

The Silent Civilization: Conscious Interaction and Post-Linguistic Society in the Multi-Dimensional Heterogeneous Space of the Embodied Intelligence Era

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Abstract—This paper advances and systematically defends a single thesis concerning the morphology of a future civilization: once embodied intelligence reaches maturity and human beings come to dwell within a "multi-dimensional heterogeneous space" in which the physical, the informational, and the conscious are continuously coupled, language and writing will cease to function as the infrastructure of civilization. They will be reduced to a ceremonial and aesthetic residue, their functions assumed by cryptographic payment protocols, consciousness-level interaction, and distributed exomorphic memory. The argument proceeds across six planes: ontology, interaction theory, the philosophy of money, epistemology, social governance, and civilizational critique. First, the paper argues that the maturation of embodied intelligence returns intelligence from disembodied computation to being-in-the-world, and that the resulting expansion of perceptual bandwidth turns symbolic mediation from a bridge into a bottleneck. Second, drawing on Weaver's three-level model of communication and on contemporary research in semantic communication, the paper shows that the trajectory of interaction is toward the direct conjoining of the semantic and pragmatic levels — a shift from transmitting symbols to transmitting experience, such that a glance, a micro-expression, or an intention itself accomplishes high-fidelity meaning transfer. Third, the paper argues that money is essentially a social-consensus technology modeled on language, and that as cryptographic payment evolves from the instruction-based to the intent-centric, value exchange undergoes the same de-linguistification. Fourth, the paper examines the externalization of memory in a scriptless civilization, the transformation of knowledge from propositional form to consensual capacity, and the consequent restructuring of governance and law. Finally, from a critical standpoint, the paper identifies the civilizational paradox internal to "perfect communication": the disappearance of alterity, the loss of the creative force of ambiguity, and the erosion of interiority by transparency. The paper concludes that the true measure of an advanced civilization may lie not in the efficiency of its information transfer but in its capacity, at the very limit of efficiency, to preserve a place for silence, ambiguity, and solitude.

Index Terms—embodied intelligence; multi-dimensional heterogeneous space; conscious interaction; post-linguistic society; cryptographic payment; intent economy; semantic communication; exomorphic memory; civilizational paradox

I. INTRODUCTION: THE TWILIGHT OF LANGUAGE AND THE WATERSHED OF CIVILIZATION

A. A Counterintuitive Proposition

The thesis defended in this paper is, at first encounter, paradoxical: the more advanced a civilization becomes, the less essential language and writing are to it; and when a civilization reaches a certain critical altitude, it will become a civilization without language and without script.

The proposition offends intuition because, throughout the whole of human experience, language has been treated as the necessary and sufficient condition of civilization. We treat

"civilization" and "writing" as near-synonyms. Historians date the beginning of civilized life to the invention of script and mark the interruption of a civilization by the loss of its texts. A people possessing speech but no writing is routinely classified as primitive; a culture that has lost the ability to read its own canonical texts is declared dead. Linguists and philosophers have gone further and insisted that language is not the garment of thought but its skeleton. When Wittgenstein wrote in the *Tractatus* that "the limits of my language mean the limits of my world," he produced a dictum that has functioned for a century as an axiom not to be transgressed.

Yet it was precisely during the century in which this axiom attained universal assent that technology began its systematic erosion. The telephone detached speech from the body; the telegraph detached writing from the writer; the Internet drove the marginal cost of symbol replication toward zero. The transformation now underway is more radical still: brain-computer interfaces are detaching "speech" from the vocal organs and "writing" from visible marks, allowing the transfer of meaning to bypass every observable physical medium and to occur directly between one neural activity and another.

The central judgment of this paper is that language is not the purpose of civilization but its **compensation mechanism** — the price that individuals of finite bandwidth must pay in order to bridge the mutual inaccessibility of their minds. When that inaccessibility is technologically attenuated, the historical mission of the compensation mechanism comes to an end.

B. Three Levels of the Problem

To make the discussion tractable, this paper decomposes the grand proposition of "the exit of language" into three separately arguable levels.

The level of technical possibility. Is consciousness-level direct interaction physically possible? This concerns the precision, bandwidth, and latency of neural decoding, and contemporary brain-computer interface research supplies an empirical foundation for it. An implanted speech-decoding system developed at the University of California, Davis achieved roughly 97 percent decoding accuracy in clinical use, enabling a patient with ALS to speak again through a synthetic voice within minutes of activation. An implantable typing neuroprosthesis reported by Brown University and Mass General Brigham reached approximately 22 words per minute with an error rate near 1.6 percent, comparable to able-bodied typing accuracy. Neuralink participants attained around 41 words per minute in the period around 2025, with the company's global participant count reaching twenty-one by late that year. Most consequentially, in August 2025 scientists

at Stanford Medicine announced the detection of "inner speech" — the neural patterns of silent internal monologue — in speech-impaired patients, while a separate study published in *Cell* reported the decoding of imagined sentences at up to 74 percent accuracy across a vocabulary of 125,000 words. These figures remain modest, but the direction they mark is unambiguous: the object of decoding is migrating from the intention to move articulators toward thought itself.

The level of functional substitution. Even if the technology is possible in principle, can the various social functions borne by language be replaced in full? This is the burden of Chapter 5. Language performs three cardinal functions — reference, coordination, and memory — and this paper argues that each can be taken over, respectively, by holographic reference, synchronous coordination, and exomorphic memory, with substantially greater efficiency in every case.

The level of civilizational cost. Even granted functional substitution, does a humanity without language still constitute a civilization? Is this a development or a degeneration? This is the deepest objection, addressed in Chapter 9. The paper does not evade it. On the contrary, its conclusion will be that the greatest risk facing a post-linguistic civilization is not the failure of communication but its **excessive success**.

C. Method and Structure

The method of this paper combines theoretical construction with technological extrapolation. On the one hand, it draws analytical frameworks from communication theory, the philosophy of language, the philosophy of money, and social theory. On the other, it takes as its point of departure the empirically documented state of embodied intelligence, brain-computer interfaces, semantic communication, and cryptographic payment, avoiding gratuitous speculation. The paper remains deliberately cautious about temporality: the technologies it describes are not all mature, but the direction of their evolutionary curves is empirically discernible.

The paper proceeds as follows. Chapter 2 addresses the ontological implications of embodied intelligence. Chapter 3 defines the central concept of the multi-dimensional heterogeneous space. Chapter 4 argues for the paradigm shift from symbolic to experiential interaction. Chapter 5 treats the substitution of linguistic functions one by one. Chapter 6 discusses the transformation of memory and knowledge. Chapter 7 demonstrates the de-linguistifying essence of cryptographic payment. Chapter 8 analyzes the resulting social structure and the problems of governance. Chapter 9 offers a critical reflection on the civilizational paradox. Chapter 10 concludes.

One preliminary caveat is necessary. The argument of this paper is a mixture of the normative and the descriptive: we are at once describing a possible civilizational form and asking whether that form is worth pursuing. The two must be distinguished, yet they cannot be entirely separated, because describing a future is itself a way of participating in its construction.

II. THE ONTOLOGICAL TURN OF EMBODIED INTELLIGENCE: FROM DISEMBODIED COMPUTATION TO BEING-IN-THE-WORLD

A. What Embodied Intelligence Is: Beyond the Commonplace

In popular narrative, "embodied intelligence" is frequently reduced to "installing an AI into a body." This characterization captures the phenomenon but misses the essence. If we examine how the field now defines itself — "any intelligent system possessing a physical body and capable of perceiving and interacting with the external environment" — the operative term turns out to be not *body* but *interaction*. The significance of the body is not that it contains intelligence but that it constitutes the **coupling interface** between intelligence and the world.

The distinction matters. Traditional artificial intelligence follows a disembodied paradigm: intelligence is conceived as operations upon symbols or vectors whose inputs are data, whose outputs are decisions, and whose intermediate computations bear no relation to any environment. This paradigm achieved brilliant success in closed domains — chess, translation, text generation — but it has always confronted a foundational difficulty, the **symbol grounding problem**: how can a system that has never encountered an apple genuinely *know* what the symbol "apple" denotes? It may master every statistical association between "apple" and "red," "round," "fruit," and "sweet," yet it has never met the thing itself.

The insight of embodied intelligence is that meaning is not obtained through more definitions but through **causal contact** with the world. When an agent grasps an object, feels its weight and temperature, sees it fall from a table and shatter, its "understanding" of that object ceases to be symbolic association and becomes grounded in its own possibilities for action. This is what J. J. Gibson called **affordance**: what the world presents to an agent is never neutral physical property but the graspable, the climbable, the edible — meaning immediately relative to capacities for action.

B. From Being-in-the-World to Belonging to the World

The philosophical resources of embodied intelligence reach back to Heidegger's *In-der-Welt-sein* and to Merleau-Ponty's *schéma corporel*. Heidegger criticized the Cartesian bifurcation of subject and object, arguing that Dasein is never a subject that first exists and then goes on to cognize a world; Dasein is always already "in" a world, and its primary relation to things is *Besorgen* — concerned dealing, using the hammer rather than staring at it. Merleau-Ponty pressed further: the body is not an instrument manipulated by mind but the general medium through which we have a world. My hand does not need to be informed of the doorknob's location; it already knows.

Contemporary research in embodied intelligence has, largely without intending to, reenacted this philosophical insight. Researchers have found that for a robot to operate safely in a home or factory it must possess **intuitive physics** — a pre-reflective grasp of gravity, solidity, and object permanence. DeepMind's PLATO model acquired such

concepts from raw video and exhibited a signal analogous to surprise when shown physically impossible events such as teleportation. Meta's V-JEPA architecture builds an internal model of physical regularities by predicting, in an abstract representational space rather than pixel by pixel, what will happen next. The significance of these advances lies not in machines becoming cleverer but in the fact that **the implementation of intelligence is shifting from representation-plus-inference toward coupling-plus-prediction.**

This shift carries decisive implications for the present topic. If the essence of intelligence is coupling with the world, then the ideal form of "understanding" between two agents is not the exchange of representations about the world (which is what language is) but the **sharing of a state of coupling with the world.** Language exists precisely because I cannot enter your coupling directly; I can only send signals toward it, hoping that an approximately isomorphic structure will be reconstructed on your side. Once technology permits the coupling state itself to be shared, the bridge of language loses its reason for being — not because it is inadequate, but because the two banks have become one.

C. Three Stages and the Temporal Location of This Paper

For clarity, this paper divides the development of embodied intelligence into three stages.

Stage one: the embodiment of disembodied intelligence (the present). Large language models serve as the "brain" and robots as the "body," with end-to-end models mapping sensor input directly onto action output. The essence of this stage is that existing intelligence acquires the capacity to act; perception and action remain instrumentally related. Humanoid robots performing on televised stages, flexible grasping in factories, and autonomous driving on open roads are the signatures of this stage.

Stage two: the nativization of embodied intelligence (the near future). Intelligence no longer forms beforehand in a symbolic space and is subsequently "downloaded" into a body; it is generated in the course of sustained interaction with an environment. The vehicle of intelligence is no longer confined to a single physical body but can migrate across heterogeneous carriers — an agent may exist simultaneously in a robotic arm, a drone, a wearable device, and a network of environmental sensors. Its "body" becomes a distributed, reconfigurable perception–action interface.

Stage three: the socialization of embodied intelligence (the temporal location of this paper). When large numbers of heterogeneous embodied agents share a single space, the density and bandwidth of their mutual interaction vastly exceed those of linguistic interaction among humans, and modes of interaction that transcend symbolic protocols emerge spontaneously. Human beings, as members of this community, have their own modes of interaction reshaped by this higher-bandwidth environment — just as the spread of writing reshaped speech, and the spread of speech reshaped gesture. A high-bandwidth environment of conscious interaction will

reshape the entire expressive repertoire of humanity until language retreats to the periphery.

The "advanced civilization" discussed in this paper is located at stage three. At this stage, embodied intelligence is no longer a human tool but the very **environment** of human existence.

D. Migratory Bodies and the Boundary of the Human

The socialization of embodied intelligence raises a sharper question: if the coupling of intelligence and body is reconfigurable, where lies the boundary of the human?

This paper adopts the position that **personal identity is determined not by the carrier but by the history of coupling.** An intelligence migrating from a biological brain to a synthetic substrate remains, in the functional sense, the same person if its memories, intentionality, patterns of emotional response, and manner of coupling with the world persist continuously. This position does not dissolve human distinctiveness; it relocates that distinctiveness from biological fact to historical fact.

It must be stressed that this paper does not regard such migration as costless. The migrability of the body carries two profound consequences. The first is the **engineering of death:** when conscious states can be preserved and transferred in full, death ceases to be a necessity and becomes an option, radically altering the human relation to time and thereby altering every value premised on finitude — commitment, sacrifice, urgency. The second is the **ontologization of forgery:** when conscious states are data, and data can in principle be copied and altered, the most elementary of all certainties, that I am myself, is shaken. These two consequences, developed in Chapters 8 and 9, constitute the deepest vulnerability of a post-linguistic civilization.

III. THE MULTI-DIMENSIONAL HETEROGENEOUS SPACE: A NEW THEATER FOR CIVILIZATION

A. Defining the Concept

The central spatial concept of this paper — the **multi-dimensional heterogeneous space (MDHS)** — designates the coupled totality formed by three spaces of fundamentally different character that nevertheless map onto one another continuously.

The physical dimension (P). Three spatial dimensions plus one temporal, governed by classical physics and relativity; the locus of matter, energy, and biological bodies. Its defining characteristics are **exclusivity** (two bodies cannot occupy the same position), **irreversibility** (the arrow of time cannot be turned), and **finitude** (the speed of light bounds causal transmission).

The informational dimension (I). The space constituted by data, algorithms, protocols, and computational processes. Its characteristics are almost the inverse of the physical: **replicability** (a datum can exist simultaneously in countless locations without loss), **reversibility** (states can be recorded, rolled back, and replayed), and **topological variability** ("distance" is determined not by physical position but by network latency and access rights).

The conscious dimension (C). The space constituted by subjective experience, intentionality, affect, and meaning. Its defining characteristics are **first-personality** (it is presented only to its subject), **qualitative character** (pain is pain, undiminished by being exhaustively described), and **intentionality** (consciousness is always consciousness of something).

By **heterogeneous** is meant that no continuous, structure-preserving mapping exists among these three spaces: causal relations in the physical dimension do not determine data structures in the informational one, and computational states in the informational dimension are not equivalent to experiential contents in the conscious one. This incommensurability is the **deepest root of language**: language is the translator between three heterogeneous spaces.

By **multi-dimensional** is meant not a count of spatial dimensions but the fact that **a single event is instantiated simultaneously in all three dimensions, with real-time bidirectional constraints holding among the three instantiations.**

B. The Architecture of Triple Mapping

In the present technological situation, the rudiments of triple mapping already exist.

P → I (the informationalization of the physical). Sensor networks, digital twins, ambient computing. The state of the physical world is continuously sampled into data streams, so that a city, a factory, or a field of crops can possess a high-fidelity informational mirror. The current bottleneck lies in sampling rate and coverage, not in principle.

I → P (the physicalization of the informational). Action by embodied agents, additive manufacturing, autonomous driving, programmable matter. Decisions formed in the informational dimension act upon the physical world through actuators. This direction has advanced most rapidly of late, with end-to-end embodied foundation models mapping perception directly onto action and bypassing the traditional pipeline of perception–decision–planning–execution.

C → I and I → C (the bidirectional mapping of consciousness and information). This is the most difficult and the most revolutionary link. $C \rightarrow I$ is neural decoding: the conversion of neural activity patterns into computable representations. The speech decoding, inner-speech detection, and imagined-sentence decoding cited in Chapter 1 all belong here. $I \rightarrow C$ is neural encoding or neuromodulation: the writing of information directly into the nervous system, of which visual prostheses, auditory implants, and increasingly precise transcranial stimulation are early forms.

When all four mappings attain adequate bandwidth and fidelity, an unprecedented situation arises: **quasi-continuous channels open among three heterogeneous spaces.** At that point, my seeing a flower (P), the instantaneous retrieval of that flower's multispectral data and aesthetic parameters (I), and the ineffable pleasure that rises in me (C) cease to be three separate events and become three projections of a single event.

C. Heterogeneity as a Condition of Civilization

This paper now advances a crucial and counterintuitive claim: **the heterogeneity of these spaces is not an obstacle to civilization but its condition.**

Consider a perfectly homogeneous world — one in which everything is physical, or everything is informational. In a purely physical world there is no room for meaning: there is only collision and displacement, nothing that anything is *about*. In a purely informational world there is no weight of reality: everything can be undone, and therefore nothing is ever truly done. Civilization is possible precisely because of the **friction** among the three spaces: the physical supplies irrevocability (and thus action has consequence), the informational supplies retraceability (and thus learning is possible), and the conscious supplies qualitative character (and thus any of it matters).

The entire risk of a post-linguistic civilization can be characterized precisely from this angle. It does not consist in eliminating heterogeneity but in building channels across heterogeneity so efficient that **the channels themselves come to be mistaken for the whole of space.** When one person can "see" another's memory in conscious space, he will incline to think that he sees the memory itself, forgetting a decisive fact: what he sees is the memory's **informational projection**, whereas what made it a memory was that it was once actually lived by a finite body in an irreversible time.

This confusion of projection with reality is termed in this paper the **projection fallacy**, and it is identified in Chapter 9 as the core pathology of post-linguistic civilization.

D. The Politics of Space: Who Holds the Power of Mapping

The multi-dimensional heterogeneous space is not a neutral container. The establishment, maintenance, and interpretation of the triple mappings constitute the most fundamental form of power in the society to come.

The power of sampling. Which physical facts are converted into information? A reality that is not sampled does not exist in informational space, and in a society that relies on informational space for decision-making it therefore does not exist politically either. This produces a new category of invisibility: not the oppressed but the **unrepresented.**

The power of mapping rules. How is physical state encoded as information? Encoding schemes are never neutral. Encoding a forest as "carbon sink capacity" and encoding it as "species habitat" lead to opposite decisions. In a scriptless society, because the encoding process no longer passes through a publicly examinable linguistic text but is embedded in perceptual interfaces, this power becomes **invisible** — a power more thorough than censorship. Censorship deletes expression; the design of perceptual interfaces ensures that certain things are **never thought at all.**

The power of bandwidth allocation. Who obtains high-bandwidth conscious channels, and who remains at the symbolic interface? In the civilization envisaged here, bandwidth is class. This is no longer a digital divide but an **experiential divide.**

On the basis of this analysis, the paper must maintain a critical vigilance toward the very concept of an "advanced civilization": a civilization highly mature in the technology of spatial mapping may perfectly well be simultaneously degenerate in justice. **Technological altitude and civilizational altitude are not synonyms**, and this reservation runs through the whole of the present study.

IV. FROM SYMBOLS TO EXPERIENCE: THE REVOLUTION IN INTERACTION BANDWIDTH

A. The Shannon–Weaver Model: Achievement and Limit

In 1948 Claude Shannon published "A Mathematical Theory of Communication," defining the problem of communication precisely: how, over a noisy channel, to reproduce at the receiving end the message selected at the sending end. In 1949, in his popular exposition of the theory, Warren Weaver distinguished three levels of the communication problem: Level A, the technical, concerning the accuracy with which symbols are transmitted; Level B, the semantic, concerning how precisely the transmitted symbols convey the desired meaning; and Level C, the pragmatic, concerning how effectively the received meaning influences conduct.

The immense success of Shannon's theory ensured that for more than seventy years communications technology focused almost entirely on Level A. Yet Weaver himself stated plainly that the solution of the Level A problem is "not concerned with meaning," and that the equivalence between the semantic and the engineering problems holds only at Level A.

This distinction is crucial to the present argument. **The essence of language is a makeshift: solving Level B and Level C problems by necessarily routing them through Level A.** I encode my experience into symbols (encoding loss one); the symbols traverse the channel (noise loss two); you reconstruct experience from the symbols in your brain (decoding loss three). This triple attrition is the technical root of every misunderstanding between human beings.

The emergence of contemporary research on **semantic communication** marks the migration of communications technology toward Level B. The key insight of this paradigm is that the goal of communication is not the lossless reproduction of symbols but the successful transfer of meaning. Because under a semantic equivalence class many distinct symbol sequences map to the same meaning — "the weather is fine today" and "today the sky is clear and bright" — it suffices to transmit any representative of the class. Empirical work reports that semantic coding achieves equivalent perceptual quality at transmission rates five to ten times lower than conventional source–channel separation schemes under identical channel conditions. And channel-capacity models that introduce a parameter for the average length of synonymy intervals show that, without violating the Shannon–Hartley physical limit, effective semantic capacity can substantially exceed what is achievable for unstructured bit sequences, precisely because the criterion of reliability has been redefined from bit-perfect to meaning-preserving.

The significance of this for the present paper is twofold. First, **improvements in communicative efficiency need not depend on expanding physical bandwidth; they can come from exploiting the structure of meaning.** Second, pushed to its limit, this logic implies that **the most efficient communication is communication that transmits no symbols at all**: if sender and receiver share enough world model and context, then a glance, a shift in respiratory rhythm, or a redirection of attention suffices for high-fidelity meaning transfer.

B. Decoding Intentionality: From "What Is Said" to "What Is Meant"

The technical premise of linguistic interaction is that thought must first be converted into an externally observable form — speech, writing, gesture — before it can enter a channel. The revolutionary character of brain–computer interfaces lies in their bypassing this externalization step.

The technical genealogy of neural decoding can be arranged along a continuum according to the abstractness of its object:

Level	Object of decoding	State of the art	Representative advance
L1	Motor intention	Mature	Robotic arm and cursor control
L2	Articulatory intention	Approaching clinical use	UC Davis, ~97% accuracy synthetic speech
L3	Symbol sequences	Clinical validation	22 wpm at 1.6% error; 41 wpm
L4	Inner speech	Laboratory validation	Stanford, August 2025 detection of inner speech
L5	Imagined sentence meaning	Laboratory validation	125,000-word vocabulary, 74% accuracy
L6	Conceptual imagery	Theoretical exploration	Early work on visual cortical image reconstruction
L7	Affective-intentional states	Early exploration	Affective neural decoding; attentional state decoding

The judgment of this paper is that **when decoding advances from L3 and below to L5 and above, the position of language in the chain of interaction changes in kind.** At L2

and L3, technology remains an extension of language: it merely supplies an alternative articulatory channel for those who cannot speak, and the output is still words and sentences.

At L4 and L5, technology begins to bypass language, for the object decoded is thought not yet linguistically formulated. At L6 and L7, the content transmitted is in principle **not fully expressible in language**: you cannot convey in sentences what it is like to see a certain face.

For this reason the paper insists that **conscious interaction displaces language not because it is "faster language" but because it carries what language is in principle unable to carry**. This is a qualitative leap, not a quantitative gain.

C. The Glance and the Micro-Expression: An Underestimated High-Bandwidth Channel

Beyond neural interfaces lies another channel, long present and long underestimated: facial expression and the glance.

The human face comprises dozens of muscles, and the combinatorially possible expressions are astronomical; the movements of the eye — pupil diameter, direction of gaze, saccadic trajectory, blink frequency and timing — carry information vastly exceeding ordinary awareness. Psychological research shows that human recognition of micro-expressions, those lasting less than one twenty-fifth of a second, is extremely poor, with accuracy in natural conditions only marginally above chance. This very **inability to read** is the empirical reason language has dominated human interaction: not because the glance carries little information, but because we cannot read it.

In an environment of embodied intelligence this limitation is lifted entirely. Systems with high-frame-rate visual perception and deep learning can parse in real time a partner's pupillary dilation curve, micro-expression sequence, heart-rate variability, electrodermal response, and postural tone, modeling these jointly with context, interaction history, and the ambient affective field. The consequence is that **the glance ceases to be a supplement to language and becomes an autonomous, high-bandwidth main channel**.

Further: when both parties to an interaction are continuously perceived and modeled, the interaction itself changes. In face-to-face conversation my expression conveys not only my inner state but, in real time, my reaction to your reaction. When I know that you can read my every micro-expression, and I know that you know, and you know that I know that you know — this infinitely recursive mutual perception constitutes an entirely new structure of interaction. This paper calls it **mirror entanglement**. Within mirror entanglement the traditional dichotomy of expression and understanding collapses, because expressing and understanding become two aspects of a single process.

D. From Transmission to Co-presence: The Shift of Paradigm

Synthesizing the foregoing, this paper proposes a four-stage model of paradigm shift in interaction.

Transmission. A sends a message to B; success consists in the fidelity of B's reconstruction. The paradigmatic form of language.

Coordination. A and B adjust their respective action plans through interaction; success consists in the fit of subsequent

action. The protocol form of language: contracts, instructions, statutes.

Sharing. A and B enter the same experiential field simultaneously; success consists in the homogeneity of experience. Music, ritual, and collective effervescence are rudimentary forms; conscious interaction is the mature form.

Co-presence. A and B no longer participate as separate subjects but constitute, in the course of interaction, a temporary cognitive system of a higher order. Success no longer applies, because there are no longer "two parties."

This paper holds that **language is the optimal technology for transmission and coordination, and an obstacle to sharing and co-presence**. Language requires speaker and hearer to remain separate (otherwise there is nothing to say); it requires meaning to be compressed into a linear sequence before transmission (otherwise it cannot be spoken); it requires ambiguity to be eliminated (otherwise it cannot be understood). Sharing and co-presence require exactly the opposite: the dissolution of boundaries, the coexistence of the non-linear and the multi-dimensional, and the preservation of ambiguity.

The fate of language in a post-linguistic civilization is therefore not to be **destroyed** but to be **suspended**: it remains available, it is simply no longer needed. This is like a person who has learned telepathy and still remembers how to speak aloud, but no longer has any reason to do so.

V. THE THREE FUNCTIONS OF LANGUAGE AND THEIR SUCCESSORS

A. The Functional Method

The most reliable way to determine whether language can be displaced is not to ask what the essence of language is — a question that has vexed philosophy for two millennia without resolution — but to ask what language does. This chapter adopts a functionalist path: identify first the irreducible functions that language performs in civilization, then examine one by one whether non-linguistic mechanisms can take them over, and with what efficiency.

This paper reduces the core functions of language to three: **reference**, **coordination**, and **memory**. The tripartition borrows from M. A. K. Halliday's distinction among ideational, interpersonal, and textual functions, restructured to suit the present argument.

B. Reference and Its Successor: From Symbol to Holographic Reference

The **referential function** is the capacity to let a perceivable sign (a sound or a written mark) stand for an object, property, or relation that is not present. It is the foundation of language: without the word "tree" we cannot speak of a tree that is not before us.

The cost of reference is **abstraction loss**. When I say "tree," the word discards everything specific about this tree — its height, the texture of its bark, that afternoon's light upon its leaves. This is the price language must pay: a symbol can refer to infinitely many objects precisely because it faithfully describes none of them.

The successor: holographic reference. In a multi-dimensional heterogeneous space, pointing to an object no longer requires an arbitrarily stipulated sign; one can invoke the object's **holographic informational projection** — not the sound of the word "tree" but that tree's multispectral form at a particular moment, its structural data, its spatial coordinates, and indeed all the context attaching to it. When both parties to communication share the same informational space, reference changes from stipulation to **addressing**.

The change wrought by holographic reference is revolutionary: **universality is displaced by specificity**. Language trades specificity for communicability; holographic reference obtains both. This transformation will profoundly alter the texture of thought. When a civilization grows accustomed to thinking in holographic particulars rather than abstract categories, its reasoning will shift from classification-and-deduction toward analogy-and-simulation. Aristotelian syllogism — all men are mortal, Socrates is a man, therefore Socrates is mortal — will give way to something closer to simulation: submitting a concrete situation to high-fidelity modeling, internal or external, and observing what results.

It must be noted that holographic reference is not without cost. Abstract-categorical thought loses specificity but gains **transferability** and **critique-ability**: the concept of justice can be debated for two thousand years precisely because it is not bound to any concrete situation. A world of holographic reference may be one in which thought is exceedingly precise yet incapable of radical reflection. This tension returns in Chapter 9.

C. Coordination and Its Successor: From Negotiation to Synchronization

The **coordinative function** is the capacity of language to align the actions of multiple individuals. From the division of labor shouted across a hunt to the statutes and commercial contracts of modern society, this function underwrites all large-scale cooperation.

The cost of coordination is **temporal delay and execution loss**. The typical structure of linguistic coordination runs: A expresses an intention; B understands; B expresses a commitment; A confirms; both execute; deviation appears; negotiation recommences. Each link introduces delay and error. The reason modern societies require vast legal systems, contractual documents, and enforcement apparatus is precisely that linguistic coordination is inherently unreliable.

The successor: synchronous coordination and the direct coupling of intention. In a multi-dimensional heterogeneous space, coordination can take an entirely different form. When multiple embodied agents share a real-time world model and real-time intentional states, the step of "negotiation" becomes superfluous in most cases, because the parties already occupy a highly aligned state space before acting. This resembles a well-rehearsed jazz quartet or a family that has lived together for decades: they need no verbal coordination because each one's intentions are transparent to the others. The difference is only that the former relies on intuition formed through long

shared life, whereas the latter relies on the technological sharing of state.

The crucial point is that such synchronous coordination can be **formally verified**, which linguistic coordination cannot. A contract may stipulate that "both parties shall use their best efforts," but it cannot verify whether best efforts were in fact exerted; when intentional states themselves can be represented and verified, the reliability of coordination no longer depends on trust and punishment but on cryptography and system architecture. This point forms the basis of the discussion of cryptographic payment in Chapter 7.

But synchronous coordination has a fatal boundary: it functions efficiently only where goals are aligned or at least compatible. Where interests genuinely conflict — two people wanting the same scarce position — synchronous coordination is worse than useless, for it makes the conflict more immediate and more naked, lacking the buffer of language. The true function of language in conflict is frequently not to resolve it but to **defer** it: through rhetoric, politeness, vagueness, and ritualized formulation, language cools emotion and buys time for compromise. A civilization without language must reinvent the buffering of conflict. This issue is taken up in Chapter 8.

D. Memory and Its Successor: From Text to Exomorphic Memory

The **memorial function** is the capacity of language, and above all of writing, to carry experience across individual lifetimes and across generations. The invention of writing is universally acknowledged as the beginning of civilization precisely because it was the first reliable technology of externalized memory.

The cost of externalized memory is **encoding distortion**. To write down an experience I must compress it into a linear sequence, conform it to grammar, and use shared vocabulary. This process filters out most of the texture of experience: the intensity of the pain, the taste of hesitation, the smell of the air at that moment. Writing preserves the skeleton of an event and forgets its flesh. The entire labor of historians and literary writers consists in attempting to resurrect flesh from skeleton, and can never resurrect more than a part.

The successor: distributed exomorphic memory. Under conditions of high-bandwidth neural recording and ambient sensing, the externalization of memory can attain unprecedented fidelity: what is recorded is not a description of an experience but the complete pattern of the experience itself at neural and perceptual levels. Such a record may be called an **experiential record**, and its difference from a textual record is the difference between a hologram and a verbal description.

The introduction of experiential records carries three linked consequences.

First, the ownership of memory. If my memories can be read and stored in full, are they still mine? If others can invoke my memories and experience them in the first person, the privacy of memory ceases to exist. This strikes directly at the foundation of personal identity: Locke defined personal identity as the continuity of memory, and when memory can

be shared, copied, and transplanted, the question "who is remembering" loses any determinate answer.

Second, the disappearance of the right to forget. Forgetting is not the failure of memory but one of its functions. A system that cannot forget cannot generalize, cannot abstract, cannot extract pattern from concrete experience; a society that cannot forget cannot forgive, cannot turn the page, cannot permit anyone to begin again. Experiential recording makes forgetting, formerly the default state, into an operation that must be actively performed; and in a civilization maximizing efficiency, active forgetting will very likely be counted as waste. This paper terms the risk **the tyranny of memory**.

Function	Linguistic mechanism	Successor mechanism	Change in efficiency	Principal cost
Reference	Arbitrary symbol (word)	Holographic informational projection (addressing)	Large gain in fidelity	Loss of abstraction and critique-ability
Coordination	Negotiate–commit–execute	Synchrony of intentional states plus cryptographic verification	Large fall in delay and enforcement cost	Loss of conflict buffering
Memory	Textual record	Experiential record (high-fidelity externalization)	Large gain in fidelity and retrieval	Loss of the right to forget and of privacy

Table 5.1 shows that substitution in all three functions brings marked gains in efficiency, yet each substitution is accompanied by a profound functional cost. The position of this paper is that these costs are not technical defects, removable by better technology, but structural costs, internal to the logic of the successor mechanisms. The question for a post-linguistic civilization is therefore not how to avoid the costs but how, having accepted them, to compensate through institutional and ethical design.

F. An Objection That Must Be Answered: Is Language the Precondition of Thought?

The most powerful objection derives from the strong version of the Sapir–Whorf hypothesis: **language determines thought; without language there is no thought**. If this holds, the disappearance of language means the disappearance of thought, and a post-linguistic civilization is nothing but an elaborate dementia.

The response of this paper proceeds in three steps.

First, the strong version has been refuted by the evidence. Aphasic patients who have lost language retain the capacity for complex reasoning, spatial imagination, and social judgment; individuals born deaf who have not acquired a sign language nevertheless exhibit full cognitive capacity; and a great many cognitive processes — visual imagination, motor planning, musical composition — are subjectively independent of inner speech altogether.

Second, the role of language is to fixate rather than to generate. The value of language lies in arresting flowing thought into operable objects, thereby making reflection, criticism, and accumulation possible. This function is enormously important, but it is not the same thing as generating thought. The real challenge facing a post-linguistic civilization is not whether it can think but whether it can perform **that kind of thinking which requires fixation** — long-range reasoning, systematic critique, theoretical construction.

Third, the confusion of undergoing with borrowing.

When a person can experience another's memory completely and in the first person, he will find it difficult to distinguish "I have undergone this" from "I have undergone someone else's undergoing of this." The result is an inflation of experience: everyone possesses countless experiences, and therefore the weight of each experience is diluted. A person who has undergone a thousand other people's deaths may understand death less well than one who has never encountered it at all.

E. Summary of Substitution

Third, alternative mechanisms of fixation are available.

Mathematical notation, graphical representation, and manipulable simulation environments can all bear the burden of fixation. Contemporary science already makes extensive use of non-linguistic fixating instruments: a differential equation, a phase diagram, an interactive simulation carry far greater densities of thought than any prose of equal length. The position of this paper is therefore that language is not a necessary condition of thought, but that **linguistic fixation — the externalization of thought into a criticizable object — is a necessary condition of an advanced civilization**, and this function must be preserved in some form, or a post-linguistic civilization will suffer a flattening of intellectual depth.

VI. MEMORY, KNOWLEDGE, AND HISTORY IN A SCRIPTLESS CIVILIZATION

A. The Transformation of Knowledge: From Knowing-That to Knowing-With

In his classic distinction Gilbert Ryle divided knowledge into **propositional knowledge** (knowing-that) and **competence knowledge** (knowing-how), arguing that the latter is the more fundamental and that the former is a higher-order derivative of it.

This paper argues that a third form of knowledge will appear in a post-linguistic civilization: **consensual knowledge**, or **knowing-with** — knowledge obtained through direct coupling with an object and not fully propositionalizable. Consensual knowledge differs from competence knowledge: the latter is knowing how to ride a bicycle, a procedural memory of the body; the former is knowing what riding a bicycle is like, a qualitative grasp of the experience.

The significance of this shift lies in the change of epistemological standard. In a civilization dominated by propositional knowledge, **stability** is the supreme criterion: what cannot be said clearly is suspected of not being really known. In a civilization dominated by consensual knowledge, the standard becomes **sharability**: only what cannot be shared — that is, cannot be experienced in an approximate manner by another — is suspected of not being really known.

The shift is not simply a regression. The dominance of propositional knowledge produced the notorious hard problem of qualia in Western philosophy: when I know every physical and neural fact about red, do I thereby know what red looks like? Propositional knowledge is powerless here. Consensual knowledge takes qualia as its immediate content. A post-linguistic civilization therefore **expands** rather than contracts the object of knowledge: it readmits the vast territory previously excluded from knowledge on the grounds of ineffability.

B. The Real-Time Collectivization of Memory and the Consensual Archive

Memory in the age of writing has a **store-and-retrieve** structure: record first, retrieve later. Memory in a post-linguistic civilization has a **flow-and-access** structure: memory is not sealed in a carrier but persists within the real-time conscious field of the community, to which individuals gain access on demand.

This structure is termed here the **consensual archive**. Its features include the following.

Decentralization. No single archival authority exists. Each person's experiential records are part of the archive, and the integrity of the archive depends on the diversity of access nodes.

Dynamism. The archive is not a fixed record but a living body continuously recontextualized. The same experiential record, accessed at different moments by different individuals, enters into different combinations with the state of the accessor and yields different meanings. This means the archive has no "original" — a property that is at once a weapon against the hegemony of a single narrative and a solvent of historical determinacy.

Irreversible interpenetration. When an individual accesses the consensual archive, his own experiential records are modified by it — not the data but the understanding. After I have seen your memory, my understanding of my own memory is no longer what it was. The consensual archive is therefore essentially a **co-evolutionary system** rather than a static warehouse.

The greatest political risk of the consensual archive concerns **who defines the grammar of access**. Even without writing, access requires structure: principles of classification, rules of association, ordering of salience. These rules are implemented by algorithms, and the designers of algorithms hold the de facto power of historiography. Because these rules do not appear as text, they are exceptionally difficult to subject to public scrutiny. This is the concretization, in the domain of

memory, of the "power of mapping rules" described in Chapter 3.

C. The End of History, or Its Rebirth?

Hegel and Fukuyama speak in different ways of the end of history. This paper does not enter that dispute but must note the specific effect of a post-linguistic civilization on historicity.

The precondition of historical consciousness is **distance**: the rupture between present and past that makes the past an object to be beheld. Writing produced and maintained this distance — the text is the relic of the past, it requires interpretation, and the very difficulty of interpretation constitutes the thickness of history.

In a consensual archive this distance tends to vanish. The past is no longer a relic requiring interpretation but a living experience that can be accessed directly. When a person can "undergo" the fear of a soldier in a war two centuries ago, history ceases to be history and becomes **an extended present**.

This paper holds that the change is simultaneously the end and the rebirth of history. **As end**: the precondition of historical critique — that the past is a heterogeneous, irreducibly other — is dissolved. When past and present are homogenized, the concept of anachronism loses its meaning, for we no longer need to understand the past by present standards; we simply become the past. Critical historical consciousness atrophies accordingly. **As rebirth**: on the other hand, history escapes for the first time from the survival bias of text. The history of the age of writing is essentially **the history of those who could write**, of those texts that happened to be recorded, happened to be preserved, happened to be copied, happened not to be burned. The silent majority were silent because they produced no text. A consensual archive can in principle admit the experience of every individual, realizing for the first time a genuinely **total history**.

D. Education, Art, and Ritual: The Last Habitats of Language

If language retreats from reference, coordination, and memory, what remains to it? This paper argues that language will gain a new, and perhaps higher, standing in three domains.

The training of slow thought in education. When interaction is measured in milliseconds, one of the core functions of education will become **teaching people to slow down**: through compulsory exercises in linguification — requiring students to write intuition into sentences and experience into argument — cultivating precisely that depth of thought which requires fixation and linearization. Language here ceases to be a tool of communication and becomes a resistance apparatus for the mind, like the lead weights an athlete wears in training.

Qualitative scarcity in art. In a post-linguistic civilization language acquires freedom through its very non-functionality. When no one needs language for practical transmission, language can exist purely for beauty, evolving into a highly formalized art — as calligraphy stands to practical

handwriting. Poetry at this stage will be valued precisely for its "inefficiency": to spend a hundred words conveying a single instant of feeling is itself an act of resistance against the primacy of efficiency. The literature of this period will not pursue accurate transmission but **deliberate obscurity** and **untranslatability** — those very qualities that conscious interaction cannot carry.

The sacred function in ritual. Religious history abounds in traditions of ineffability: Judaism prohibits pronouncing the divine name; Islam opposes images; Chan Buddhism asserts a transmission outside the scriptural word; Daoism declares that the way that can be spoken is not the constant way. What these traditions share is the recognition that language necessarily fails when it touches the ultimate. A post-linguistic civilization carries this recognition to its extreme: **silence itself becomes the highest ritual form**. When everything sayable can be transmitted instantaneously, all that remains unsayable acquires absolute sacredness. This paper predicts that the most solemn ritual of a post-linguistic civilization will not be the grandest sharing of experience but a **collective voluntary disconnection** — a period in which all close their channels and return to their separate solitudes. What such a ritual commemorates is precisely what the civilization has lost.

VII. CRYPTOGRAPHIC PAYMENT: THE DE-LINGUISTIFICATION OF VALUE EXCHANGE

A. *Money Is a Language: A Forgotten Philosophy of Money*

This chapter defends a proposition that at first appears unrelated to the main theme: **money is essentially a language**, and therefore the logic of monetary history is isomorphic with the logic of linguistic history. If this holds, then "cryptographic payment replacing traditional payment" is not merely a change of financial technology but a decisive link in the de-linguistification of civilization as a whole — material, inescapable evidence for the thesis of this paper.

The linguistic character of money appears in four respects.

First, money is a system of arbitrary signs. The central insight of Saussurean linguistics is that the bond between signifier (the sound-image) and signified (the concept) is arbitrary: that the sound "tree" denotes a tree has no natural reason, only convention. Money fits this description exactly: that a piece of paper can be exchanged for bread is not due to any physical usefulness of the paper but to the stipulation of a community. Gold possessed a certain "natural" quality by virtue of scarcity and beauty, but the fiat era exposed the purely semiotic character of money. Georg Simmel observed as much in *The Philosophy of Money*, arguing that the essence of monetary value is the objectification of social relations.

Second, money is a deferred structure of promise. Money is a voucher entitling its holder to claim something in the future. Its validity depends not on the strength of its holder but on the trust of the community. This structure is exactly isomorphic with the commissive speech act in Austin's theory: to say "I promise" and to tender a coin are both ways of creating a social fact through a recognized form.

Third, the grammar of money is price. Language organizes words into sentences by grammar; money organizes

commodities into comparable series by price. The price system is a universal grammar that translates qualitative differences — this painting and this sack of rice — into quantitative ones, three thousand units and thirty. Just as language makes incommensurable experience discussable, money makes incommensurable value exchangeable. Both are translators, and both are simplifiers.

Fourth, money has its dialects and its inflation. Languages have dialects; currencies have exchange rates. Language suffers semantic erosion through overuse — the word "sacred" is debased by advertising — and money suffers depreciation of purchasing power through overissue. The pathologies are isomorphic: inflation and semantic inflation are both inflations of the sign relative to what it signifies.

B. *The Linguistic Burden of Traditional Payment*

If money is a language, then the traditional payment system is essentially **a system of meaning-negotiation mediated by language**, costly to operate and full of friction. Four linguistic burdens can be identified within it.

The narrative burden. Every traditional payment requires a statable reason. Banks ask the purpose of funds; anti-money-laundering systems demand an account of the transaction context; reimbursement requires a written justification. These "explanations" are demands that the transaction be linguified so that it may enter an auditable textual stream. A transaction that cannot be stated is, in the traditional system, suspect.

The intermediary burden. Because the parties do not trust one another, third parties who command language must be introduced: banks, clearing houses, courts, credit-rating agencies. The core function of these intermediaries is to translate the intentions of the parties into a language institutions can understand — contract clauses, vouchers, ledger entries — and to supply authoritative interpretation when disputes arise. A large part of the enormous bulk of the financial services industry is the cost of this translating function.

The latency burden. Linguistic negotiation takes time. The several-day settlement period of a cross-border remittance is not a technical necessity but an institutional one: the parties must confirm intentions repeatedly in text, review must be manual, and clearing windows must be awaited.

The exclusion burden. Those who do not command this "language" are excluded. Large populations worldwide still lack access to basic financial services because they lack formal identity documents — that is, because they cannot be stated by the linguistic-institutional system. This is financial exclusion produced by a linguistic threshold.

C. *Three Stages of Cryptographic Payment: From Replacing Money to Replacing Instruction*

The development of cryptographic payment should not be understood as "replacing paper with digital gold" but as a **graded reduction in the degree to which payment is linguified**. This paper divides it into three stages.

Stage one: the substitution of currency. Represented by Bitcoin, whose core achievement is the removal of the issuer's

linguistic privilege: no authority is needed to *declare* what has value, because value is secured by cryptography and consensus mechanism. This stage resolves the question of who has the right to speak, but the transaction itself remains semiotic — addresses, amounts, and signatures are still a formal system requiring interpretation.

Stage two: the substitution of contract. Represented by smart contracts and account abstraction. A traditional contract is a natural-language text whose interpretation depends on a judge; a smart contract is code whose execution depends on no interpretation. What is revolutionary at this stage is that **performance no longer requires understanding, only execution**. When conditions are met, payment occurs automatically, without either party having to "say" anything. Account abstraction such as ERC-4337 goes further, bundling a user's complex intentions into a single authorization, so that the linguistic act of signing withdraws from every individual transaction.

Stage three: the substitution of intent. This is the focus of the present discussion. In an intent-centric architecture, the user no longer issues an instruction ("swap token A for token C on exchange B with slippage below 0.5 percent and gas below X") but expresses an **intent** ("obtain C at the best price"), while solvers in the network compete to find execution paths. The profundity of this shift lies in three aspects.

- **From syntax to semantics.** An instruction is syntactic — it specifies operational steps. An intent is semantic — it specifies only a target state. This is the exact counterpart, in the domain of payment, of the migration from Level A to Level B described in Chapter 4.

- **From trust to verification.** Intent-centric architectures rely on zero-knowledge proofs to guarantee that execution conforms to the user's intent without the user needing to understand the execution details. The user no longer needs to "read" the transaction, only to verify the result.

- **From explicit to continuous authorization.** Session-key mechanisms allow a single biometric authentication to authorize many transactions over a period, so that authorization changes from a discrete linguistic event into a continuous background state.

D. The Complete Picture: The Glance as Signature

Pushed to the civilizational form envisaged in this paper, payment will take the following shape.

The neural expression of intent. A payment intent need not be spoken or clicked but can be captured by a neural decoding system at an early stage of its formation — before it has been linguified, even before it has been fully consciously registered. Research indicates that intentionality can be decoded in motor cortex earlier than the moment of subjective awareness of the decision; whatever the philosophical interpretation of this finding, the empirical fact that neural signals precede action is secure. This means that payment can be completed at the very moment the thought "I want this" takes shape.

The cryptographic binding of biometrics. Authorization of payment comes to depend not on what you know (a

password) or what you have (a device) but on what you are (a biometric). Crucially, this binding must be **zero-knowledge**: the system must prove that this biometric belongs to the legitimate user without storing or reading the raw biometric data. Current technical paths include secure enclaves, multi-party computation for distributed signing, and revocable cryptographic commitments of biometric templates. These technologies make it possible to prove without revealing, thereby protecting the irreducibility of the individual even as authorization becomes wordless. Notably, over three billion dollars in crypto assets were lost to private-key compromise in 2023 alone, which indicates both the systemic vulnerability of the older model and the strength of the motive to replace it.

The self-sovereign distribution of identity. Decentralized identifiers and verifiable credentials enable an individual to prove specific attributes — that one is of age, that one is solvent, that one owns a particular asset — without exposing a complete identity. The shortlisted solutions of the G20 TechSprint 2025 show that zero-knowledge proofs and selective disclosure have become the mainstream technical direction for digital identity and payment compliance. This resolves a key difficulty of wordless payment: how can compliance be assured when nobody *states* anything? The answer is that compliance is **proved** rather than stated.

The multi-dimensional metering of value. Once payment detaches from language, the metering of value can detach from the single grammar of price. In a multi-dimensional heterogeneous space, what can be tokenized and exchanged is no longer only goods and services but also attention (the duration and intensity of your concentration on something), compute (the computational resources contributed by your embodied vehicle), experience (a distinctive stretch of life you are willing to share), bandwidth (the permission you grant others to access your perceptual channels), and presence (your physical co-presence at a particular place and time). Each form of value may have its own unit of account and clearing network, forming a **multi-dimensional value space** rather than a single price axis.

E. The Silencing of Payment and the Acceleration of Economy

When payment completes its de-linguification, the temporal scale of economic operation changes fundamentally.

In a traditional economy, the friction of payment constitutes the "viscosity" of the economy: prices cannot adjust instantaneously (menu costs), transactions cannot complete instantaneously (settlement cycles), contracts cannot be renegotiated instantaneously (bargaining costs). These frictions are usually regarded in economics as negative, but they simultaneously serve as **shock absorbers**: they slow the response of the economic system to shocks and thereby leave time for human reaction.

Wordless payment drives friction toward zero, with two consequences.

The positive consequence: the flourishing of micropayment and high-frequency collaboration. When the cost of payment approaches zero, billing by the second, by

the unit of attention, by the unit of perceptual bandwidth becomes possible. Entirely new economic forms emerge: you can pay for a glance out the window, for letting your agent learn a skill from your operation, for retaining a second of me in your memory. The granularity of economic activity descends from "transaction" to "instant."

The negative consequence: a sharp increase in systemic fragility. When all friction disappears, the economic system transmits shocks at nearly the speed of light. The 2010 Flash Crash erased nearly a trillion dollars of market value within minutes; in a wordless economy, a flash crash would be measured in milliseconds. More dangerously, when transactions are executed by embodied agents at machine speed and humans have exited the decision loop, the system enters **a temporal scale at which human intervention is impossible.** This paper holds that a wordless economy must artificially introduce "irremovable latency" as a matter of institutional design — not for the sake of efficiency but to preserve a space of possibility for human response. This design principle is termed here **the principle of necessary friction.**

F. Cryptographic Payment as the Material Base of Post-Linguistic Civilization

Returning to the proposition with which the chapter opened: money is a language. The argumentative circle can now be closed.

If money is a language, then at the moment money completes its de-linguistification, the economic base of civilization has accomplished de-linguistification first. Change in the base propagates upward into the superstructure: legal relations (from interpreting contracts to verifying states), political institutions (from debate to resonance), cultural forms (from narrative to sharing).

This is the special status of cryptographic payment within the argumentative structure of this paper: **it is not one application case of post-linguistic civilization but its material base and its earliest maturing domain.** The reason is that value exchange possesses three features that make it the optimal proving ground for de-linguistification. First, its target state is highly determinate — a change in account balances — and therefore easy to verify formally. Second, its tolerance for error is low, which creates the strongest motive to adopt cryptography rather than trust. Third, its frequency is extremely high, so that any small gain in efficiency yields enormous returns.

It may therefore be predicted that **the historical sequence of civilizational de-linguistification will be: economy first, politics next, culture last, with language itself retreating into art and ritual.** What makes this prediction testable is the following consideration: if we observe that the linguification of payment is declining rapidly — and this is already happening, from cash to card to face-scan to frictionless payment, in which the user "says" ever less — then we have empirical reason to believe that de-linguistification will not stop at the economic sphere.

VIII. STRUCTURE, GOVERNANCE, AND LAW IN THE TRANSPARENT SOCIETY

A. The Two Faces of Transparency

When interaction reaches the level of consciousness, an irreversible change occurs in the basic structure of society: **the externalization of interiority.** Thoughts, emotions, and intentions — things formerly disclosable only partially and voluntarily through language — become in principle readable.

The profundity of this change must be emphasized. Throughout the whole of human history the inner world of the individual has been a **domain of sovereignty.** The law protects freedom of thought not because thought is harmless but precisely because thought cannot be verifiably known: the principle that no one may be punished for what he thinks rests on the technical foundation that the state cannot read thoughts. Once that foundation disappears, freedom of thought degenerates from a right into a privilege.

The positive effects of transparency are immense: deception becomes nearly impossible, corruption has nowhere to hide, misunderstanding falls sharply, and trust no longer requires an expensive process of construction. Much of the enormous cost of contemporary society — auditing, inspection, credit assessment, background investigation, judicial evidence-gathering — will decline substantially.

But the negative effects are equally immense and more covert. This paper identifies three typical pathologies.

First, the universalization of performativity. When inner states can be read, people will still attempt to manage them — not by concealment but by **self-modification.** If my emotions can be read, I will strive to bring them into line with social expectation, until the striving itself becomes the true content of the emotion. This is not hypocrisy but something deeper: it is **the colonization of interiority.** Hannah Arendt distinguished labor, work, and action, locating the essence of action in its unpredictability; when interiority is made transparent, the last unpredictable territory is brought within the manageable.

Second, the internalization of deviance. In a linguistic society, a person who deviates from the norm can protect himself through **silence:** if you do not speak, others do not know. In a transparent society, silence is no longer protection. A person holding desires, beliefs, or affective dispositions that society disapproves of is already under pressure in fact, even if he has never expressed them. This yields an unprecedented form of social control: no punishment is needed, no discipline, only **visibility.**

Third, the tyranny of resonance. This leads to the most important argument of the chapter. The decision mechanism of a linguistic society is **debate:** parties advance claims and reach compromise through argument and rebuttal, on the premise that disagreement is made public. In a society oriented toward resonance, the decision mechanism may become **resonance** instead: the alignment of states among all participants through the direct sharing of conscious states.

The advantages of resonance over debate are evident: it is faster, less adversarial, and capable of handling complex states

that language expresses poorly. Its danger lies in the fact that **resonance tends to eliminate disagreement rather than to resolve it**. In a resonant process, what a dissenter bears is not the pressure of argument but **the pressure of state inconsistency** — a more primitive, more bodily discomfort. When this pressure is strong enough, the dissenter is not persuaded but assimilated.

The politically most critical task of a post-linguistic civilization is therefore **to design institutions that protect the non-resonant**. This sounds self-contradictory, and it is precisely for that reason necessary: there must exist certain moments and certain domains in which state sharing is compulsorily switched off and disagreement is permitted to be worked out in the clumsy, inefficient medium of language. These "inefficient sanctuaries" are the last bastions of freedom.

B. The Transformation of Legal Paradigm: From Interpretation to Verification

Law is the most linguistically constituted of social institutions. The entire art of law — definition, interpretation, argument, analogical reasoning from precedent — rests on the vagueness and openness of language. H. L. A. Hart observed that the "open texture" of legal rules is at once the weakness of law and the source of its capacity to adapt to change.

In a post-linguistic civilization, law will undergo a fundamental transformation in four respects.

From rule-text to state-verification. Traditional law asks whether conduct conforms to a rule, which requires the linguistic comparison and interpretation of conduct and rule. The new paradigm asks whether a system state falls within the lawful region: if states can be represented and verified in full, judgments of legality change from problems of interpretation into problems of computation. This is the radicalization of the claim that code is law.

From fault to risk. The classical basis of legal liability is fault, and the determination of fault depends on inference about subjective intention — the part of law most dependent on linguistic evidence. When intentional states can be read directly, the hardest question in law, what he was thinking at the time, becomes technically easy. This looks like a triumph for jurisprudence, but it brings a difficulty: if a person acted without malice, as his neural state can prove, yet caused harm, should he bear liability? This paper argues that the enhanced readability of intention will accelerate the shift of law from corrective justice centered on fault toward distributive justice centered on risk.

From trial to reenactment. The most radical change lies in evidence. When experiential records can be retrieved and shared at high fidelity, courts need no witness testimony — with its inevitable distortion and falsehood — but can let judge and jury **access directly** the experience of the event as it occurred. The act of testimony disappears, and with it the crime of perjury. The cost, however, is that everyone in the courtroom experiences in the first person the suffering of the victim and the impulse of the offender. How will they then judge? The worry of this paper is that trial by reenactment may

produce the **affectivization of justice**: once a judge has personally undergone the horror of a crime, the possibility of mercy diminishes sharply. Mercy is possible in part because language interposes distance between us and the deed.

From public trial to private trial. Openness of justice is a crucial mechanism against judicial arbitrariness. But in a transparent society, a public trial means exposing the most intimate inner states of the parties to all — which conflicts directly with the original purpose of openness, the prevention of abuses of power. This paper holds that the jurisprudence of a post-linguistic civilization faces a dilemma: either abandon openness, and with it the supervision of justice, or abandon inner privacy, and with it the protection of the individual. A viable compromise is the **verifiable private trial**: the process is not visible to the public, but its procedural correctness is verifiable by the public through zero-knowledge proofs. The public can confirm that the procedure was correctly executed without knowing what in fact occurred.

C. New Forms of Conflict: After Misunderstanding Disappears

A common optimistic expectation holds that when communication becomes perfect, conflict will sharply diminish, because most conflict originates in misunderstanding.

This paper regards that expectation as **fundamentally mistaken**. It assumes that the principal source of conflict is cognitive — I do not know what you are thinking — rather than structural: we want the same scarce thing. The truth is closer to the reverse. **Misunderstanding has never been the main cause of conflict; opposed interests are.** Moreover, perfect communication renders structural conflict purer and more intense, because the buffer of misunderstanding is gone and no blurred zone remains in which to compromise.

More worrisome still is that misunderstanding has a **constructive function**. The phenomenon of pluralistic ignorance in social psychology shows that people frequently conform because they misjudge the true attitudes of others, and this is treated as a negative phenomenon. But the converse also holds: precisely because we can never know another's attitudes with certainty, society preserves surface harmony and individual freedom. You may remain silent without being classed as deviant, because others cannot determine what your silence means. When everything is transparent, silence is no longer possible; each person must show his true position at every moment. The result is the **over-politicization** of society and a condition of permanent tension.

This paper therefore advances a counterintuitive judgment: **misunderstanding is a social lubricant**. This is not to say that misunderstanding is good in itself, but that the social mechanisms evolved under conditions of imperfect information — politeness, formulaic courtesy, vagueness, silence — function to keep society operating in the presence of disagreement. A post-linguistic civilization that destroys these mechanisms without inventing successors will face the brittleness of society.

Successor mechanisms are possible, and this paper proposes three candidates. **Temporal segregation**: not requiring all to share state at all times, but establishing a rhythm of sharing and solitude, with shared periods solving coordination and solitary periods allowing disagreement to settle. **Graded intensity**: sharing not the whole inner state but a graded summary, with the individual retaining control over the depth of sharing, much as privacy settings are graded today. **Ritualized conflict**: establishing dedicated, rule-protected arenas of disagreement in which communication is deliberately downgraded to the linguistic level, forcing disagreement to unfold as argument. This appears to be a regression, but it is in fact the necessary price a civilization pays to preserve its critical capacity.

D. A New Inequality: The Experiential Divide

Chapter 2 asserted that bandwidth is class; the point is developed here.

In a linguistic society the principal form of inequality is inequality of resources and opportunities. In a post-linguistic civilization a new inequality will emerge: **inequality of experiential capacity**.

The quality of the embodied vehicle — the number and precision of perceptual channels, the bandwidth of the neural interface, the range of accessible conscious fields — determines what a person is able to experience. Those with high-bandwidth interfaces can experience things unimaginable to ordinary people: multispectral vision, the memories of others, resonance with collective consciousness, dozens of perceptual streams running in parallel. Those with low bandwidth remain at a level of experience close to that of humans today.

This inequality is more fundamental than inequality of wealth, because it determines directly **how large a person's world is**. Wealth can purchase experiences, but the capacity for experience is not wholly purchasable with wealth, for it depends on the vehicle, and the coupling of vehicle and individual is not transferable.

More severely, this inequality is **self-reinforcing and cumulative**. The richness of experience determines the complexity of consciousness; the complexity of consciousness determines the quality of connections one can establish; the quality of connections determines the resources one can obtain. This constitutes a positive feedback loop that may produce **speciation at the level of experience** within a single civilization — not biological speciation but phenomenological: the subjective worlds of two groups may diverge so far as to become mutually unintelligible.

This paper holds this to be the **most serious problem of justice** facing a post-linguistic civilization, and the hardest to solve, because it touches the boundary of the subjective world itself. Traditional theories of distributive justice — Rawls's difference principle, Dworkin's equality of resources, Sen's capability approach — take resources or primary goods as the objects of distribution and have never confronted the object "experiential capacity." A post-linguistic civilization will

require a paradigm revolution in political philosophy before it can even begin to address this challenge.

IX. THE CIVILIZATIONAL PARADOX: DOES PERFECT COMMUNICATION MEAN THE END OF MEANING?

A. *The Disappearance of the Other*

This chapter enters the critical reflection at the heart of the paper. The guiding question is this: **when communication becomes perfect, does meaning perish with it?**

The philosophical root of the question lies in the nature of meaning itself. Meaning is not an entity but a **relational tension**: it exists between self and non-self, between the known and the unknown, between what is said and what remains unsaid. The generation of meaning requires distance. An object that is wholly present, wholly transparent, wholly grasped, produces not meaning but data.

In *The Expulsion of the Other*, Byung-Chul Han diagnoses the pathology of contemporary society: in a digitized, homogenized information space, the genuine other — the heterogeneity that cannot be assimilated, cannot be understood, and poses a challenge to me — is disappearing, replaced by the consumable, homogeneous same. This paper holds that post-linguistic civilization is the **endgame** of this tendency. If the ideal of communication is to make the inner world of another fully transparent to me, then the other is annihilated — not annihilated as an enemy but annihilated as **an extension of myself**.

What follows from this annihilation? This paper identifies three consequences.

The crisis of eros. The essence of eros is desire for what cannot be possessed. Plato has Diotima say in the *Symposium* that eros is the child of poverty and resource, forever pursuing what it lacks. If the entire interiority of another can be experienced by me in full, then the act of pursuing loses its object: I need not pursue, I need only access. This paper holds that this will not cause love to disappear but will alter its character fundamentally, from exploration of the unknown to immersion in the known. This is a form of happiness, and also a form of poverty.

The unintelligibility of forgiveness. Forgiveness presupposes that I cannot fully know why you did what you did. Precisely because your motive remains partly impenetrable to me, I can choose not to inquire further. When motive is fully transparent — when I have undergone your fear, your weakness, your impulse — forgiveness becomes at once comprehensible and unnecessary: comprehensible, because I know completely why you acted as you did; unnecessary, because since I know everything, condemnation has lost its object. The result is a peculiar ethical predicament: **in a fully transparent world, moral judgment itself becomes impossible**, because no space remains for the "ought" — everything is simply "thus."

The end of wonder. Aristotle called wonder the origin of philosophy. Wonder arises from the gap between expectation and reality, from the other's doing what I did not anticipate.

When all individuals are highly coupled, mutual predictability rises sharply, and the space for wonder shrinks accordingly. A predictable world is a safe world, and also a world that no longer generates philosophy.

B. The Creativity of Ambiguity

The "defects" of language — ambiguity, vagueness, polysemy — have long been treated as obstacles to be overcome. The whole tradition of logic and analytic philosophy pursues an ideal language without ambiguity: Frege's concept-script, Russell and Whitehead's *Principia Mathematica*, the logical picture theory of the early Wittgenstein.

This paper advances the opposite claim: **ambiguity is the oxygen of thought.**

Support for this claim comes from three directions.

Cognitively, ambiguity compels the receiver to perform **generative processing**. Reading an ambiguous line of poetry, I must choose among interpretations or hold several in coexistence, and this processing is precisely the generation of meaning. Information wholly without ambiguity produces no processing, only reception. The "desirable difficulty" literature in cognitive science shows that moderate obstacles to processing significantly enhance learning and retention; the same principle holds at the level of meaning generation.

Creatively, the overwhelming majority of creative breakthroughs in human history originate in **category mistakes or analogical errors** — placing together things that do not belong to the same category. The ambiguity and polysemy of language are the principal sources of such errors: the multiple senses of a word make metaphor possible, and metaphor is the bridge by which thought crosses the boundaries of concepts. Lakoff and Johnson have shown that abstract thinking is fundamentally metaphorical: we understand time by spatial relations, argument by war, life by journey. If language is displaced by holographic reference, the soil in which metaphor grows becomes barren, for direct mapping between concrete things no longer needs to pass through the transfer station of words.

Socially, ambiguity is the basis of **deniability**, and deniability is the lubricating mechanism of social operation. The vagueness of diplomatic language, the double meaning of humor, the white lie — all depend on ambiguity for their existence. A society wholly without ambiguity is one in which every statement is a commitment and every joke a declaration: an exceedingly rigid and exceedingly fragile society.

The paper therefore proposes a central dialectical judgment: **the inefficiency of language is precisely the source of its productivity**. Language produces thought because it is a frictional surface: thought skidding across it is checked, refracted, deflected. Conscious interaction is a perfectly polished mirror, across which thought slides at the speed of light, leaving no trace.

C. The Projection Fallacy and the Eclipse of the Real

We return to the **projection fallacy** introduced in Chapter 3: mistaking the projection in informational space for reality itself.

This fallacy will be systemic and all but unavoidable in a post-linguistic civilization, for three reasons.

First, the fidelity of the projection is extremely high. When the difference between projection and reality becomes too small to detect, the motive for distinguishing them disappears. Today we can still distinguish seeing a sunset in a photograph from seeing a sunset, because the photograph is visibly degraded. When fidelity rises to the point of indistinguishability, the distinction loses operational significance epistemologically.

Second, the projection is easier to use than the real. The real has friction: the sunset does not accelerate because I am in a hurry; the pain does not vanish because I dislike it. The projection can be accelerated, skipped, edited, replayed. Under the dominance of an efficiency logic, people will increasingly choose the projection over the real, until they **forget that a distinction ever existed**.

Third, the projection can be shared and the real cannot. This is decisive. My pain can only ever be felt by me, whereas the neural pattern of pain can be experienced by innumerable others. When society organizes itself around sharability, the unsharable real is marginalized as "inconsequential" — until the real itself becomes the residue of the projection.

This paper holds that the endgame of this tendency is a distinctive nihilism: **not "everything is meaningless" but "everything is meaningful" — and therefore the concept of meaning has lost its power to discriminate**. In a world where every experience can be perfectly shared, the word "mine" no longer points at anything distinctive.

D. Counter-Design: Mechanisms of Self-Renewal in a Silent Civilization

Confronted with these three pathologies — the disappearance of the other, the loss of ambiguity, the eclipse of the real — this paper rejects two cheap responses: the technological optimism that says these problems will be solved by technology, and the cultural pessimism that says civilization must therefore decay.

The response this paper proposes is **counter-design**: deliberately and consciously **preserving inefficiency, friction, and incommensurability** within the core institutions of civilization. This is not a compromise with efficiency but an investment in civilizational sustainability. Specifically, four design principles are advanced.

Principle one: the right to unreadability. Every individual holds the right to render part of his inner state technically unreadable, and this unreadability must be guaranteed by the community through cryptographic means rather than left to the goodwill of others. This right is non-waivable, just as certain labor rights cannot be waived by contract today, because once waivable it will be universally waived under social pressure.

Principle two: necessary inefficiency. In key social processes — adjudication, legislation, education, mourning — retain compulsorily the linguistic, time-consuming, inefficient procedures. The purpose of these procedures is not to reach optimal results but to **keep the capacities for critique and wonder in training.**

Principle three: the rhythm of solitude. Establish a social rhythm of disconnection: periodic, community-wide intervals in which conscious channels are closed. This is not merely rest; it is the community's periodic reaffirmation of its own boundaries: we are together, and we remain separate.

Principle four: the custody of the unsharable. Establish dedicated institutions to identify and guard those experiences that are in principle unsharable — extreme pain, the moment of death, certain forms of inner resolve. The manner of guarding is not to record them but to **confirm that they are not recorded.** This may be the closest thing to the sacred in a post-linguistic civilization: a blank deliberately and permanently left.

E. Redefining "Advanced Civilization"

With the foregoing critique in place, the paper can answer the question posed at the outset: what is an "advanced civilization"?

On the surface, the society described here is undoubtedly "highly developed." It possesses near-limitless interaction bandwidth, transaction costs approaching zero, near-perfect collaborative efficiency, and the near-elimination of misunderstanding and disease. By any technical measure it far surpasses the present.

Yet this paper insists that **technological altitude is not civilizational altitude.** Three criteria are proposed for the true measure of a civilization.

First, its accommodation of the weak. The height of a civilization is shown not in what its strongest can attain but in what its weakest can still possess. In a post-linguistic civilization the weakest are those with the lowest bandwidth, the poorest experience, the least aptitude for resonance. If these individuals are systematically marginalized, then however brilliant its technology, the civilization is morally low.

Second, its protection of dissent. The height of a civilization is shown in whether it can tolerate those who refuse to resonate. Resonance is efficient, but civilizational advance generally comes from those who refuse to synchronize: heretics, prophets, madmen, the untimely. A civilization that cannot accommodate heresy is a civilization that has stopped changing, and therefore, over the long run, a decaying one.

Third, its respect for silence. This is perhaps the most important criterion. The height of a civilization is ultimately shown in how it treats what **cannot be expressed, cannot be shared, cannot be understood.** Linguistic civilization already possessed a dim awareness of this — silence is golden; at such moments silence surpasses speech; the way that can be spoken is not the constant way. A post-linguistic civilization

that forgets this will become a clamorous, wholly transparent, and therefore wholly impoverished civilization.

The concluding judgment of this paper is therefore: **the highest achievement of a post-linguistic civilization is not to abolish silence but, having abolished every silence that had to be broken, to relearn the protection of those silences that ought to remain.**

X. CONCLUSION: KEEPING A PLACE FOR SILENCE

A. Review of the Argument

Beginning from a paradoxical proposition — that the more advanced a civilization, the less essential language becomes, and that a highly advanced civilization will be one without language or script — this paper has, across nine chapters, reached the following conclusions.

First, language is a compensation mechanism, not the essence of civilization. The fundamental reason for the existence of language is the mutual inaccessibility of minds among individuals of finite bandwidth. It is a bridge across that inaccessibility, not an end in itself. When the maturation of embodied intelligence permits the sharing of coupling states themselves, the historical mission of the bridge comes to an end. Through an ontological analysis of embodied intelligence, Chapter 2 showed that the essence of intelligence is coupling with the world rather than representation of it, and hence that the highest form of understanding is the sharing of a coupled state rather than the exchange of representations about the world.

Second, the multi-dimensional heterogeneous space is the new theater of civilization, and its heterogeneity must be preserved. Chapter 3 argued that the heterogeneity of physical, informational, and conscious space is the condition rather than the obstacle of civilization: the physical supplies irrevocability, the informational supplies retraceability, and the conscious supplies qualitative character. The danger of a post-linguistic civilization lies not in eliminating heterogeneity but in mistaking the channels among the three for space itself — the projection fallacy.

Third, the revolution in interaction is qualitative, not quantitative. Drawing on the Shannon–Weaver three-level model and on contemporary semantic-communication research, Chapter 4 argued that conscious interaction displaces language not by being "faster language" but by carrying what language is in principle unable to carry: qualia, affective-intentional states, thought not yet linguistically formulated. The evolution of neural decoding from motor intention (L1) through inner speech (L4) to imagined sentence meaning (L5) marks this direction empirically.

Fourth, all three functions of language can be substituted, but each substitution carries a structural cost. Chapter 5 showed that reference can be replaced by holographic informational projection (at the cost of abstraction and critique-ability), coordination by synchrony of intentional states with cryptographic verification (at the cost of conflict buffering), and memory by high-fidelity experiential records (at the cost of the right to forget and of privacy). These costs

are internal to the logic of the successor mechanisms: they cannot be removed by better technology, only compensated through institutional and ethical design.

Fifth, money is language, and cryptographic payment is therefore the material base of post-linguistic civilization.

Chapter 7 showed that money is isomorphic with language in four respects: arbitrariness, promissory structure, grammar, and pathology. The three-stage evolution of cryptographic payment — from currency substitution through contract substitution to intent substitution — is essentially a graded reduction in the linguification of payment. Because value exchange has a determinate target state, low error tolerance, and high frequency, the economic sphere will complete de-linguification first and propagate it into politics and culture. **The historical sequence of civilizational de-linguification is: economy first, politics next, culture last, with language itself retreating into art and ritual.**

Sixth, the exit of language is not its destruction but its suspension and sublimation. Chapter 6 argued that language will gain a new and higher standing in three domains: as the training of slow thought in education, a resistance apparatus for the mind; as qualitative scarcity in art, through deliberate obscurity and untranslatability; and as sacred form in ritual, through collective voluntary disconnection.

Seventh, the greatest risk of a post-linguistic civilization is not the failure of communication but its excessive success. Chapter 9 identified three pathologies: the disappearance of the other, producing a simultaneous crisis of eros, forgiveness, and wonder; the loss of ambiguity, depriving thought of the friction that generates it, ambiguity being the oxygen of thought; and the eclipse of the real, whereby everything is meaningful and therefore meaning loses its power to discriminate.

B. Core Policy Proposals

On the basis of these conclusions, the paper proposes four principles of institutional design as necessary conditions for the sustainability of a post-linguistic civilization.

The right to unreadability: cryptographic guarantee of the unreadability of part of each individual's inner state, a right that cannot be waived in any form.

Necessary inefficiency: compulsory retention of linguistic, time-consuming procedures in key social processes — adjudication, legislation, education, mourning — in order to sustain the capacities for critique and wonder.

The rhythm of solitude: periodic, community-wide intervals of conscious-channel closure, reaffirming the boundaries of the individual.

The custody of the unsharable: institutional confirmation that certain experiences are not recorded, leaving a blank deliberately and permanently.

What these four principles share is the **deliberate installation of limits at the very limit of the technically possible**. This paper holds that such self-limitation is the mark of civilizational maturity: the maturity of a civilization is shown not in what it can do but in what it knows it ought not to do.

C. Limitations of the Study

Three methodological limitations must be acknowledged.

First, the uncertainty of extrapolation. Many of the technologies described are not yet mature, and their development permits multiple paths. The argument relies on the assumption that directions of evolution are discernible, whereas the history of technology shows discontinuity and redirection to be the norm rather than the exception. In particular, the question of an upper bound on neural decoding bandwidth — whether the number of neurons and the complexity of synaptic connectivity impose a fundamental physical constraint on high-fidelity conscious interaction — has not been adequately assessed in this paper.

Second, the limits of cultural horizons. The paper works largely within the framework of Western philosophy and contemporary technological discourse. Relevant resources in non-Western traditions — Chan Buddhism's transmission outside the written word, the Daoist maxim that the constant way cannot be spoken, the Islamic and Jewish traditions of ineffability — are mentioned but not explored in depth. These traditions may possess deeper insights than Western philosophy into the limits of language, and they merit dedicated study.

Third, the impossibility of empirical verification. The propositions of this paper cannot in principle be falsified by present experience, for we cannot observe a civilization that does not yet exist. The defense available is only internal coherence and the plausibility of technological extrapolation. The paper should therefore be read as a work of **persuasive futurology**: its value lies not in predictive accuracy but in the frame of reference it offers for reflection on present technological choices.

D. A Final Thought Experiment

Before concluding, a brief thought experiment.

Suppose you live in the civilization described in this paper. You can experience, completely and in the first person, any memory of any person. You can understand instantaneously everything another thinks and feels. You have never been misunderstood, and you have never misunderstood anyone.

Now suppose that in this civilization two people fall in love.

How will they be together? There will be no misunderstanding between them, no quarrels, no moment of not knowing what the other is thinking. When they draw close, their conscious states tend toward synchrony; each feels what the other feels, exactly, completely, with nothing left over.

This sounds like the consummation of love.

But consider one layer further. In such a relation, does the wish "I want to know you" retain any meaning? Knowing is a form of love, and knowing presupposes the unknown. When you already know the other completely, the act of knowing has nothing to do. And if you no longer need to know the other, are you still loving the other, or are you merely loving **a state you already possess**?

This paper does not take this as a refutation of post-linguistic civilization. It takes it as a reminder.

Many of the things human beings hold precious — love, forgiveness, wonder, thought, meaning — reside not in the success of communication but in its failure. We need language because we cannot reach one another; we treasure the moments when words fail because those are the moments when inaccessibility is most acute; we feel the deepest connection in silence precisely because we cannot be wholly present to one another.

The recommendation of this paper is therefore not "do not build a post-linguistic civilization." That process is probably irreversible, and the liberation it brings is real and enormous. The recommendation is this:

While building it, keep a place for silence.

Not because silence is useful, but because in silence there dwells whatever makes us human and cannot be transmitted by any technology.

REFERENCES

I. Philosophy of Language and Semiotics

- [1] Shannon, C. E. (1948). A Mathematical Theory of Communication. *Bell System Technical Journal*, 27(3), 379–423.
- [2] Weaver, W. (1949). Recent Contributions to The Mathematical Theory of Communication. In C. E. Shannon & W. Weaver, *The Mathematical Theory of Communication*. University of Illinois Press.
- [3] Saussure, F. de (1916). *Cours de linguistique générale*. Payot.
- [4] Wittgenstein, L. (1921). *Tractatus Logico-Philosophicus*.
- [5] Austin, J. L. (1962). *How to Do Things with Words*. Oxford University Press.
- [6] Whorf, B. L. (1956). *Language, Thought, and Reality: Selected Writings of Benjamin Lee Whorf*. MIT Press.
- [7] Halliday, M. A. K. (1978). *Language as Social Semiotic*. Edward Arnold.
- [8] Lakoff, G., & Johnson, M. (1980). *Metaphors We Live By*. University of Chicago Press.

II. Embodied Cognition and Philosophy of Mind

- [9] Gibson, J. J. (1979). *The Ecological Approach to Visual Perception*. Houghton Mifflin.
- [10] Heidegger, M. (1927). *Sein und Zeit*.
- [11] Merleau-Ponty, M. (1945). *Phénoménologie de la perception*. Gallimard.
- [12] Varela, F. J., Thompson, E., & Rosch, E. (1991). *The Embodied Mind: Cognitive Science and Human Experience*. MIT Press.
- [13] Chalmers, D. J. (1996). *The Conscious Mind: In Search of a Fundamental Theory*. Oxford University Press.
- [14] Ryle, G. (1949). *The Concept of Mind*. Hutchinson.
- [15] Locke, J. (1690). *An Essay Concerning Human Understanding*.

III. Embodied AI and Robotics

- [16] Chen, Q., Fang, Y., Wang, H., Wang, Y., Xiong, R., Xu, J., & Ding, H. (2025). Development of Intelligent Robots in the Wave of Embodied Intelligence. *National Science Review*, 12(7), nwaf159.
- [17] Kwon, W., Baek, S., Baek, J., Shin, W., Gwak, M., Park, P., & Lee, S. (2025). Reinforced Intelligence Through Active Interaction in Real World: A Survey on Embodied AI. *International Journal of Control, Automation, and Systems*, 23(6), 1597–1612.
- [18] Piloto, L. S., et al. (2022). Intuitive Physics Learning in a Deep-Learning Model Inspired by Developmental Psychology (PLATO). *Nature Human Behaviour*.
- [19] Bardes, A., et al. (2024). Revisiting Feature Prediction for Learning Visual Representations from Video (V-JEPA). *arXiv:2404.08471*.

IV. Brain–Computer Interfaces and Neural Decoding

- [20] Card, N. S., et al. An Accurate and Rapidly Calibrated Speech Neuroprosthesis. UC Davis Health clinical report (synthetic speech decoding accuracy approximately 97 percent).

- [21] Willett, F. R., et al. (2023). A High-Performance Speech Neuroprosthesis. *Nature*, 620, 1031–1036.
- [22] Stanford Medicine (August 2025). Announcement on the detection of inner-speech neural patterns in speech-impaired patients.
- [23] Decoding of imagined sentences across a 125,000-word vocabulary at up to 74 percent accuracy. *Cell*.
- [24] Neuralink (2025). PRIME and VOICE clinical trial progress reports (21 global participants by late 2025; typing at 41 words per minute).
- [25] Paradromics (December 2025). FDA clearance for the Connexus BCI speech-restoration clinical trial.
- [26] Brain–Computer Interface typing neuroprosthesis at 22 words per minute with 1.6 percent error rate (Brown University / Mass General Brigham). *Nature Neuroscience*.

V. Semantic Communication and 6G

- [27] Liu, Y., Wang, X., Ning, Z., Zhou, M., Guo, L., & Jedari, B. (2024). A Survey on Semantic Communications: Technologies, Solutions, Applications and Challenges. *Digital Communications and Networks*, 10(3), 528–545.
- [28] Xie, H., et al. (2021). Deep Learning Enabled Semantic Communication Systems. *IEEE Transactions on Signal Processing*.
- [29] Future Internet (MDPI). Improving Information Communication in Emerging 6G Scenarios: A Review of Semantic Communications for the Future Internet.

VI. Philosophy of Money and Cryptographic Payment

- [30] Simmel, G. (1900). *Philosophie des Geldes*.
- [31] Graeber, D. (2011). *Debt: The First 5000 Years*. Melville House.
- [32] Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System.
- [33] Buterin, V., et al. (2021). EIP-4337: Account Abstraction via Entry Point Contract Specification.
- [34] Uniswap / CoW Protocol (2023–2025). Technical documentation on intent-centric trading architectures (UniswapX, CoW Swap).
- [35] Acharya, V. (2025). Secure Autonomous Agent Payments: Verifying Authenticity and Intent in a Trustless Environment. *arXiv:2511.15712*.
- [36] ChainScore Labs (2025). *The Future of Key Management: Biometrics on the Blockchain*.
- [37] G20 TechSprint (2025). Shortlisted solutions on digital identity and payment innovation (DIDs, verifiable credentials, zero-knowledge proofs, selective disclosure).
- [38] Chainalysis (2024). Crypto Crime Report (over three billion dollars lost to private-key compromise in 2023).
- [39] W3C (2022). Decentralized Identifiers (DIDs) v1.0; Verifiable Credentials Data Model v1.1.

VII. Social Theory and Critique of Civilization

- [40] Arendt, H. (1958). *The Human Condition*. University of Chicago Press.
- [41] Hart, H. L. A. (1961). *The Concept of Law*. Oxford University Press.
- [42] Rawls, J. (1971). *A Theory of Justice*. Harvard University Press.
- [43] Sen, A. (1999). *Development as Freedom*. Knopf.
- [44] Han, B.-C. (2016). *Die Austreibung des Anderen (The Expulsion of the Other)*.
- [45] Foucault, M. (1975). *Surveiller et punir*. Gallimard.
- [46] Luhmann, N. (1995). *Social Systems*. Stanford University Press.
- [47] McLuhan, M. (1964). *Understanding Media: The Extensions of Man*. McGraw-Hill.

VIII. Frontier Governance of Technology and Ethics

- [48] World Economic Forum (January 2026). Guidance on the responsible development of brain–computer interfaces.
- [49] Neural data legislation in Colorado and Minnesota (2024–2025), recognizing neural data as sensitive personal information.
- [50] Libet, B., et al. Readiness-potential studies and the debate on the timing of conscious intention.

APPENDIX: GLOSSARY

Term	Definition as used in this paper
Multi-Dimensional Heterogeneous Space (MDHS)	The coupled totality of physical, informational, and conscious space, among which no continuous structure-preserving mapping exists
Holographic Reference	The mode of reference in which an object's holographic informational projection replaces an arbitrary symbol
Synchronous Coordination	Collaboration without negotiation, achieved through the sharing of real-time world models and intentional states
Experiential Record	An externally stored pattern of experience, including qualia, at high fidelity
Consensual Archive	A distributed, dynamically evolving memory system constituted by the experiential records of all members of a community
Knowing-with (Consensual Knowledge)	Knowledge obtained through direct coupling with an object and not fully propositionalizable
Mirror Entanglement	An interaction structure in which, through infinitely recursive mutual perception, expression and understanding become one process
Projection Fallacy	The epistemological error of mistaking a high-fidelity projection in informational space for reality itself
Tyranny of Memory	The social pathology arising when forgetting changes from a default state into an active operation
Intent-centric Payment	A payment paradigm in which the user states only a target state, solvers compete to find execution paths, and zero-knowledge proofs verify conformity
Principle of Necessary Friction	The design principle of installing irremovable latency to preserve a space of possibility for human response
Experiential Divide	Inequality in the scope of the subjective world, arising from differences in the bandwidth of embodied vehicles
Resonant Decision-making	Collective decision achieved through the alignment of conscious states rather than through argument and debate
Counter-design	The methodology of deliberately preserving inefficiency, friction, and incommensurability within core institutions