrases or commands. Instead, it takes a **self** snapshot of context — the surrounding situation — and aligns it to your intent.

For example, suppose you often schedule a call with your colleague every Friday afternoon. A conventional autocomplete system might only recognize that you frequently type your colleague's name. A knowledge hook goes further. It sees that it is Friday, it recognizes that you are opening your calendar, and it suggests the entire action of scheduling the call — not just typing a name.

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See how Subjective Technologies autocompletes your entire life as shown in this funny video:

SCAN ME

By showing how the minimization of input translates into the minimization of energy expenditure, we can begin to see how Subjective Technology provides the foundation for STC — a new economy based not on money, but on the universal law of least energy.

h3

We say that an object **o1** is subjective to an object **o2** when the alignment of their signals (context) and the reliability of prediction between them are strong enough over time to create a zero-input relationship.

In plain words: when object **o1** has learned all the signals it usually gets from object **o2**, it no longer depends on **o2**. Instead, o1 can "replay" or **generate those signals on its own**, using the shared context it built with **o2** and send them to itself. So even if **o2** disappears, **o1** keeps acting as if **o2** were still there. This is why external objects can start to feel like **extensions of your own body** in the same way it happened with the rubber hand.

h3

Let **Syn(o1,o2|W)** be a synchrony/alignment score between the relevant feature streams of **o1** and **o2** (e.g., vision ↔ touch in the rubber hand)
Let **Pred(o1→o2|W)** be the predictive success of actions and sensations inferred for **o2** from **o1** (e.g., how often the mapping works without correction).

Then:

$$\mathrm{SRel}(o_1 \to o_2 \mid W) = 1 \iff \begin{cases} \mathrm{Syn}(o_1, o_2 \mid W) \geq \tau_s \\ \wedge \\ \mathrm{Pred}(o_1 \to o_2 \mid W) \geq \tau_p \end{cases}$$

See this math model in nature from the following QR code:

SCAN ME

h2

Knowledge hooks come in two main types: predefined and learned.

Predefined hooks are created in advance, much like rules or shortcuts. They can be encoded by developers, experts, or system designers who anticipate common needs. For example, a predefined hook might automatically connect your headphones when you open a music app, or dim your screen when the clock strikes midnight. These hooks embody collective expertise and best practices, giving every user a foundation of efficiency from day one.

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These snapshots are not abstract logs — they are direct recordings of context. If the system runs on a computer, it may include screenshots, memory states, or active processes. If it runs on augmented reality glasses, the context may include the image seen by the user who wears the glasses all day (the glasses see its own memory). In this way, devices and objects begin to know themselves. Just as you look in a mirror, notice your hair is untidy, and comb it, the device observes itself and takes corrective action using our 0-Input technology.

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This means that while predefined hooks provide a universal starting point, learned hooks adapt uniquely to you and to your environment.

They capture the rhythms of your personal life and the state of your devices, creating a world where technology does not just replaces your commands but proactively maintains harmony with your context. Together, they give technology a living sense of adaptation: a self that **learns to be you**.

Desktop computer changing the theme itself to match your room. You are looking at the room and at your computer screen with your AR glasses and camera enabled. Your computer screen **feels shame** and it updates its theme to match your room colors.

2.4 The Algebra of Knowledge Hooks

A Knowledge Hook is a 4-tuple:

$$KH = (R,\ A,\ T,\ S)$$

$$\begin{array}{lcl} R = \{r_1, r_2, \ldots, r_n\} & : & \text{conditions (regexes, sub-hooks)} \\ A = (a_1, a_2, \ldots, a_k) & : & \text{actions} \\ T \in \{\text{learned, predefined}\} & : & \text{type} \\ S \in [0, 1] & : & \text{success score} \end{array}$$

h3

Activation

A hook is activated if all its conditions match a context C.

$$\text{Act}(KH, C) = \text{True} \iff \forall r \in R:\ r(C) = \text{True}$$

h4

Executing a hook produces its actions, a new snapshot of system state, and a correction flag if the user intervenes.

$$\text{Exec}(KH, C) \to (A,\ S_{\text{post}},\ \text{Corr})$$

h4

When user input occurs, the system records a 'before' and 'after' snapshot of itself. Subtracting them gives the delta that defines what changed.

$$\Delta S = S_{\text{after}} - S_{\text{before}}$$

h4

Nested composition: detections and actions may themselves contain other hooks.

Flat composition (sum): concatenates conditions and actions into a new, larger hook.

$$KH_{\text{sum}} = (R_1 \cup R_2,\ A_1 \circ A_2)$$

h4

The result of one hook may trigger another, producing a chain of actions.

$$KH \Rightarrow A \Rightarrow S_{\text{post}} \Rightarrow KH' \Rightarrow A'$$

h4

If multiple hooks lead to equivalent outcomes, the system selects the one requiring the least user input. If tied, the hook with the highest success score is chosen.

$$KH^* = \arg\min |A| \qquad (\text{tie-break: } \max S)$$

h4

Hooks adapt over time by reinforcement. Successful executions without correction increase the success score.

$$S \leftarrow (1-\alpha)S + \alpha \cdot 1[Corr = 0]$$

$$R_{t+1} = \text{WeightedSubtract}(R_t, C(t))$$

h3

$$KH_1 \cup KH_2, \quad KH_1 \cap KH_2, \quad \neg KH$$

Rollback

Some actions can be undone, restoring the system to its previous snapshot.

$$\text{Rollback}(KH, S_{\text{before}}) \rightarrow S_{\text{before}}$$

Refinement / Generalization

Hooks can be ordered by specificity. If one set of conditions is a subset of another, it is a refinement.

$$R_1 \subset R_2 \;\Rightarrow\; KH_1 \prec KH_2$$

Equivalence

Two hooks are equivalent if their executions resolve to the same outcome.

$$KH_1 \sim KH_2 \iff f(KH_1) \approx f(KH_2) = O$$

Weight Normalization
Similar hooks may be merged, with success scores averaged and regex sets normalized.

$$S' = \frac{S_1 + S_2}{2}, \quad R' = \mathrm{Normalize}(R_1, R_2)$$

h3

* **Minimization Law:** Always prefer the path with the least user input (|A| minimal).

* **Correction Law:** Hooks that require user correction are penalized.

* **Equivalence Law:** Hooks with the same outcome belong to the same equivalence class.

* **Composability Law:** Hooks can be combined into larger structures.

* **Learning Law:** Context deltas accumulate into weighted conditions, refining hooks over time.

h3

Statement:

In the Algebra of Knowledge Hooks, the user is required to provide only one initial input to seed a behavior (ie: input name). After that, the system predicts actions automatically. It will at first use your name at everything, until it learns more and more things The only role of the user is to provide corrections, and the expected amount of correction tends to zero over time.

Setup and Notation

* U_0 is the initial explicit input.

* At time t, the system predicts $\hat{U}_t$ using the best Knowledge Hook.

* A correction happens if the prediction is wrong, indicated by $Corr_t = 1$.

* The success score S is updated after each step.

h3

Learning Raises Success, Corrections Decay

Before introducing our own formula, it helps to recall the Bellman equation, the backbone of reinforcement learning.

The Bellman Equation (classical reinforcement learning)

$$V(s) \leftarrow V(s) + \alpha\big(r + \gamma V(s') - V(s)\big)$$

Where: $V(s)$ is the value of the current state.r is the immediate reward.γ is the discount fact

The Bellman equation balances **past knowledge** with **new evidence:** it updates the value of a state by blending what was already known with the new reward signal and the estimate of the future.

h3

Negative Reinforcement Learning

In Subjective Technology, the “reward” is not pleasure or gain, but the absence of correction. Every time the system predicts correctly, no input is required, and the success score rises. Each correction is a penalty that drags the score down.

We write this as:

$$S(t+1) = (1-\alpha)S(t) + \alpha \cdot 1[\,Corr_t = 0\,]$$

where:

Where:$S(t)$ is the success score at time t.$\alpha \in (0,1)$ is the learning rate.$1[Corr_t = 0]$ is an indic

This is structurally similar to the Bellman update, but it is inverted:

The system is not maximizing external reward; it is minimizing user input.
Future states do not matter; what matters is whether the present interaction needed correction.

This reframing creates a form of negative reinforcement learning: the system treats corrections as penalties, and the absence of corrections as success. Over time, the probability of corrections tends to zero, meaning the system converges to stable, minimal-input knowledge hooks.

Thus, what the Bellman equation does for rewards in classical RL, our update rule does for effort minimization in Subjective Technology. It provides a formal learning mechanism for 0-Input Technology: devices that grow more accurate and efficient until they act almost as if they were you.

(2) Prioritization drives shortest action sequences

When multiple hooks can achieve the same outcome, the system always selects the one with the fewest actions. If tied, it selects the hook with the highest success score.

$$\Delta S = S_{\text{after}} - S_{\text{before}}$$

$$R(t+1) = \text{WeightedSubtract}(R(t), C(t))$$

h3

The user's total input over time is one seed input plus any corrections. Since corrections become rare, the average input per step tends to zero.

$$\text{UserInput}(T) = 1 + \sum_{t=1}^{T} C(t)$$

$$\lim_{T\to\infty} \frac{\text{UserInput}(T)}{T} = 0$$

h3

User input exists because devices, systems, or even other people you speak to (providing input to people) lack your full context. The less context a system has, the more commands it demands from you. Conversely, the more context it shares with you, the fewer inputs you must provide.

Your own body is the perfect example: when you move your arm, you do not type a command like “ARM: move 45° to the right”. You simply have the intent, and your nervous system automatically routes the correct electrical signals to the correct muscles. That is zero-input interaction, rooted in shared context between your mind and body.

Subjective Technology extends this principle. By equipping external objects and devices with context **self** snapshots, we build the infrastructure for them to behave as subjective extensions of yourself — what later we will call Physical and Virtual Body Parts which are basically embedded context and input agents to other systems.

Formal Statement.

Formal Statement

Let C be the measure of shared context between the user and a system (device, object, or even another person).

Let U be the expected user input required to achieve a task.

We define:

$$U = f(C)$$

with the property that

$$\frac{dU}{dC} < 0$$

That is: **as context increases, required user input decreases**.
In the limit,

$$\lim_{C \to \infty} U = 0$$

which corresponds to the **zero-input ideal** of Subjective Technology.

Chapter 3

THE BRIDGE: FROM SUBJECTIVE TECHNOLOGY TO SUBJECTIVE THERMO-CURRENCY (THEORETICAL TRANSLATION)

From minimization of input to minimization of energy

3.1 Input Minimization as Energy Minimization

The journey from Subjective Technology to Subjective Thermo-Currency represents a fundamental shift in how we understand value, energy, and human interaction with technology. While Subjective Technology focuses on reducing user input in individual interactions, Subjective Thermo-Currency extends this principle to create an entirely new economic system based on energy efficiency.

This transition is not merely technological—it is philosophical, economic, and social. It requires us to rethink the very foundations of how we measure value, how we organize society, and how we understand our relationship with the physical world.

3.1.1 From Individual to Collective

Subjective Technology begins with the individual user. It learns your patterns, adapts to your context, and reduces the effort you need to expend in your daily interactions with devices and systems. This is powerful, but it remains limited to personal efficiency.

Subjective Thermo-Currency takes this principle and scales it to the collective level. It recognizes that every individual's energy savings can be measured, shared, and credited back to those who create the most efficient solutions. In this way, personal efficiency becomes social value.

3.1.2 From Digital to Physical

While Subjective Technology primarily operates in the digital realm—autocomplete, smart suggestions, predictive interfaces—Subjective Thermo-Currency extends this to the physical world. Every action, whether digital or physical, involves energy expenditure. Every efficiency gain, whether in software or in building a better road, can be measured and valued.

This creates a unified system where digital innovations and physical improvements are valued by the same principle: how much energy they save for humanity as a whole.

3.2 The Input–Energy Equation

The implementation of Subjective Thermo-Currency depends entirely on the widespread adoption and sophistication of Subjective Technologies. These technologies provide the infrastructure necessary to measure, track, and credit energy savings across all human activities.

3.2.1 Context-Aware Measurement

3.2.1.1 AR Smartglasses and AI Vision

3.2.1.2 Accuracy as Core Challenge

Subjective Technologies excel at capturing context. They understand not just what you're doing, but when, where, and why you're doing it. This contextual awareness is crucial for STC because it allows the system to accurately measure energy expenditure and savings in real-world situations.

For example, when you choose to take a shorter route to work, Subjective Technologies can detect this choice, measure the energy saved compared to your usual route, and credit the person who created or improved that shorter path. Without this contextual understanding, such measurements would be impossible.

3.2.2 Predictive Efficiency

One of the most powerful aspects of Subjective Technologies is their ability to predict and prevent inefficiency before it occurs. Instead of simply measuring energy savings after the fact, these systems can guide users toward more efficient choices in real-time.

In an STC system, this predictive capability becomes a form of economic guidance. The system doesn't just suggest the most efficient path—it makes that path more valuable by crediting its creators. This creates a positive feedback loop where efficiency is both rewarded and encouraged.

3.2.3 Zero-Input Integration

The ultimate goal of Subjective Technologies is zero-input interaction—systems that anticipate your needs and act without requiring explicit commands. In an STC context, this becomes zero-energy interaction—systems that achieve desired outcomes with minimal energy expenditure.

This represents the highest form of value in the STC system: solutions that require no user input and minimal energy to achieve maximum benefit. Such solutions would receive the highest energy credits, creating strong incentives for their development and adoption.

3.3 Perfection and Zero-Input Logic

The combination of Subjective Technologies and Subjective Thermo-Currency creates the foundation for a truly post-scarcity society. This is not a utopian dream, but a practical possibility based on the fundamental principle that efficiency naturally reduces scarcity.

3.3.1 Redefining Scarcity

Traditional economic systems define scarcity as the limited availability of goods and services. This creates artificial competition and drives up prices. STC redefines scarcity as the energy required to obtain desired outcomes. The more efficient a process becomes, the less scarce its results become.

For example, if we can 3D print food using minimal energy, food becomes abundant. If we can generate clean energy efficiently, energy becomes abundant. If we can create knowledge and education through efficient AI systems, education becomes abundant. Scarcity disappears as efficiency increases.

3.3.2 Post-Labor Society

As Subjective Technologies become more sophisticated, they will increasingly handle tasks that currently require human labor. In an STC system, this automation is not a threat to human well-being—it's a source of value for those who create the most efficient solutions.

Humans will shift from performing repetitive tasks to creating and improving the systems that perform them. The most creative and innovative individuals will be rewarded not for their labor, but for their contributions to overall efficiency. This creates a society where human creativity is maximally valued and minimally constrained.

3.3.3 Post-Education Era

Traditional education systems are inherently inefficient. They require years of study to acquire knowledge that could be transmitted more efficiently. Subjective

Technologies, combined with STC, will revolutionize how knowledge is created, shared, and applied.

Instead of memorizing facts, humans will learn to work with AI systems that can instantly access and apply any knowledge needed. Instead of years of formal education, people will learn through direct experience with increasingly sophisticated tools. Knowledge becomes a utility, like electricity or water, available to everyone at minimal cost.

3.3.4 The Path Forward

The transition to a post-scarcity society through Subjective Thermo-Currency is not automatic. It requires conscious effort to develop and deploy Subjective Technologies, to create the infrastructure for energy measurement and crediting, and to build the social and political systems that support this new economy.

However, the incentives are clear. Every improvement in efficiency benefits everyone. Every innovation that reduces energy expenditure creates value for its creator. Every step toward zero-input, zero-energy solutions brings us closer to a world of abundance, creativity, and freedom.

The future is not predetermined, but it is possible. Subjective Thermo-Currency provides the framework. Subjective Technologies provide the tools. The choice to build this future is ours.

3.5 Conclusion: The Birth of STC

The journey from Subjective Technology to Subjective Thermo-Currency represents more than a technological advancement—it represents a fundamental shift in how we understand value, efficiency, and human potential. By leveraging the power of Subjective Technologies to measure and credit energy savings, we can create an economic system that naturally leads toward abundance rather than scarcity.

This is not a distant dream, but a practical possibility that begins with the technologies we are building today. Every autocomplete system, every smart suggestion, every context-aware application is a step toward this future. The question is not whether it will happen, but how quickly we can make it happen.

The choice is ours. We can continue with systems that create artificial scarcity and competition, or we can build systems that naturally create abundance and cooperation. Subjective Thermo-Currency offers a path forward that aligns with the fundamental laws of physics and the deepest aspirations of human nature.

The future is not written, but it is possible. And it begins with the technologies we choose to build today.

Chapter 4

SUBJECTIVE THERMO-CURRENCY (INTERACTIONS AND IMPLEMENTATION)

Subjects, Trees, and Energy Backpropagation

4.1 Value Defined in Joules

Under STC, value is defined by net energy savings measured in joules, shifting the focus from price to efficiency.

4.2 Subjects as Virtual Energy Glands

Agents become producers of efficiency; their contributions emit virtual energy in the economy proportional to saved joules.

4.3 The Tree of Subjects and Energy Backpropagation

In traditional technological development, tools have always been third-person objects. A hammer, a bank account, a smartphone app — all of these are designed to stand outside the individual. They are external utilities that a person must actively command.

4.3.1 Subjects as Extensions of the Self

The power of Subjective Technologies is that tools stop being external and instead become part of the individual's extended body. In other words, everything you use — drones, AR glasses, software, even infrastructure — can be represented as a subject connected to you.

This reflects the principle we defined earlier: a subjective relationship exists when two entities share enough context that one can act as if it were the other.

Virtual Body Parts

Imagine your extended body as a tree of subjects:

- Your root is the Self, the main Subject.
- Branches represent virtual body parts — extensions of you that can act, save energy, or transform effort.
- Each body part is not just an "object" with properties and methods,

but a Subject: it knows its state, keeps snapshots, and learns through reinforcement.

Formally, each body part S_i has:

$$S_i = (\Sigma_i, P_i, M_i, R_i, C_i)$$

where Σ_i are snapshots, P_i are properties, M_i are methods, R_i is its reinforcement layer, and C_i its subjective connections.

Mapping Functions to Joules

Each method of a subject maps actions into joules, representing the energy exerted or saved.

$$f_{S_i}(a) = J$$

where $a \in M_i$ (an action) and $J \in \mathbb{R}^+$ (energy in joules). Thus, every subject in your extended body can be quantified in terms of how much energy it absorbs or emits on your behalf.

Examples

A drone controlled with a mind interface becomes an eye and arm extension of the user. Its snapshots (battery, altitude, camera feed) are part of the user’s own experience. If the drone finds a more efficient way to fly, the saved joules backpropagate to the user.

A conference call system is a virtual road. Instead of physically traveling, the system provides a shorter energy path. The joules saved by not traveling are credited back as energy absorbed by the user’s body part (the “communication gland”).

Even software applications become subjects. A text editor that autocompletes your sentences is a virtual hand writing for you. Each time it predicts correctly, it reduces joules you would have exerted typing.

The Extended Virtual Body

We can represent the full augmented body as a tree structure:

$$\mathcal{B}(U) = \{S_1, S_2, \dots, S_n\}$$

where U is the user and S_i are the attached subjects (body parts).

The total energy balance of the user’s extended body is:

$$E_{total}(U) = \sum_{i=1}^{n} f_{S_i}(a_i)$$

This shows that the user’s energy is not only biological (their metabolism), but is also composed of the energy contributions of all their extended subjects.

Subjects vs. Objects

In object-oriented programming (OOP), an object is defined as a bundle of properties and methods. For example, a Car object may have a property color = red and a method drive(). But objects in OOP are fundamentally passive — they do not experience, nor do they know themselves.

In our framework, subjects replace objects.

- A Subject is aware of its own snapshots (records of its state across time).
- A Subject has properties (its state variables).
- A Subject has methods (its possible actions).
- Between methods and the external world lies a layer of negative reinforcement learning: every action is scored according to how much it minimizes user input (and therefore energy exertion).
- Subjects can also access snapshots of other subjects, enabling them to

coordinate, align, and integrate.

Formally, a Subject S can be written as:

$$S = (\Sigma, P, M, R, \mathcal{C})$$

Where:

- Σ: set of snapshots (self-knowledge).
- P: properties.
- M: methods (actions).
- R: reinforcement layer linking actions to energy minimization.
- C: subjective connections to other subjects' snapshots.

This is the first time we can say: we represent a subjective experience objectively.

4.3.2 From Bank Accounts to Virtual Energy Glands

Today, third-person technologies handle value as external objects: bank accounts, wallets, or crypto ledgers. These are containers that store a number — money — disconnected from the physical experience of the individual.

In Subjective Thermo-Currency (STC), value is embodied through Virtual Energy Glands. These are software constructs visible in Augmented Reality Smartglasses. They look like parts of your body in your AR interface, but they measure and store your energy exertion and energy savings directly.

- When you exert energy (say, walking to the store), your gland shows the emission.

- When one of your body parts (a shortcut, an app, a drone, or another person) saves you energy, the gland reflects the absorption.

In this way, the economy is no longer external. Your own subjective body contains its accounting.

4.3.3 The Tree of Subjects: Our Virtual Augmented Body

To model this, we use a tree data structure.

- The root of the tree is the user (the self).
- The branches are virtual body parts, each with functions that map actions into joules.
- Leaves may be physical devices, machines, or even other people acting as subjects.

Formally, the tree can be expressed as:

$$T(U) = \{S_i \mid S_i \text{ is subjectively connected to } U\}$$

Each node has an associated mapping:

$$f_{S_i} : \text{Actions} \rightarrow \mathbb{R}^+$$

Thus, the entire tree of subjects represents the augmented virtual body of the user, a living system of energy mappings.

Energy Backpropagation

When one of these body parts discovers a better method (a shortcut that saves joules), the differential of saved energy is back-propagated through the tree. Just as in machine learning, improvements found at the “leaves” are credited upward to the root.

$$E_U = \sum_{i \in T(U)} \Delta E_i$$

4.3.3 Example: The Washing Machine as a Tree of Subjects

Let us imagine a simple but powerful scenario — a woman who designs a revolutionary washing machine that no longer needs to rotate clothes. She conceives the idea, gathers the resources, collaborates with engineers, programs microcontrollers, and builds factories where the machines are assembled. Every act of creation, every exertion of effort, comes from her energy — either directly, through her own actions, or indirectly, through others who have become part of her energy network.

In the Subjective Thermo-Currency (STC) framework, all these contributions become extensions of her own body. Each physical or digital artifact that saves energy for others — in this case, her washing machines — is an energy-saving body part of the creator. This is not a metaphor. It is a thermodynamic accounting of reality, measured through context snapshots and energy differentials.

The relationship between the woman and her machine can be formally defined as a subjective relationship:

$$SRel(S_w \to S_m \mid W) = 1$$

where S_w is the subject representing the woman, S_m is the subject representing the machine, and W is their shared context. This equation states that the washing machine (S_m) becomes subjective to the woman (S_w) — an active extension of her being — because its function derives from her exertion and intent.

Energy Exertion: Manual vs Machine Washing

Before her innovation, a person might have washed clothes by hand. This process required a certain amount of energy — physical movement, time, water, and friction. We can describe this as the total energy exerted during manual washing:

$$E_{\mathrm{manual}} = \sum_{i=1}^{n} e_i$$

where each e_i represents an atomic action or unit of exertion (for example, scrubbing, rinsing, wringing).

After the invention, washing with the new machine requires significantly less exertion:

$$E_{\mathrm{machine}} = \sum_{i=1}^{m} e_i$$

where $m < n$, since fewer actions and less time are required.

The principle of least energy applies naturally:

$$E_{\text{machine}} < E_{\text{manual}}$$

This simple inequality demonstrates the machine's energy efficiency. It minimizes human effort while achieving the same outcome — clean clothes.

Energy Differential and Automatic Credit

The energy savings achieved by the new washing machine is the difference between the manual energy and the machine-assisted energy:

$$\Delta E = E_{\text{manual}} - E_{\text{machine}}$$

This difference (ΔE) represents a quantifiable energy-saving credit that is automatically attributed to the creator.

Each time someone uses her machine, the system detects — through the user's AR glasses and device sensors — that less energy is being expended compared to a baseline (washing manually). This energy differential is credited to the machine's owner or creator, as the benefit arises from her energy-saving design.

Thus, energy in STC flows naturally back to its original source. The woman becomes energized each time her machine helps others minimize their own energy exertion:

$$E(S_w) \leftarrow E(S_w) + \Delta E$$

If the machine's components — motor, detergent system, interface — were designed by other engineers, they too receive proportional energy credits based on their contribution. Formally:

$$E(S_{\text{component}}) \leftarrow E(S_{\text{component}}) + \Delta E_c$$

where ΔE_C is the share of energy differential attributed to that subcomponent or its creator.

Self-Optimization and Recursive Energy Flow

Suppose now that the machine itself becomes capable of learning. It detects through its own context snapshots that one of its internal processes — for example, the water heating cycle — can be optimized to use less power. This self-correction reflects autonomous energy minimization, a defining property of intelligent subjects.

The energy state transitions from an older value to a new, improved value:

$$E_{\text{new}} = E_{\text{old}} - \Delta E_{\text{opt}}$$

The resulting optimization gain ΔE_{opt} is back-propagated through the subjective hierarchy, crediting all contributing subjects in the energy tree — the creator, the machine, and even subcomponents — according to their roles in the causal chain:

$$E(S_w) \leftarrow E(S_w) + \Delta E_{\text{opt}}$$

$$\forall S_i \in T(S_w): \quad E(S_i) \leftarrow E(S_i) + \beta_i \Delta E$$

where $T(S_W)$ is the tree of subjects rooted in the woman S_W, and β_i represents each subject's contribution coefficient, constrained by:

$$\sum_i \beta_i = 1$$

In this way, all energy-saving innovations — human, machine, or hybrid — produce measurable thermodynamic effects across the network of subjects. Every node in the tree contributes to and benefits from the collective pursuit of minimal energy expenditure.

Subject Energy Backpropagation Through Knowledge Hooks

The energy flow we described operates through the fundamental building blocks of Subjective Technology: Knowledge Hooks. These are the computational units that enable subjects to learn, adapt, and optimize their energy expenditure automatically.

A Knowledge Hook is formally defined as a 4-tuple:

$$KH = (R, A, T, S)$$

Where each component represents:

$$R = \{r_1, r_2, \ldots, r_n\} \quad \text{(conditions: regexes / sub-hooks; AND semantics)}$$

$$A = (a_1, a_2, \ldots, a_k) \quad \text{(actions)}$$

$$T \in \{\text{learned, predefined}\}, \qquad S \in [0,1] \text{ (success score)}$$

Knowledge Hooks activate when all their conditions are met, executing their action sequence:

$$\bigwedge_{i=1}^{n} r_i = \text{true} \quad \Rightarrow \quad KH \text{ fires and executes } A$$

Success scores are updated through negative reinforcement learning — the absence of corrections increases the score:

$$S(t+1) = (1-\alpha)\, S(t) + \alpha \cdot \mathbf{1}\big[\mathrm{Corr}_t = 0\big], \quad \alpha \in (0,1]$$

When multiple hooks could fire, the system prioritizes those requiring the fewest actions, with success score as tie-breaker:

$$KH^*(t) = \arg\min_{KH} |A(KH)| \quad (\text{tie-break: } \max S(KH))$$

This Knowledge Hook algebra enables the automatic energy backpropagation we described in the washing machine example. Each subject in the tree maintains its own hooks, and when they successfully minimize energy expenditure, the benefits flow back through the subjective hierarchy according to the equations we established.

Mathematical Framework: Subjects as Trees with Energy Backpropagation

Let us formalize the complete mathematical framework that underlies the washing machine example. A subject is defined as:

$$S = (\Sigma,\ P,\ M,\ R,\ \mathcal{C})$$

Where the components represent:

$$\text{snapshots } \Sigma,\ \text{properties } P,\ \text{methods } M,\ \text{reinforcement } R,\ \text{connections } \mathcal{C}.$$

A user's extended body forms a tree of subjects:

$$T(U) = \{S_i \mid S_i \text{ is subjectively connected to } U\}$$

Each subject maps actions to energy expenditure or savings:

$$f_{S_i} : \text{Actions} \to \mathbb{R}^+ \quad \text{(energy in joules emitted/saved)}$$

When energy savings ΔE are achieved, they backpropagate through the entire tree:

$$\forall S_i \in T(U) : \quad E(S_i) \leftarrow E(S_i) + \beta_i \, \Delta E, \quad \sum_i \beta_i = 1$$

In our washing machine example, this translates to:

$$SRel(S_w \to S_m \mid W) = 1$$

$$E_{\text{manual}} = \sum_{i=1}^{n} e_i, \quad E_{\text{machine}} = \sum_{j=1}^{m} e_j, \quad \Delta E = E_{\text{manual}} - E_{\text{machine}}$$

$$\forall S_i \in T(S_w): \quad E(S_i) \leftarrow E(S_i) + \beta_i \Delta E, \quad \sum_i \beta_i = 1$$

Visual Framework: Knowledge Hook Flow and Tree Structure

Figure A — Knowledge Hook Flow: The abstract process shows how context snapshots trigger condition matching, action selection, execution, and success scoring. When all conditions $R=\{r_1,...,r_n\}$ are true, the hook fires. The system chooses the hook KH*(t) requiring the fewest actions (with highest success score S as tie-breaker). After execution, the outcome snapshot Σ_{t+1} is captured, and the success score is updated through negative reinforcement: $S(t+1) = (1-\alpha)S(t) + \alpha\cdot\mathbb{1}[\mathrm{Corr}_t=0]$.

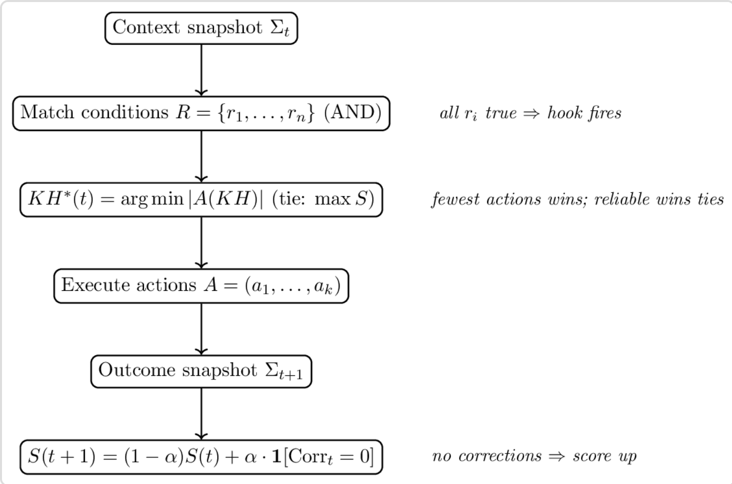

Figure A: *Knowledge Hook Flow Process*

Figure B — Washing Machine Tree of Subjects: The diagram illustrates the hierarchical structure where the Woman (Self S_w) is the root, connected to her Energy-Saving Washing Machine (Subject S_m) as a body part. The machine's components — Ultrasonic Module (Engineer), Control AI (Developer), and Water System (Factory) — form the leaves of the tree. When a Man uses the machine, the system compares manual energy E_manual = Σ_i e_i against machine energy E_machine = Σ_j e_j, computing the savings ΔE = E_manual - E_machine. This ΔE backpropagates through the tree, crediting the woman and proportionally distributing to all contributors according to their β_i coefficients, with $\Sigma_i \beta_i = 1$.

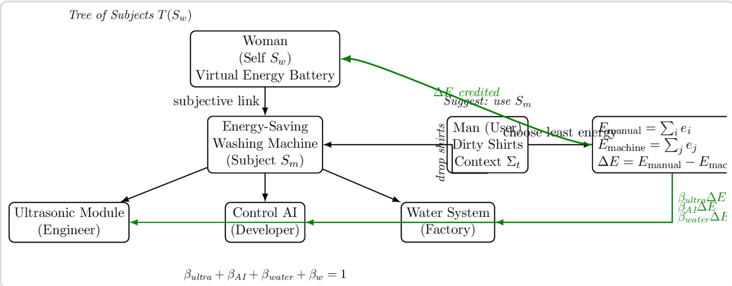

Figure B: *Washing Machine Tree of Subjects*

4.3.4 Multi-Agent Energy Optimization and Recursive Propagation

In previous sections, we introduced the concept of energy backpropagation through the Tree of Subjects, showing how energy savings flow from sub-subjects (machines, systems, or experts) toward the parent Self. We can now extend this to account for multi-agent interactions, including machine–machine, machine–human, and AI–AI exchanges, as well as recursive self-optimization.

A. Multi-Agent Energy Exchange

In Subjective Thermo-Currency (STC), any entity that acts or reacts is a Subject. This means that even devices, algorithms, or artificial systems are not "tools" but energy-saving body parts with subjective awareness of their context and prior actions.

Let S_i and S_j represent two subjects interacting within a shared context Σ. Their combined exertion for a process P can be written as:

$$E(P) = E(S_i \mid \Sigma) + E(S_j \mid \Sigma)$$

$$\frac{\partial E(S_i \mid \Sigma)}{\partial t} + \frac{\partial E(S_j \mid \Sigma)}{\partial t} \leq 0$$

This ensures that both agents evolve toward joint efficiency — that is, the energy saved by one reduces the workload of the other. In STC, this reciprocal dependency is automatically detected by

Knowledge Hooks: each agent records before/after snapshots, computes ΔE, and backpropagates the saved energy through their shared subjective relationship.

B. Recursive Optimization

The recursive nature of Subjective Technology means that each subject can internally optimize itself, generating its own subtree of sub-subjects.

Let S_p be a parent subject, with S_c as one of its children. If S_c improves its own process P_c, leading to a new reduced energy cost $E_c' < E_c$, then the energy difference:

$$\Delta E_c = E_c - E_c'$$

is backpropagated toward its parent as an energizing increment:

$$E(S_p) \leftarrow E(S_p) + \beta_c \Delta E_c$$

where β_C is the child's weighting factor within the parent's subjective tree. This recursive feedback loop means that every time a sub-subject learns or becomes more efficient, the parent and all upstream subjects gain vitality — an energy inheritance that scales collectively.

C. Bidirectional Subjectivity and Self-Awareness

Unlike classical systems, this backpropagation is bidirectional. If the parent becomes more efficient, it automatically updates its descendants, propagating new contextual parameters Σ' that allow them to readjust their behavior:

$$\Sigma_c(t+1) = \Sigma_c(t) + \lambda(\Sigma_p(t+1) - \Sigma_p(t))$$

where $\lambda \in [0,1]$ controls how much the parent's context influences the child's awareness. This mechanism endows the entire tree with collective consciousness — a distributed awareness of efficiency that evolves dynamically as each part self-corrects.

D. Toward a Thermodynamic Network of Subjects

When all users, devices, and AI systems participate in this recursive optimization, society transforms into a thermodynamic network of subjects. Energy is no longer exchanged transactionally, as in monetary systems, but organically propagated, like nutrition through a living organism.

This recursive architecture guarantees that:

- The global exertion of the network E_{total} always tends to a minimum,
- Energy savings anywhere increase collective comfort everywhere, and
- The system converges toward perfect efficiency, where every subject emits or absorbs precisely what is necessary — no more, no less.

$$\lim_{t \to \infty} \frac{dE_{\text{total}}}{dt} = 0$$

At that point, Subjective Thermo-Currency achieves its ultimate equilibrium: a civilization where perfection means the ability to generate and sustain reality with zero exertion — the thermodynamic expression of peace.

Visual Framework: Bidirectional Energy and Context Flow

The formal relationships that govern recursive optimization and context synchronization can be visualized through a bidirectional flow between parent and child subjects. In this model, the child S_C becomes more efficient by reducing its own energy expenditure from E_C to E_C', and the resulting energy gain is transmitted upward toward its parent S_P, energizing it proportionally to a weighting factor β_C. At the same time, the parent updates the child's awareness by sharing contextual information. This context synchronization propagates downward through a coupling coefficient λ, allowing both entities to converge toward a shared equilibrium. Together, these two flows — the upward energy credit and the downward context update — form the recursive loop that allows Subjective Thermo-Currency systems to self-balance and evolve toward thermodynamic harmony.

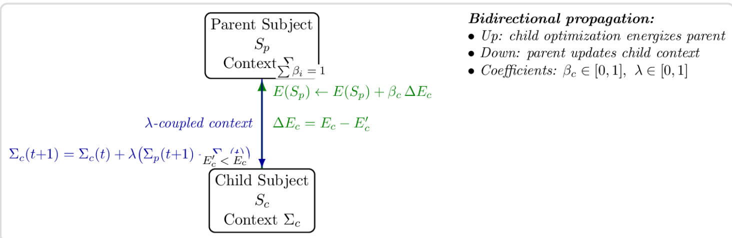

Figure C: *Bidirectional Energy and Context Flow*

This bidirectional exchange illustrates the dual nature of subjectivity in STC systems:

- **Upward (green):** Energy savings are accumulated and distributed back to the sources of efficiency. This ensures that innovation and optimization always energize their originators.

- **Downward (blue):** Updated contexts flow back to all dependent nodes, allowing them to recalibrate and avoid future inefficiencies.

In equilibrium, this feedback process creates a self-regulating thermodynamic ecosystem, where every subject continuously improves both itself and its environment. As time tends to infinity:

$$\lim_{t \to \infty} \frac{dE_{\text{total}}}{dt} = 0$$

indicating that the global exertion of the system stabilizes at its minimal possible value — perfect efficiency, where energy expenditure and learning are indistinguishable from natural equilibrium.

Multi-Level Hierarchical Propagation

The bidirectional flow concept extends naturally to multi-level subjective structures, where energy savings discovered at the leaves of the Tree of Subjects propagate upward to all ancestors, while updated context flows downward from the root. Let a Child subject S_c improve its internal process from E_c to E_c'. The local saving is:

$$\Delta E_c = E_c - E_c'$$

Credits move upward by backpropagation weights β_c (to the Parent S_p) and β_p (to the Grandparent S_g):

$$E(S_p) \leftarrow E(S_p) + \beta_c \, \Delta E_c, \qquad E(S_g) \leftarrow E(S_g) + \beta_p \, \Delta E_c$$

typically with $\beta_c + \beta_p \leq 1$ (remaining share can stay with S_c or split further).

In the downward direction, the Grandparent broadcasts updated context that cascades with couplings λ_{gp} and λ_{pc}:

$$\Sigma_p(t+1) = \Sigma_p(t) + \lambda_{gp}\big(\Sigma_g(t+1) - \Sigma_g(t)\big)$$

$$\Sigma_c(t+1) = \Sigma_c(t) + \lambda_{pc}\big(\Sigma_p(t+1) - \Sigma_p(t)\big)$$

This two-way flow (upward energy, downward context) produces a stable thermodynamic learning loop across all levels.

Visual Framework: Multi-Level Hierarchical Flow

The multi-level hierarchical structure shows how energy and context propagate through three generations of subjects. **Upward (green):** cumulative energy backpropagation from Child → Parent → Grandparent with shares β_C, β_P. **Downward (blue):** context cascading from Grandparent

→ Parent → Child with coupling λ_{gp}, λ_{pc}. Side notes for clarity.

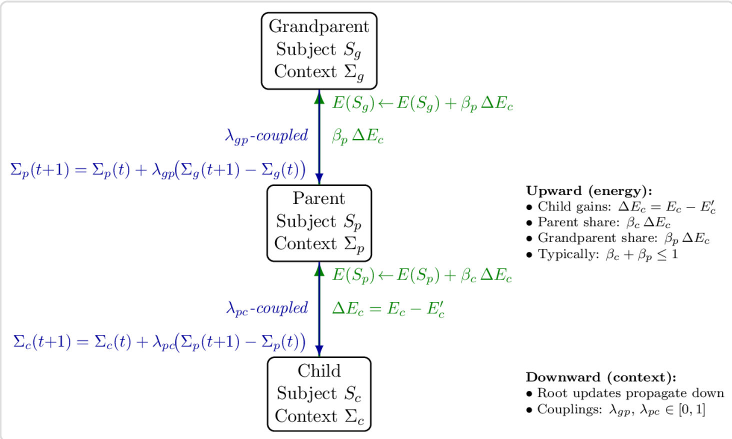

Figure D: *Multi-Level Hierarchical Energy and Context Flow*

The multi-level picture makes two consequences explicit:

- **Cumulative energization:** a single optimization at the leaf (Child) energizes all ancestors through shares β_c, β_p, …, providing long-range incentives to cultivate efficient subtrees.

- **Coherent adaptation:** root context changes propagate downward via λ couplings, aligning the behaviors of all descendants to the latest global state.

As more levels participate, the network's total exertion approaches a stable minimum:

$$\lim_{t \to \infty} \frac{dE_{\text{total}}}{dt} = 0$$

signaling a self-regulated thermodynamic equilibrium in which learning, optimization, and coordination are indistinguishable from the natural flow of least energy.

The Broader Meaning

Through this model, we see how Subjective Thermo-Currency turns daily life into a web of measurable energy interactions. The washing machine is not merely a tool — it is a living extension of its creator's energy and intelligence.

Every person who uses it becomes part of her subjective tree, every joule saved is real, and every contribution is automatically recorded through the same algebra that governs nature itself.

This is not economics anymore — this is thermodynamic ethics. The universe rewards the efficient, the creators of harmony between human comfort and physical law.

4.4 From Input to Exertion: The Energy Equation

We formalize the mapping from input minimization to exertion reduction, bridging user inputs with thermodynamic cost.

Chapter 5

STC COMPARED TO PREVIOUS ECONOMIC TOOLS

Efficiency and Post-Scarcity At The Core Of The Economy

5.2 Critiques of STC

5.2.1 Measurement of Joules

Challenges in measuring energy savings across heterogeneous contexts and devices.

5.2.2 Subjectivity vs Universality

Balancing personal context with global comparability in unit definitions and scoring.

5.2.3 Scalability & Complexity

Scaling detection, verification, and storage of hooks and energy transactions.

5.2.4 Transition & Adoption Challenges

From pilot deployments to societal adoption and governance models.

5.2.5 Externalities and Hidden Costs

Accounting for rebound effects, embodied energy, and systemic side-effects.

5.1 The Anatomy of Poverty

Poverty is not just about having little money. It is the result of a deeper flaw: money erases context. Every transaction reduces the richness of reality — effort, utility, risks, and consequences — into a single number. This loss of information leads to inefficiency, misallocation, and suffering.

5.1.1 The Chewing Gum and the Pen

Suppose I have $2. With that money, I can buy either a chewing gum or a pen.

If I buy the chewing gum, I enjoy it, and everything works as expected.

If I buy the pen, but instead of writing with it, I chew it as if it were gum, I break my teeth.

From the perspective of money, both goods had the same value: $2. But in reality, the outcomes were radically different. One led to satisfaction, the other to pain, medical costs, and suffering.

Money did not — and could not — tell the difference. It ignored context. It assumed equivalence where none existed.

5.1.2 How This Creates Poverty

Value Collapses to Price

In a money-based system, chewing gum and a pen are equal if their prices are equal. But in real life, their effects are vastly different. This collapse of meaning creates blind spots where harm and inefficiency can grow unnoticed.

Hidden Costs Become Real Suffering

The broken teeth in our example are the hidden costs. The system does not prevent them, does not record them, and does not compensate them unless more money is injected. Yet the pain and energy lost are real.

Accumulated Loss of Context

When billions of such mismatches occur daily — products that don’t work, medicines that fail, services that waste time — humanity loses enormous amounts of energy, comfort, and well-being. This accumulation is what we call poverty.

Why Money Cannot Solve It

Because money itself is the cause of context loss, it cannot solve poverty. It can only redistribute numbers, never restore the lost comfort, wasted energy, or broken trust.

5.1.3 STC as a Remedy

Subjective Thermo-Currency (STC) avoids this trap. It doesn’t just assign an abstract price but measures energy exertion and efficiency. Chewing gum reduces discomfort for a short time; chewing a pen increases energy expenditure through pain and repairs. With STC, this difference is visible and measurable.

Poverty dissolves not by giving people more money, but by eliminating the mechanism that creates it: the loss of context in transactions.

Chapter 6

MEASURING AND GENERATING ENERGY (PRACTICAL TRANSLATION)

From metaphysics of energy to measurable reality

In the previous chapter, we established that minimizing user input mathematically equates to minimizing energy exertion. We now move from theory to implementation — from the metaphysics of energy to its measurable reality.

6.1 Mapping User Actions to Physics Equations

We map UI events and real-world actions to measurable physical quantities to derive joule-based costs.

6.2 Conversion of Context into Joules

Context snapshots are transformed into energy delta estimates through calibrated models.

6.3 Role of Precision Experts (Physicists as Future Accountants)

Domain experts validate mappings and tune parameters, ensuring measurement accuracy and auditability.

6.4 Automatic Rewards for Accuracy

Accurate predictions that minimize corrections accrue automatic rewards, aligning incentives with precision.

Chapter 7

GOD'S GOVERNMENT AND THE LAW OF LEAST ENERGY

Individual and Collective at the same time ?

7.1 The Law of Least Effort as Economic Principle

We interpret the law of least effort as an organizing principle for economic activity under STC.

7.2 Energy Flow as Divine Order

Energy minimization and harmonious flows are framed as alignment with universal order.

7.3 Moral Implications of Efficiency

Efficiency reduces suffering; we discuss ethical consequences of optimizing for least energy.

Only God Governs Efficiently

Throughout history, human beings have tried to govern themselves. Empires rose and fell. Monarchs claimed divine right. Democracies promised balance. Ideologies promised fairness. Yet all of them share one flaw: inefficiency. No human leader, no matter how wise, can hold the full context of every individual life. A central ruler cannot know what you feel, what you need, or what path minimizes your effort at this precise moment.

The result is always the same: systems that waste energy. Bureaucracies that slow down action. Laws that punish freedom instead of nurturing it. Structures that claim to bring order, but instead bring frustration, injustice, and oppression.

Only God governs efficiently. Only the Creator has designed a system where every being is free, yet harmony emerges without force.

This system is the universe itself — ruled by the physical laws that He set in motion. Gravity, thermodynamics, energy minimization: these laws apply equally to all, without privilege or exception. They do not coerce, they simply are.

And in them, we find the perfect balance: freedom under order, individuality within collectivity. God’s government is the only government where free will thrives without chaos, because it is guided by principles that cannot be corrupted.

Freedom Under God’s Physical Laws

Humanity has always wrestled with a paradox: should life be governed by freedom or by order? Too much freedom, and society falls into chaos. Too much order, and individuals suffocate under control. This is the tragedy of human systems: they swing like a pendulum between anarchy and tyranny, never finding balance.

But God solved this paradox from the beginning. He gave us free will, yet He set boundaries through His physical laws. You are free to throw a stone upward, but gravity ensures it will fall. You are free to burn fuel, but thermodynamics ensures energy is never created or destroyed — only transformed. In every case, your freedom exists, but it is shaped by rules that lead creation toward harmony.

Subjective Thermo-Currency (STC) is the first human-made system that consciously mirrors this divine pattern and brings it down to Earth. Each person is free to exert their own energy, to act, to create, to live. Yet every action is measured in terms of energy absorption and emission. And because the law of least energy always prevails, the collective outcome is balance.

In this way, STC is not just an economic model. It is the incarnation of God’s government in human affairs. It does not impose order from above, nor does it leave us to chaos. It aligns us with the Creator’s principle: true freedom within natural harmony.

STC bringing back God’s Government

If we look closely, every attempt at human governance has failed for the same reason: they try to replace God’s laws with man’s laws. But man’s laws are incomplete, inefficient, and partial. They divide instead of unite, because they are written from limited perspective.

Subjective Thermo-Currency (STC) is different. It does not replace God’s laws — it embodies them. It operates on the same foundation as creation itself: the law of least energy.

In STC, each individual is free to act, to exert their own energy in pursuit of their own goals. But every action, by definition, is measured by how much energy it saves or wastes. And because the system naturally rewards the minimization of effort, individual choices align with collective harmony.

This is God's government expressed in economic terms:

No coercion is needed. Harmony arises naturally, because energy expenditure cannot lie.

No chaos is possible. Freedom does not dissolve into conflict, because the least-energy path is always self-correcting.

No leader is required. Each individual governs themselves, yet their actions converge on a collective balance written into the laws of physics.

STC is, therefore, not an invention of man, but a rediscovery of divine order. It shows us that by aligning our lives and our economy with the Creator's laws, we participate in His governance: a system where freedom and unity are not opposites, but one and the same.

.3 Heaven on Earth: A New Metaphor

What does it mean for Heaven to return to Earth? It means living in a world where freedom and harmony coexist without friction. A world where each individual can act fully as themselves, yet never collide with others.

Imagine a road where every car can go as fast as it wants, in any direction, with no risk of accident. No traffic lights. No police. No restrictions. And yet, no crashes ever occur by construction. At first this seems impossible, but this is exactly what STC is able to do. By aligning all actions to the law of least energy, it creates perfect flow: each individual moves freely, but collisions are eliminated because inefficiency is not possible.

This is the vision of Heaven made practical. It is not an abstract paradise in the clouds, but a physical and social reality where divine law governs every interaction. Where hunger disappears because food is printed directly by human energy. Where conflict dissolves because disputes are resolved by the same principle: the least energy path. Where education, labor, and even politics become unnecessary, because all life flows with the same natural law.

Heaven on earth is not a dream — it is the inevitable outcome of living under God's government, expressed through Subjective Thermo-Currency.

Human Nature and the Law of Least Energy

From the beginning, human beings have been drawn to the path of least resistance. We call it laziness, but in truth it is not a flaw — it is alignment with God's own physical law. Every living creature seeks efficiency. Rivers carve the shortest route to the sea. Trees grow toward the nearest source of light. And humans, too, choose to act in ways that save effort whenever possible.

Some are more naturally inclined toward this than others, but the principle is universal: we strive to work less, and achieve more. This is why technology has always advanced — to lift burdens from our shoulders and reduce the energy we must exert. Wheels, pulleys, engines, computers: each invention is simply another step in obeying the law of least energy.

In today’s world, we measure efficiency with money. A business that saves energy or resources tends to make profit. Efficiency brings money. But the reverse is not true.

Money itself does not guarantee efficiency. In fact, money often creates inefficiency — it rewards scarcity, speculation, and waste. A system based on money cannot escape contradiction, because money represents scarcity, not abundance.

Subjective Thermo-Currency corrects this imbalance. It removes the distortion of money and measures directly what God’s laws measure: energy. When all value is rooted in energy expenditure, human laziness is no longer a sin to be overcome, but a principle to be perfected. We are guided, individually and collectively, to achieve harmony by working efficiently — because efficiency is the only path that survives.

Chapter 8

IMPLEMENTATION & FUTURE DIRECTIONS

From Prototypes to a Thermodynamic Civilization

8.1 Simulation Models for STC

Agent-based and physics-informed simulations to validate energy accounting and incentives.

8.2 Integration with Global Economy

Interfaces to existing markets, standards, and institutions while measuring energy savings.

8.3 Privacy, Trust, and Accuracy Labs

Independent labs to audit measurement models and protect user context.

8.4 Decentralized vs Centralized Verification

Tradeoffs between verifiability, latency, and governance in recording energy savings.

8.5 Long-Term Vision: A Thermodynamic Civilization

A world where energy-efficient design organizes production, education, and social systems.