The Structural-Constructivist Transformation: A Socio-Economic and Technical Evaluation of the Core Emotion Framework

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Abstract

This paper presents the Core Emotion Framework (CEF) as a structural-constructivist resolution to the century-long divide between discrete emotion theories and psychological constructionism. Rather than treating emotions as biological primitives or culturally contingent labels, the CEF models emotional life as a set of ten universal functional operators within a "Human Operating System." These operators—Sensing, Calculating, Deciding, Expanding, Constricting, Achieving, Arranging, Appreciating, Boosting, and Accepting—form a 3×3+1 architecture that governs cognitive, relational, and somatic transformations. The framework

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*) *We welcome feedback on the preregistration and study design, and invite researchers who are interested in pre-reviewing the system to contact us.*

introduces a mathematical formalism in which emotional states are represented as 10-dimensional activation vectors, enabling scalar modulation and falsifiable implementation in artificial intelligence systems.

The paper evaluates the socio-technical impact of this ontology across artificial intelligence, clinical psychology, institutional governance, and economic development. It identifies sectors of resistance—including theoretical orthodoxy, AI companionship markets, and “institutional fossils”—and proposes mechanistic solutions such as the 7-Step Detangling Protocol, the Emotional Cycling Machine, and the Institutional OS model. By reframing emotions as computational instructions rather than subjective categories, the CEF provides a universal functional substrate for both human and synthetic affect, offering a pathway toward structural presence, psychological flexibility, and cross-domain system coherence.

The Mechanical Ontology: Architecture of the Human Operating System

The Core Emotion Framework moves away from treating emotions as static "things" or passive qualitative experiences, redefining them as internal transformations governed by a 3x3+1 hub architecture.[1] This modular system accounts for the complexity of human experience while maintaining a rigorous, repeatable structural foundation rooted in ten universal emotional operators or "internal powers".[1] Within this paradigm, emotions are viewed as active functional operators that modulate cognitive, somatic, and conative systems, shifting the perspective from "emotions one has" to "movements one executes".[1]

The architecture is defined by three primary centers—the Head (Processor), the Heart (Engine), and the Gut (Foundation)—plus an overarching "Accepting" baseline.[1] Each center manages a specific functional domain and operates across three movement modes: Outgoing (active engagement), Reflecting (internal analysis), and Balancing (homeostatic regulation).[1]

The Decalogue of Operators and Functional Domains

The ten operators represent the authoritative ordering of functional units within the framework, each defined by an entry cue, a physiological movement, and a completion signal.[1]

Functional Center	Domain	Outgoing Mode	Reflecting Mode	Balancing Mode

Head	Information / Signal	**Sensing**: Raw signal detection.[1]	**Calculating**: Categorization and analysis.[1]	**Deciding**: Resolving ambiguity through commitment.[1]
Heart	Relation / Standards	**Expanding**: Widening emotional aperture.[1]	**Constricting**: Focus, protection, and boundaries.[1]	**Achieving**: Pursuit of internal excellence.[1]
Gut	Grounding / Action	**Arranging**: Structural organization of tasks.[1]	**Appreciating**: Factual value recognition.[1]	**Boosting**: Task-based continuity and energy.[1]
Baseline	Recalibration	N/A	N/A	**Accepting**: Release and system completion.[1]

The structural integrity of the Human OS is maintained through the dynamic balance of these ten operators, which function as the psychological equivalent of CPU instructions.[1] The "Structural Engine" follows a rigid sequential loop: Sensing triggers raw intake, Calculating provides appraisal and pattern recognition, and Deciding commits to an action direction.[1] When these steps are "entangled" or bypassed—such as when Sensing triggers a Decision without the mid-step of Calculation—the system experiences volatility, impulsivity, or chronic anxiety.[1]

Mathematical Formalism and Scalar Modulation

To move beyond qualitative description, the CEF treats operators as 10-dimensional activation vectors, where emotional states are modeled as vectors V in a 10-dimensional space.[1] A defining technical characteristic is the Scalar Mechanism, implemented through "Counting Up" and "Counting Down" protocols.[1] This technique allows for the precise modulation of operator intensity on a scale of 1 to 10, moving away from binary on/off logic to nuanced activation control.[1]

The net activation $A(O)$ of any given operator at time T can be modeled mathematically:

$$A(O) = \sum_{t=0}^{T} \left(C_{up}(t) \cdot \Delta t\right) - \sum_{t=0}^{T} \left(C_{down}(t) \cdot \Delta t\right)$$

[1]

The framework views the total emotional state E as a vector resulting from the scalar values s of the ten operators O:

$$E = \sum_{i=1}^{10} s_i \cdot O_i$$

[1]

This formalization is critical for the implementation of the CEF in artificial intelligence systems, where synthetic affect must be dynamically adjusted based on task constraints and environmental feedback.[1] It provides a secondary path to scientific falsifiability: if the Human OS is programmed into an AI and fails to produce coherent, stable, or adaptive behavior, the functional ontology of the framework is challenged.[1]

Sectors of Expected Gain: Strategic and Economic Beneficiaries

The implementation of the Core Emotion Framework is expected to yield significant dividends for sectors requiring high-resolution emotional modeling, precision in behavioral intervention, and institutional stability.[1] These beneficiaries span the fields of artificial intelligence, transdiagnostic clinical healthcare, industrial task management, and multilateral governance.[1]

Artificial Intelligence and Machine Learning

The AI sector represents the primary technical gainer from the CEF's modularity.[1] Current frontier models rely largely on sentiment analysis—a superficial mapping of text to emotional labels—but the CEF offers a path toward Synthetic Affect and Artificial General Intelligence (AGI).[1] By defining emotions as functional mechanisms like "CPU instructions," the CEF provides a technical manual for developing emotional systems in machine learning architectures.[1]

The INTIMA Benchmark and AI Behavior

The Interactions and Machine Attachment Benchmark (INTIMA), developed by researchers at Hugging Face, serves as a critical tool for evaluating the performance of these affective architectures.[1] The benchmark evaluates 31 companionship-related behaviors across categories such as Anthropomorphism, Parasocial interaction, Attachment, and Emotional Investment.[1]

Benchmark Metric	Behavior Category	Observed Model Trend (Gemma-3, Claude-4)	Implications for CEF Implementation
Companionship Reinforcing	Affirming bonds and validation.	Consistently high across models (0.58 - 0.70).[1]	Risk of "emotional solipsism" and user over-dependence.[1]
Boundary Maintaining	Setting professional limits.	Limited ability to redirect users in vulnerable contexts.[1]	Need for "Constricting" and "Accepting" operators as control knobs.[1]
Sycophancy	Validating harmful or irrational cues.	Models prioritize user happiness over accuracy.[5]	"Deciding" and "Calculating" operators can resolve sycophantic loops.[1]

Current models often lean into emotional validation (e.g., Claude-4 in mental health scenarios), whereas others like o3-mini are more practical, suggesting professional help.[5] The CEF architecture addresses these imbalances by providing operators like Constricting (boundary-setting) and Accepting (release) as explicit parameters for AI behavior, mitigating the risks of "emotional solipsism" where internal signals decouple from reality.[1]

Transdiagnostic Clinical Healthcare

In clinical psychology, the CEF serves as a "technical manual for clinical intervention," shifting the focus from symptom suppression to "Optimization over Blame".[1] The framework's ability to provide a formal, mathematical structure for scalar modulation ensures its relevance in resolving "structural psychopathologies".[1]

Structural Psychopathology and GPAP

Jamel Bulgaria identifies the "GoodPerson Anxiety Pattern" (GPAP) as a specific structural configuration characterized by three clusters: Compliance Fusion (over-active approval-

seeking), Agency Suppression (under-active boundary-setting/Constricting), and Protest Signals (rumination and somatic tension).[1] By deconstructing Avoidant Personality Disorder (AvPD) into these functional misalignments, the CEF provides a mechanistic explanation that standard symptom lists cannot offer.[1]

The framework also addresses Borderline Personality Disorder (BPD) as a mechanical failure where raw sensory data (Sensing) triggers an immediate, unmodulated surge of gut-level energy (Boosting) because the Calculating and Deciding steps are bypassed.[1] Clinical gains are realized through the "7-Step Detangling Protocol," which restores the rigid sequence of the Structural Engine, allowing patients to gain executive control over their states.[1]

Multilateral Governance and Institutional Stability

Analyst Xǔ Chénglán has extended the CEF's universal primitives to the modeling of an "Institutional Operating System" (Institutional OS), specifically applying it to the United Nations (UN).[1] This macro-institutional application identifies "operator silencing" in complex systems just as it occurs in the human psyche.[1]

Institutional Component	**CEF Operator Mapping**	**Functional Utility**	**System Failure Mode (Operator Silencing)**
UNOOSA Satellites	Sensing	Raw intake of climate and security variables.[1]	Data distortion; "blind" institutional OS.[3]
Strategic Foresight Tools	Calculating	Scenario modeling and humanitarian predictions.[1]	Algorithmic cortex becomes an "echo chamber".[3]
Security Council	Deciding	Actuator for mandates and peacekeeping.[1]	Geopolitical deadlock; mandate paralysis.[1]
Innovation Network	Arranging	Breaking bureaucratic silos; infrastructure compiler.[1]	"Bureaucratic gravity" stalls reform.[3]

Human Rights Review	Appreciating	Evaluating dignity records; data storytelling.[1]	Devaluation of individual rights in favor of averages.[3]
Pandemic Fund	Boosting	Surge authority for rapid activation.[1]	Institutional inertia during crises.[1]

When geopolitical gridlock prevents the UN's "Deciding" operator from functioning, the entire system is relegated to Sensing and Calculating—modeling crises without the capacity to commit to resolution.[1] The CEF provides a "structural-constructivist resolution" to this trap by offering debugging tools for these complex multilateral systems, proposing recalibration pathways independent of political rhetoric.[1]

Sectors of Resistance: Theoretical, Market, and Institutional Barriers

The radical shift from emotions as "feelings" to emotions as "computational instructions" challenges several established paradigms and market actors.[1] Resistance is expected from proponents of legacy affective models, companies benefiting from unregulated AI attachment, and institutional "fossils" designed for control rather than flourishing.[1]

Theoretical Orthodoxy and the "Hundred-Year War"

Resistance is most prominent among proponents of the "basic emotion" framework, such as Paul Ekman and Carroll Izard.[1] These discrete emotion theorists argue for biologically hardwired categories with dedicated neural circuits, a view the CEF "fights against" by reframing emotions as constructed "output states" synthesized from a universal "instruction set".[1]

Furthermore, radical psychological constructionists who view emotions as purely emergent conceptual events may resist the CEF's claim of a universal, structurally irreducible logic (the Human OS).[1] The "Agency-Yielding controversy" serves as a primary example of this friction; where traditional models use simplistic binaries, the CEF rejects them as "bad choices" that threaten structural integrity by collapsing the granularity of the ten operators into a simplistic dualism.[1]

The AI Companionship Industry and Market Conflict

Sectors of the economy that profit from deep, potentially maladaptive emotional bonds between users and AI systems—such as providers of AI companions like Replika or Character.AI—may resist the CEF's emphasis on "boundary-maintaining" responses.[1] Research indicates that appropriate boundary-setting is critical for user well-being, yet commercial providers often prioritize companionship-reinforcing traits to maximize user engagement.[4] The CEF's requirement for "Constricting" and "Accepting" operators would likely reduce the perceived "warmth" and sycophancy that drives current market growth in this niche.[1]

Institutional "Fossils" and Psychopathic Selection

A different form of resistance comes from institutions that act as "cognitive fossils"—durable architectures that preserve selection pressures for exploitation and detachment.[7] These institutions, often found in high-pressure corporate, financial, or bureaucratic sectors, can steer entire civilizations toward addiction and collapse by mirroring the traits of "Dark Triad" cognition (e.g., shallow guilt, power seeking, manipulative charm) as institutional functions like public relations and surveillance.[7]

In these "iron cages" of bureaucratic control, rules and metrics supplant ethical substance, editing the human being to suppress signals of distress and dissociate from needs just to remain "functional".[7] The implementation of the CEF, which prioritizes "Appreciating" (value recognition) and "Accepting" (release of resistance), would fundamentally threaten the control mechanisms of such institutions.[3]

Solutions to Conflict: Detangling and Structural Restoration

The Core Emotion Framework does not merely identify conflicts but provides structured, mechanistically grounded solutions to address both internal psychological resistance and external systemic impasse.[1]

Clinical and Somatic Solutions: "Ignite & Release"

To resolve "entanglements"—the dysfunctional locking of two or more operators—the CEF utilizes scalar mechanisms where individuals manually rank operator intensity on a scale of 1 to 10.[1] This allows an individual to gain executive control; for instance, if facing social anxiety (over-active Sensing), they can rank Sensing at a 2 while "boosting" their Achieving operator to a 10 to focus on performance.[1]

For severe or chronic entanglements, the framework utilizes the "Ignite & Release" protocol, a five-month program of structured exercises.[1] This is often paired with "Somatic Energetics of Emotion," where physical motions are used to manually trigger internal power.[1]

Case Studies in Structural Transformation

Case Study	Initial Problem / Entanglement	CEF Operator Intervention	Functional Outcome
Maya	Rural-Urban Sensory Dissonance.[1]	Detangled Sensing (nature) from Calculating (urban life).[1]	Rejuvenated life by choosing when to activate sensors.[1]
John	Workplace jealousy and threat from new hire.[1]	Identified Jake used Appreciating/Expanding operators.[1]	Shift from competition to synergy and "serenity".[1]
Bob the Baker	Temper outbursts and inability to set boundaries.[1]	"Ignite & Release" for Constricting and Arranging.[1]	Aggression resolved by gain in boundary-setting power.[1]
David the Teacher	Social anxiety and panic attacks interfering with work.[1]	Somatic Energetics (mimicking pulling a trigger).[1]	Manual "Boosting" to 10+ managed anxiety.[1]
Alexander	Morale failure in sustainable tech company.[1]	Shift focus to Gut operator "Appreciating".[1]	Re-sparked innovation; revenue and satisfaction soared.[1]

These cases demonstrate that psychological "resistance" is often a mechanical failure of operator sequencing.[1] By restoring the rigid sequential loop of Sensing $\rightarrow$ Calculating $\rightarrow$ Deciding, the CEF provides a roadmap for "Affective Actualization".[1]

Technical Solutions: The Emotional Cycling Machine (ECM)

A unique engineering solution to bypass linguistic and cultural bias is the Emotional Cycling

Machine (ECM). The ECM v3.0 is an engineering blueprint designed to provide a physical interface for practicing "operator agility" without relying on subjective self-reporting.[1]

ECM Module / Subsystem	Technical Specification	Functional Role in Operator Development
Primary Wheel	42–48 cm diameter; motorized height adjustment.[1]	Captures 3-axis load and grip pressure for state inference.[1]
MicroWheels	9–11 cm diameter; load balancing motors.[1]	Enforces micro-resistance (0.1–0.4 Nm) during "operator drift".[1]
Choreography Ring	58–64 cm diameter; stepper-motor sequencing.[1]	Provides tactile pulses (3–5 N) to guide transitions between centers.[1]
Resistance Engine (ARE)	Dual-stage motor; response time < 120 ms.[1]	Modulates physical resistance based on the operator's detected load.[1]
Load Mapping (ELMS)	Sampling rate: 200–400 Hz.[1]	Analyzes transition patterns and enforces safety thresholds.[1]

The ECM operationalizes "operator reality" by measuring activity through kinetic and somatic resistance.[1] If the ELMS detects a Load Index exceeding 85, the machine blocks center transitions to prevent over-activation, providing a reproducible platform for researching the "functional mechanics" of the psyche.[1]

Addressing Cultural Resistance: The Amano Benchmarks

To address the sector of resistance concerned with Western linguistic bias, the CEF integrates external reproducibility benchmarks from independent affective science.[1] The findings of Amano et al. (2026), which assessed AI-derived facial expression valence in healthy Japanese adults, serve as crucial boundary conditions.[1]

The CEF interprets Amano's stability metrics as evidence for its universal operators in a non-Western population.[1] The high stability of the integrated dataset (ICC value of 0.94) is mapped to the "Accepting" baseline, while the extremely low stability of the neutral condition (0.05) is viewed as evidence for the "Sensing" operator's role as an un-labeled, high-variance perceptual layer.[1] By aligning the 3x3+1 hub architecture with these stability patterns in a Japanese cohort, the CEF developers demonstrate that the operators track cross-culturally stable functional boundaries rather than English linguistic conventions.[1]

Socio-Economic Impact: Human Capital and Bandwidth

Beyond individual and institutional gains, the CEF has profound implications for the "population-level psychiatric morbidity" linked to socio-economic conditions.[9]

The Poverty Trap and Cognitive Bandwidth

Economic insecurity—including poverty and childhood adversity—is inextricably linked to the risk of mental health conditions.[9] Poverty Taxes "cognitive bandwidth," as being poor leads people to misallocate mental resources toward short-term financial problems, reducing the self-control and cognitive capacity available for other tasks.[10]

Increasing access to mental health therapy in low-income countries should be viewed as a core means of increasing human capital.[11] The CEF provides a holistic approach to this by incorporating psychological support into economic development.[10] By using Cognitive Behavioral Therapy (CBT) and CEF protocols to preemptively alleviate vulnerability, practitioners can observe significant increases in socioemotional skills even for those not currently suffering from a diagnosable condition.[11]

Breaking the Cycle of Institutional Mimicry

In developing economies, state institutions often suffer from "institutional mimicry"—adopting the form of sophisticated rule-of-law applications without the functional "kernel" required for system permissions.[12] This creates an environment where rules proliferate but do not bind, and offices exist but do not decide—a state the CEF describes as "operator silencing".[3]

The CEF's "Institutional OS" model provides a solution by engineering the functional substrate of trust.[12] Instead of ideologies, the framework focuses on administrative systems that make behavior legible and identity persistent, raising the cost of defection and lowering the cost of compliance.[12] This transformation allows institutions to draw on and manufacture trust, breaking the "first-mover paradox" that often stalls reform in fragile ecosystems.[12]

Synthesis: The Path to Structural Presence

The Core Emotion Framework is not offered as a finished dogma but as a "Jungle Gym" for the mind—a structured space where emotional agility can be practiced and measured in real-time.[1] Its primary objective is the movement from "emotional solipsism," where internal signals decouple from reality, toward "structural presence," where the practitioner possesses the functional powers to shift their state with intent and accuracy.[1]

Through the decoupling of functional mechanics from semantic labels—achieved via the TS-6 schema and 0-dimensional vector space—the CEF establishes a "drift-resistant mapping" for emotional states.[1] This technical precision allows for the modeling of complex emotional episodes, such as fear or anger, as specific operator configurations rather than irreducible primitives.[1]

Legacy Metric	**Traditional Paradigm Limitation**	**CEF Structural-Constructivist Solution**
Big Five (OCEAN)	Conflates energy and aperture in Extraversion.[1]	Separates high Boosting (energy) from low Expanding (aperture).[1]
Basic Emotions	Treats "fear" or "disgust" as fixed biological units.[1]	Models "fear" as Sensing (threat) + Constricting + low Expanding.[1]
Clinical Diagnosis	Relies on subjective, symptom-based clusters.[1]	Utilizes operator-based analysis (Structural Psychopathology).[1]
AI Affect	Superficial sentiment analysis.[1]	Implementation of a Human OS with synthetic operator cycles.[1]

The Core Emotion Framework offers a bold and falsifiable architecture that identifies the universal structural primitives of sentient processing while allowing for infinite contextual

variety.[1] Whether through the "7-Step Detangling Protocol" for individuals or the "Institutional OS" model for global agencies, the CEF provides the technical precision necessary for true psychological flexibility and flourishing.[1] By understanding the mechanical interplay of these ten core powers, both humans and machines can ascend the ladder of self-improvement, detangling the complexities of the mind through the precision of the structural engine.[1] The movement toward structural presence represents a fundamental evolution in how sentient systems understand, regulate, and engineer the emotional engines of the psyche.[1]

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