The Structural-Constructivist Architecture of Human Affect: A Comprehensive Technical Analysis of the Core Emotion Framework

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Abstract

The historical evolution of affective science has long been constrained by a binary struggle between discrete and dimensional models of emotion. This "century-long conflict" has historically prevented a unified understanding of how biological necessity interfaces with cognitive flexibility and social construction.[1] The Core Emotion Framework (CEF), conceptualized and developed by Jamel Bulgaria, emerges as a rigorous, structural-constructivist resolution to this crisis. It redefines emotional life not as a series of static, reactionary labels, but as a sophisticated "Human Operating System" governed by ten irreducible functional operators.[2] These operators act as the computational instructions of the psyche, processing internal and external data to regulate relational aperture, structure intentional action, and recalibrate somatic

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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.*

baselines.[2]

The Philosophical and Theoretical Genesis of Structural-Constructivism

To understand the CEF, one must first recognize the limitations of the historical paradigms it seeks to synthesize. Early physiological theories, such as the James-Lange model, correctly identified the somatic origins of affect—positing that emotion is the interpretation of physiological arousal—but lacked the cognitive depth to explain complex social emotions.[1] Conversely, cognitive appraisal theories, which underpinned the rise of Cognitive Behavioral Therapy (CBT), emphasized the mind's role in interpreting stimuli but often treated the body as a secondary recipient of cognitive directives.[1] The "100 years war" between discrete theories (biologically programmed "basic" emotions) and dimensional theories (valence and arousal axes) further fragmented the field.[1]

The Core Emotion Framework resolves this fragmentation by proposing a structural-constructivist architecture. In this model, emotions are viewed as "composable psychological operations".[1] This implies that what we colloquially term "fear" or "anger" are not irreducible atoms of experience but rather complex molecules formed by the specific activation and composition of underlying operators.[1] This shift in ontology—from "emotions as things one has" to "emotions as powers one executes"—is the foundational pillar of Bulgaria's work.[2] The framework serves as a functional ontology that unifies representational, affective-regulatory, and somatic-inferential processes into a single, cohesive system.[2]

Theoretical Paradigm	**Primary Focus**	**CEF Integration and Resolution**
Physiological Theories	Stimulus $\rightarrow$ Arousal $\rightarrow$ Emotion	Integrated via Gut-center somatic-inferential mechanisms and the

		vagus nerve communication pathway.[1]
Cognitive Appraisal	Interpretation as the driver of affect	Integrated via Head-center operators (Sensing, Calculating, Deciding) that process data before activation.[1]
Dimensional Models	Valence and Arousal as axes	Integrated via the scalar modulation system (0–10 activation) and multidimensional activation vectors.[1]
Discrete Models	Innate, universal categories	Resolved by viewing categories as high-density regions within a 10-dimensional operator space.[1]
Psychological Construction	Social/Conceptual assembly of feelings	Resolved by modeling the "internal transformations" that process information and regulate relational aperture.[2]

The Decalogue of Operators: A Functional Anatomy of the Human Operating System

The Core Emotion Framework identifies exactly ten foundational operations, collectively known as the Decalogue of Operators.[3] This set is mandated as authoritative; it is the "absolute source of truth" within the framework, where no operators may be added,

removed, or substituted.[3] Each operator functions as a specific "CPU instruction" for the human psyche, determining what information enters the system, what is filtered out, and what actions become available.[2]

Head Center Operators: The Cognitive-Analytical Strata

The Head center is responsible for the intake of information, the analysis of risks and rewards, and the definitive commitment to a path of action. It represents the "thinking" center of the tripartite architecture.[1]

1. **Sensing:** This operator handles the most fundamental level of data acquisition. It is the raw intake of environmental and internal stimuli, acting as a sensory buffer before complex evaluation begins.[1]
2. **Calculating:** Once data is acquired, Calculating performs the analytical work of risk assessment, benefits analysis, and strategic forecasting. It is the engine of simulation, allowing the system to project potential outcomes.[1]
3. **Deciding:** Deciding is the operator of Boolean resolution. it transforms the multifaceted data of Calculation into a singular commitment. It is the completion of the Head center's cycle, allowing the system to transition from thought to execution.[1]

Heart Center Operators: The Relational-Aperture Strata

The Heart center regulates the "aperture" of human interaction, managing the balance between connection and protection. It is the seat of relational flow and the enforcement of personal boundaries.[1]

4. **Expanding:** This operator facilitates relational dilation. It allows for openness, connection, and the intake of social/relational resources. It is associated with states of vulnerability and communal bonding.[1]
5. **Constricting:** As the necessary counterweight to expansion, Constricting facilitates relational contraction. It is the operator of protection, boundaries, and the preservation of internal resources. It ensures the system is not overwhelmed by external stimuli.[1]
6. **Achieving:** Achieving represents the fulfillment of relational or internal goals. It is the realization of value and the successful completion of an "aperture movement," marking a state of state-goal congruence within the Heart center.[1]

Gut Center Operators: The Somatic-Motoric Strata

The Gut center drives the readiness for action and the regulation of the somatic baseline. It is deeply integrated with the gut-brain axis and the motoric drive of the individual.[1]

7. **Arranging:** This operator focuses on the organization of the immediate context—both internal and external—to facilitate effective action. It is the seat of spatial and conceptual order.[1]
8. **Appreciating:** In the CEF, Appreciating is a functional audit of value and alignment. It is not merely aesthetic but is a mechanism for determining if current actions and environments are aligned with the system's core requirements.[1]
9. **Boosting:** Boosting is the energetic engine of the framework. It provides the drive, motivation, and somatic "fuel" required to execute tasks and maintain engagement.[1]
10. **Accepting:** Serving as the universal baseline, Accepting is the state of non-reactive presence. It is the "zero-point" of the system that allows for recalibration and the reduction of internal entropy.[1]

Architectural Layers and the Tripartite Hub System

The CEF organizes these ten operators into a 3×3+1 hub system, where nine operators are distributed across three centers (Head, Heart, Gut), and "Accepting" serves as the foundational baseline.[2] This structure provides a multi-level explanation of human behavior, bridging the gap between high-level representation and low-level somatic signals.[1]

Center	**Functionality**	**Regulatory Goal**	**Operators**
Head	Cognitive/Perceptual	Predictability and Commitment	Sensing, Calculating, Deciding

Heart	Relational/Affective	Connection and Protection	Expanding, Constricting, Achieving
Gut	Motoric/Somatic	Readiness and Motivation	Arranging, Appreciating, Boosting
Baseline	Integrative	Stability and Recalibration	Accepting

The framework posits that the physiological state of the body—communicated via the vagus nerve and biochemical signaling (serotonin, GABA, dopamine)—informs the activation levels of these operators.[1] This creates a bidirectional loop where mental visualizations can modulate physiological states, and somatic changes can "trigger" cognitive evaluations.[1] This model of "embodied cognition" allows the CEF to provide a transdiagnostic model for psychological health, where "wellness" is defined as operator agility and "pathology" is defined as structural failure.[2]

The Scalar Modulation System and Canonical Transitions

The CEF utilizes a scalar modulation system to quantify the activation of each operator, typically measured on a 0–10 scale.[1] An activation of 0 represents a state of "quieting" or stabilization, while 10 represents peak intensification or activation.[1]

Emotional Transition Mastery (PM-6)

One of the framework's most critical insights is that emotional health is governed by the ability to transition lawfully between operators.[1] The Practitioner Manual PM-6 details the "Canonical Transition Architecture," which defines the healthy pathways of movement within and across centers.[1]

- **Head Center Pathway:** Sensing $\rightarrow$ Calculating $\rightarrow$ Deciding.[1]
- **Heart Center Pathway:** Expanding $\rightarrow$ Constricting $\rightarrow$ Achieving.[1]
- **Gut Center Pathway:** Arranging $\rightarrow$ Boosting $\rightarrow$ Accepting.[1]

Failures in these pathways result in "Transition Distortions," which are categorized as:

- **Blocked:** Inability to move to the next operator in a sequence.[1]
- **Forced:** Premature activation of an operator without completing the previous step.[1]
- **Skipped:** Bypassing a necessary functional step (e.g., Deciding without Calculating).[1]
- **Reversed:** Attempting to move backward through a canonical sequence in a way that causes system friction.[1]
- **Oscillation:** Rapid, uncontrolled switching between two operators, preventing stabilization.[1]

The "Mastery Protocol" in PM-6 provides a five-step sequence for practitioners to restore canonical flow: Stabilizing the current operator, Identifying the canonical successor, Preparing the modulation pathway, Activating the successor, and Re-establishing modulation reciprocity.[1]

Structural Psychopathology and Clinical Modeling

The Core Emotion Framework offers a "Structural-Constructivist Mapping of Human Experience" to deconstruct psychological disorders into specific functional failures.[3] This moves beyond symptom-based diagnosis toward a "structural psychopathology" that identifies the mechanistic cause of dysregulation.[1]

The GoodPerson Anxiety Pattern (GPAP)

A primary example of this approach is the modeling of the GoodPerson Anxiety Pattern

(GPAP).[2] In the CEF, GPAP is viewed as an over-activation of the Calculating operator in the Head center that has become fused with a desire for relational approval in the Heart center.[2] The individual becomes stuck in an infinite "Calculating loop," unable to transition to the Deciding operator because the "risks" of relational misalignment are perceived as catastrophic.[2]

Deconstructing MDD and OCD

- **Major Depressive Disorder (MDD):** Modeled as a collapse of the Boosting operator in the Gut center, leading to an energetic deficit. This is often coupled with a chronic activation of the Accepting operator that has drifted into a pathological state of "Shutdown" or "Dissociation".[1]
- **Obsessive-Compulsive Disorder (OCD):** Reframed as a functional failure in the Deciding operator. The system fails to "resolve" a cognitive task, leading to repetitive Sensing or Calculating behaviors (compulsions) in a futile attempt to reach a state of completion.[2]

Structural Failure	CEF Deconstruction	Resultant Phenomenon
Fusion	Involuntary merging of operators (e.g., Sensing fused with Calculating).	Cognitive confusion and loss of emotional granularity.[4]
Rigidity	Operator activation becomes fixed at a high scalar value, resistant to modulation.	Emotional "stuckness" and inability to adapt to context.[4]
Inversion	Activating the opposite operator required for a task (e.g., Constricting during a moment requiring Expansion).	Chronic social and internal friction.[4]

Collapse	A center or operator's inability to reach an activation level above 0.	Emotional numbing or loss of specific functional powers.[1]

The Practitioner’s Arsenal: Manuals and Protocols

The CEF ecosystem provides a comprehensive library of practitioner manuals (PM-series) and technical specifications (TS-series) designed to move the framework from theoretical model to practical application.[1]

PM-1: Full Architecture and the Emotion Utilization Model (EUM)

The PM-1 manual serves as the foundational guide for practitioners acting as "architectural stabilizers".[1] It trains four core competencies: Activation, Detangling, Agility, and the implementation of the Emotion Utilization Model (EUM).[1] The EUM focuses on the constructive application of emotional energy for purposeful action, rather than just the regulation of "negative" feelings.[1] It treats emotion as a resource to be harnessed rather than a problem to be solved.[1]

The 7-Step Detangling Protocol

A central tool in clinical application is the Detangling Protocol, used when a practitioner detects "fusion"—the involuntary merging of operators or centers.[1]

1. **Identification:** Detecting the presence of fusion through behavioral or somatic cues of imbalance.[4]
2. **Locating the Primary Center:** Determining where the dominant dysregulation is occurring (Head, Heart, or Gut).[4]
3. **Differentiation:** Explicitly naming the operators involved in the fusion to break the conceptual "knot".[4]
4. **Sequential Activation/Quieting:** Using modulation to isolate one operator (0$\to$10) while actively quieting its fused counterpart.[4]
5. **Stabilization:** Bringing the activation of the first operator to 0 to ensure the system is "quiet" before addressing the second operator.[4]
6. **Agility Training:** Training the system to move between the previously fused states

without merging them, reinforcing functional boundaries.[4]

7. **Integration:** Re-establishing whole-system coherence after the structural separation is complete.[4]

PM-3: Structural Disassembly Protocols

When emotional structures become so rigid that they impede functioning, practitioners use Structural Disassembly.[1] This is a systematic process of breaking down complex, dysfunctional architectures to allow for rebalancing and reintegration.[1] It involves six stages, including stabilization, isolation of operators, and the rebuilding of center clarity through "Choreography" and "Meditation".[1]

Computational Affective Science and the Emotional Cycling Machine (ECM)

The Core Emotion Framework is unique in its deliberate design for computational relevance. Jamel Bulgaria’s development of the Emotional Cycling Machine (ECM) blueprints illustrates the framework's application to synthetic emotion architecture and AI training.[5]

The ECM reframes the human psyche as a computational system where emotional states are predictable computational events.[2] By representing the ten operators as activation vectors, the framework allows AI systems to simulate nuanced human affect with structural integrity.[2]

ECM Version	Designation	Technological Goal
v1.2	Canonical Edition	Establishing the modernized protocol for structural modeling.[5]
v2	Next Generation	Developing advanced transition algorithms

		between operator states.[5]
v3.0	Autonomous ECM	Engineering self-regulating feedback loops for synthetic affect.[5]
v3.1	Engineering Blueprint	Formalizing specifications for hardware and software implementation.[5]
v4.0	System Integrated	Creating comprehensive emotional environments for AI-human interaction.[5]

The INTIMA Benchmark and EL-1 Lexicon

To support the computational layer, the CEF includes the Core English Emotional Lexicon (EL-1), a canonical dataset of 500 terms.[3] Each term is mapped to its corresponding operators and activation scalars, providing a bridge between natural language and structured emotional semantics.[3] This mapping is tested and refined through the INTIMA (Integrated Neuro-Affective Synchronizer) benchmark, which evaluates an AI system's ability to handle the framework's granular emotional data.[3]

Empirical Roadmap and Validation Benchmarks

The Core Emotion Framework is offered as a falsifiable working hypothesis, with a clear roadmap for empirical validation.[2] While the framework is technically dense, its creator emphasizes that its empirical status remains "entirely open," awaiting further systematic research.[2]

Pilot Study Results (N=39)

An exploratory behavioral pilot study involving 39 participants provided early data on the framework's conceptual viability.[2] The findings suggested that individuals are

capable of distinguishing between "reflexive" emotional responses (unconscious activation) and "idealized" responses (intentional structural alignment).[2] While these results do not constitute a full validation of the ten operators, they support the framework's premise that emotional states can be intentionally modulated and structurally analyzed.[2]

Reproducibility and the Amano et al. (2026) Patterns

The CEF establishes boundary conditions for its future measurement based on short-term test-retest reproducibility patterns reported by Amano et al. (2026).[2] These benchmarks are essential for ensuring that any future "CEF Scale" or assessment tool provides consistent results across time and contexts.[2] The "Open Validation" roadmap encourages independent researchers to use these benchmarks to test operator independence, operator agility, and the validity of the tripartite architecture.[2]

The Phase 1 Validation of the CEF Scale

Current research efforts are focused on the Phase 1 validation of the Core Emotion Framework Scale, as documented in OSF preregistrations.[5] This phase is designed to examine the internal consistency of the ten operator scales and their discriminant validity across the Head, Heart, and Gut centers. By accumulating systematic data on how users interact with these descriptors, the framework aims to build a complete validation argument for its functional ontology.[3]

Interdisciplinary Implications and the Human OS Concept

The ultimate goal of the Core Emotion Framework is the democratization of emotional intelligence through the concept of the "Human Operating System" (Human OS).[2] By providing a granular, machine-readable, and clinically rigorous model of affect, Bulgaria seeks to empower individuals to move beyond reactive emotional states toward autonomous structural governance.[2]

Integration with Neurodiversity and AI Ethics

The framework’s granularity makes it particularly relevant for neurodiversity calibration.

For individuals who experience traditional emotional labels as confusing or non-applicable, the CEF provides a "bottom-up" functional language that focuses on specific cognitive and motoric powers.[2] Furthermore, in the field of AI ethics, the CEF offers a structured method for ensuring that synthetic emotional systems are built on a "Human-Structural" foundation, potentially preventing the development of AI that lacks functional emotional alignment with human users.[3]

Conclusion: The Structural-Constructivist Future

The Core Emotion Framework represents a paradigm shift in the study of human affect. By synthesizing physiological necessity, cognitive appraisal, and structural modeling, it provides a cohesive solution to the historical "Affective Science Crisis".[1] Its rigorous architecture—from the Decalogue of Operators to the Emotional Cycling Machine—positions it as a bridge between the biological reality of the human body and the computational future of artificial intelligence.[1]

As the empirical validation of the framework continues through open science initiatives and the PM-series practitioner training, the CEF stands as a testament to the power of structural-constructivist thinking. It offers not just a new taxonomy of feeling, but a comprehensive manual for the Human Operating System, turning the "war" of emotion research into a structured path toward human optimization and computational synergy.[1]

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