Comprehensive Analysis of the Core Emotion Framework: A Structural-Constructivist Resolution to the Affective Science Crisis

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Abstract

The study of human emotion has historically been bifurcated by a profound theoretical schism, separating those who view emotions as biologically innate, discrete categories and those who see them as psychologically constructed, dimensional experiences. This division, often referred to as the "Affective Science Crisis," has hindered the development of a unified model capable of bridging basic research, clinical practice, and computational modeling. The Core Emotion Framework (CEF), conceptualized and formalized by Jamel Bulgaria, emerges as a sophisticated structural-constructivist

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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.*

resolution to this historical conflict. By proposing a modular architecture of the human psyche governed by ten irreducible functional operators—termed the Decalogue of Operators—the CEF reframes emotional life not as a series of subjective mysteries, but as a computationally tractable "Human Operating System" (Human OS).

Theoretical Foundations and the Structural-Constructivist Paradigm

The Core Emotion Framework operates on the premise that the historical divide between discrete emotion models, such as those of Paul Ekman and Carroll Izard, and dimensional models, such as those of James Russell and Lisa Feldman Barrett, can be resolved through a "structural-constructivist" synthesis.[1] Discrete models posit that emotions like fear, anger, and joy are universal, biologically hardwired responses evolved to address specific adaptive challenges.[1] Conversely, dimensional models argue that these labels are social constructions layered over a "core affect" defined by the axes of hedonic valence and arousal.[1]

The CEF bridges this gap by asserting that while complex emotional experiences are constructed, they are built from a rigorous, repeatable, and universal structural foundation of functional operators.[1] These operators are viewed as internal transformations or "movements" that process information, regulate relational aperture, structure action, and recalibrate the system's baseline states.[1] In this context, emotions are not "states" that one enters, but "powers" or "operators" that an individual executes to navigate reality.[1]

The foundational architecture of the CEF is organized into a 3x3+1 hub system, partitioning the human experience into three distinct functional centers: the Head (Cognitive Focus), the Heart (Relational Flow), and the Gut (Action and Embodiment).[1] This tripartite division mirrors the evolutionary and biological organization of the nervous system, providing a framework for understanding how representational, affective-regulatory, and somatic-inferential processes interact to produce human behavior.[1]

Core Comparison of Affective Models

Feature	Discrete Emotion Models	Dimensional Models	Core Emotion Framework (CEF)
Primary Unit	Basic Emotions (Fear, Joy, etc.)	Valence and Arousal	Functional Operators (Decalogue)
Origin	Biological Hardwiring	Psychological Construction	Structural-Constructivist Architecture
Structure	Categorical / Taxonomic	Continuous / Latent Space	3x3+1 Hub Architecture
Function	Adaptive Survival Responses	Subjective Experience Mapping	Human Operating System (Human OS)
Computational Basis	Limited / Nominal	Vector-based (VAD)	Scalar-Modulated 10D Vectors

The CEF's move toward a functional ontology allows it to deconstruct monolithic psychological labels into specific operational failures or successes.[1] For instance, "anxiety" is reframed from a broad symptom into a technical failure of operator cycles—specifically, an over-activation of the "Calculating" operator in the Head center that has failed to transition into the "Deciding" operator.[1] This mechanistic approach provides a level of granularity previously unavailable in traditional affective science, enabling more

precise interventions in both clinical and computational contexts.[1]

The Decalogue of Operators: Functional Mapping of the Human OS

At the heart of the CEF lies the Decalogue of Operators, a set of ten irreducible functional processes that serve as the building blocks for character development and transient emotional experience.[1] These operators are systematically distributed across the three functional centers, with each center containing three operators categorized by their directional influence: Outgoing (+), Reflecting (-), and Balancing (0).[6] The tenth operator, Accepting, serves as the overarching baseline and manifestor of the entire system.[5]

The Head Center: The Cognitive Processor

The Head center is responsible for navigation, logic, and the representational mapping of the environment.[5] It functions as the system's processor, taking in raw data and transforming it into actionable information through three specific operations [5]:

1. **Sensing (1):** Identified as the Right Outgoing Brain function, Sensing is the instinctive ability to read the environment and interpret sensory cues to enhance situational awareness.[6] It represents the intake layer of the institutional brain, and its distortion leads to a collapse of all downstream processing.[7]
2. **Calculating (2):** Identified as the Left Reflecting Brain function, Calculating is the analytical process that evaluates materials, risks, and benefits.[6] It serves as the algorithmic cortex, transforming sensed data into meaning, predictions, and strategic foresight.[5]
3. **Deciding (3):** Identified as the Balancing Brain function, Deciding is the mechanism used to make choices by weighing rationality against intuition.[6] It is the actuator of the Head center, representing the commitment to a path and the final output of the cognitive logic loop.[5]

The interaction between these three operators determines the system's cognitive agility. A healthy Head center transitions smoothly from Sensing to Calculating and finally to Deciding, whereas dysfunction often manifests as "cognitive looping," where

an over-active Calculating operator fails to yield to the Deciding operator, resulting in chronic indecision and anxiety.[1]

The Heart Center: The Emotional Engine

The Heart center provides the magnitude and direction of the individual's drive, governing relational aperture and the regulation of internal boundaries.[5] It acts as the engine of the Human OS, fueling the logic of the Head with the energy of connection and focus [5]:

4. **Expanding (4):** As the Outgoing Heart operator, Expanding is the drive to create openness, connection, and empathy.[6] it opens pathways for interpersonal bonds and innovative, inclusive thinking.[6]
5. **Constricting (5):** As the Reflecting Heart operator, Constricting is the capacity to focus attention on minute details and establish precise boundaries.[6] it protects the system from emotional overwhelm and ensures structural clarity.[6]
6. **Achieving (6):** As the Balancing Heart operator, Achieving is the ability to manage multiple responsibilities effectively while striving for excellence.[6] It serves as the action vector of the Heart center, pushing the system toward specific external results or finish lines.[5]

In institutional contexts, such as multilateral governance, Expanding represents the inclusive nature of diplomatic mandates, while Constricting represents the necessary legal and budgetary boundaries that ensure institutional focus.[7] Achieving is the physical movement of the system toward sustainable development goals and humanitarian targets.[7]

The Gut Center: The Somatic Foundation

The Gut center serves as the visceral anchor and motoric engine, handling the weight, order, and kinetic execution of the individual's existence.[5] It is the foundation upon which the actions of the Head and Heart are realized in the physical world [5]:

7. **Arranging (7):** As the Outgoing Gut operator, Arranging is the drive and assertiveness to take control of situations and organize reality.[6] It overcomes institutional inertia and bureaucratic gravity by enabling proactive leadership and infrastructure compilation.[5]
8. **Appreciating (8):** As the Reflecting Gut operator, Appreciating is the practice of

finding value and resonance in the current state of things.[5] It reinforces self-worth through "internal applause" and celebratory reflection on achievements.[6]

9. **Boosting (9):** As the Balancing Gut operator, Boosting is a dynamic force that fuels energy and maintains momentum.[6] It functions as a "surge engine," shifting the system from steady-state monitoring to high-intensity response during crises.[5]

The interaction of these operators provides the individual with somatic grounding. For instance, Boosting turns institutional inertia into institutional velocity, while Arranging ensures that this velocity is directed toward productive organizational structures.[7]

The Integrating Baseline: Accepting

10. **Accepting (10):** The tenth operator, Accepting, is defined as the capacity to let go of resistance and yield to the natural flow of life to manifest change.[6] It is the most critical component of the framework, serving as the prerequisite for the healthy functioning of all other operators.[5] If Sensing data or a Constricting state is not Accepted, the "machine" experiences friction, leading to psychological rigidity and distress.[5]

Functional Mapping of the CEF Decalogue

Operator	Center	Direction	Core Role	Computational Analog
Sensing	Head	Outgoing (+)	Environmental Intake	Input Buffer / Data Feed
Calculating	Head	Reflecting (-)	Risk/Benefit Analysis	Processor / Algorithm

Deciding	Head	Balancing (0)	Path Selection	Commit / Execute
Expanding	Heart	Outgoing (+)	Openness / Empathy	Bus / Connection Port
Constricting	Heart	Reflecting (-)	Detail / Boundaries	Firewall / Sandbox
Achieving	Heart	Balancing (0)	Goal Execution	Vector Processor
Arranging	Gut	Outgoing (+)	Order / Assertiveness	Compiler / Orchestrator
Appreciating	Gut	Reflecting (-)	Value Discovery	Validation / Hashing
Boosting	Gut	Balancing (0)	Energy Surge	Clock Speed / Overclock
Accepting	Baseline	Integrating	System Lubrication	BIOS / OS Kernel

This mapping illustrates how the CEF reframes the human experience as a set of composable psychological operations.[2] By exercising each operator individually, individuals can learn to utilize these "internal powers" when necessary and avoid them when they are inappropriate, fostering a state of autonomous structural governance.[1]

Interfacing with the Circumplex Model: Empirical Support and Theoretical Alignment

The CEF's claim to a universal structural foundation requires interfacing with existing pancultural evidence in affective science. A pivotal data point in this regard is James Russell's 1989 cross-cultural study of the circumplex model of affect.[3] Russell's research across Estonian, Greek, Polish, and Chinese populations demonstrated that people conceptualize feelings in a circular order within a Cartesian space formed by two major bipolar dimensions: pleasure-displeasure (valence) and arousal-sleepiness (arousal).[3]

While Russell's paper does not discuss the CEF directly—as it predates the framework's formalization—its findings provide critical data that actually does support the CEF's structural-constructivist architecture.[3] The circumplex model establishes that the "surface phenomenology" of feelings is organized along universal axes of valence and arousal, which the CEF reframes as the emergent properties of specific operator interactions.[1]

The Mapping of Operators to Affective Space

The CEF provides a mechanistic explanation for why feelings land in specific regions of the circumplex space. Rather than treating pleasure and arousal as primitive axes, the CEF views them as the result of scalar modulations in the 3x3+1 hub system.[1]

- **Valence (Pleasure-Displeasure):** High pleasure (positive valence) is associated with the successful activation of the Appreciating, Expanding, and Accepting operators.[1] Displeasure (negative valence) often corresponds to the over-activation of the Constricting operator or the frustration of the Achieving and Arranging operators.[1]
- **Arousal (Excitement-Sleepiness):** High arousal is the functional output of the Boosting and Expanding operators, which increase system velocity and relational aperture.[6] Low arousal (sleepiness/calm) usually corresponds to the activation of the Accepting and Constricting operators, which recalibrate the system to a lower

kinetic baseline.[1]

Circumplex Quadrant	Primary Affective Qualities	Associated CEF Operator Cluster
High Arousal, Positive Valence	Excited, Delighted, Happy	Boosting (+) + Expanding (+) + Appreciating (-)
High Arousal, Negative Valence	Alarmed, Tense, Angry	Boosting (+) + Constricting (-) + Arranging (+)
Low Arousal, Negative Valence	Depressed, Sad, Bored	Constricting (-) + (Silenced) Boosting (0)
Low Arousal, Positive Valence	Serene, Content, Calm	Accepting (0) + Appreciating (-) + Deciding (0)

Russell's evidence that these dimensions occur across non-Indo-European languages (Estonian, Chinese) and isolated cultures (the Greek island of Alonnisos) reinforces the CEF's assertion that the underlying architecture of human emotion is universal.[1] The CEF elevates the circumplex from a descriptive tool to a functional blueprint by showing that individual words (e.g., "afraid" or "serene") do not just reflect one dimension but simultaneously represent the interaction of multiple operators operating independently to position the feeling in affective space.[1]

Reconciling Dimensionality and Modularity

A significant critique in affective science is that dimensional models can be too "coarse"

to explain nuanced internal experiences.[10] The CEF addresses this by using 10-dimensional (10D) activation vectors to map affective states.[1] While the surface feelings may be reducible to valence and arousal in a similarity sort, the internal "emotional mechanics" require the higher dimensionality of the Decalogue to support clinical deconstruction and synthetic affect in AI.[1]

For instance, two states might both be "high arousal and negative valence" (e.g., anger vs. fear), but the CEF distinguishes them based on operator profiles. Anger involves high Arranging (assertiveness) and Boosting (surge), whereas fear involves high Constricting (boundary protection) and Sensing (threat detection) with suppressed Agency (Arranging).[1] This mapping provides the "causal explainability" sought by modern affective computing, bridging the gap between raw sensory observations and concrete affects.[10]

Agency vs. Yielding: The Polarity of Psychological Health

Central to the CEF's clinical application is the mastering of the dynamic balance between the foundational polarities of Agency (self-assertion) and Yielding (connection).[4] This polarity serves as the primary axis for achieving Emotional Flexibility—the ability to adaptively transition between different operator states depending on environmental demands.[4]

The Mechanics of Agency

Agency within the CEF is primarily driven by the Outgoing (+) operators of the Gut and Heart centers: Arranging and Expanding+Achieving.[6] It involves the experience of controlling one's actions and, through them, events in the external world.[12] Decision-level agency is recognized as an upstream dimension, defined as the subjective experience of originating and committing to one's own decisions even in the absence of overt action.[12] When Agency is healthy, the Deciding operator in the Head center commits to a path that is then executed through Arranging and Achieving, supported by the energy of Boosting.[1]

The Mechanics of Yielding

Yielding involves the capacity for connection, openness, and the release of resistance,

primarily governed by the Reflecting (-) and Integrating operators: Appreciating, Expanding, and Accepting.[4] It is the state that allows for the "recalibrating of the baseline," transforming crises into long-term structures.[1] Yielding is not a sign of weakness but a functional requirement for system integration; without the capacity to yield (Accepting), the individual remains trapped in a state of "Emotional Rigidity," characterized by pathological fusion with active operators.[4]

Polarity and Psychological Distress

Psychological distress is often rooted in the collapse of this polarity.[4] The CEF identifies two primary modes of collapse:

1. **Emotional Rigidity (Fusion):** This involves the pathological fusion of operators, where an individual cannot exit a specific state.[4] For example, "compliance fusion" involves an over-activation of approval-seeking primers, leading to the suppression of agency.[8]
2. **Operator Silencing:** This occurs when an operator is modulated to zero intensity, preventing the system from forming a complete mandate.[7] In a state of depression, the Boosting and Appreciating operators may be silenced, leaving the individual with no surge energy or sense of self-worth.[1]

Dynamic State	**Agency Component**	**Yielding Component**	**Psychological Presentation**
Optimal Flexibility	Active Deciding & Arranging	Active Accepting & Expanding	High resilience and adaptive mastery.
Anxious Fusion	Over-active Calculating	Silenced Deciding	Chronic rumination and indecision.

Avoidant Suppression	Under-active Arranging	Over-active Constricting	Passivity, withdrawal, and social fear.
Manic Activation	Hyper-active Boosting	Silenced Accepting	Loss of behavioral boundaries and focus.

By outlining these polarities as testable predictions, the CEF establishes an empirically tractable dimension of human volition, providing a framework for understanding and safeguarding autonomy.[12]

Transdiagnostic Deconstruction of Psychopathology

The Core Emotion Framework offers a paradigm shift in psychiatry and psychotherapy by deconstructing traditional diagnostic categories into structural operator patterns.[1] This allows practitioners to move away from treating symptoms and instead focus on "detangling" the responsible core emotions.[1]

The GoodPerson Anxiety Pattern (GPAP)

The GPAP is a cornerstone of CEF's clinical research, particularly in relation to Avoidant Personality Disorder (AvPD).[1] Rather than viewing AvPD as a simple "fear of judgment," the GPAP reframes it as a structural imbalance across three clusters [8]:

- **Cluster 1: Compliance Fusion:** An over-activation of approval-seeking and perfectionistic primers that produce "conscientious anxiety"—the belief that one must be "good" to be safe.[8]
- **Cluster 2: Agency Suppression:** An under-activation of assertiveness, boundary-setting (Constricting), and self-direction (Arranging/Deciding), leading to withdrawal and the inability to express needs.[8]
- **Cluster 3: Protest Signals:** Internal alarms such as rumination and somatic tension that arise when the system's agency is chronically suppressed.[8]

Validation through Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) confirms that GPAP is not a narrative interpretation but a distinct latent construct.[8] Treating GPAP requires restoring the suppressed agency rather than merely reducing the fear of judgment.[8]

Operator Profiles in Mood and Personality Disorders

The CEF provides specific operator mappings for a range of disorders, facilitating a more mechanistic approach to treatment:

- **Obsessive-Compulsive Disorder (OCD):** Defined as a technical over-activation of the Calculating operator in the Head center that has failed to transition into the Deciding operator, creating a "cognitive loop".[1]
- **Major Depressive Disorder (MDD):** Analyzed as a systemic silencing of the Boosting operator and the failure of the Appreciating operator, leading to a state where the system cannot generate energy or find value in current achievements.[1]
- **Borderline Personality Disorder (BPD):** Characterized by "operator agility failure," where the individual oscillates rapidly between Expanding (relational longing) and Constricting (fear of engulfment) without the stabilizing influence of the Accepting or Deciding operators.[1]

This structural disassembly allows for the 7-Step Detangling Protocol, where a practitioner helps the individual identify which operator is over-active or failing and implements specific exercises (ECM) to recalibrate the system.[1]

Computational Affect and the Future of Synthetic Emotion

The modularity of the Core Emotion Framework makes it uniquely suited for the field of affective computing and the development of emotionally intelligent AI.[1] The CEF provides a granular "Emotional Technology Architecture" that allows for the engineering of synthetic affect through scalar modulation and vector-based logic.[1]

EI for AI: Teaching Emotion to Artificial Intelligence

Traditional AI emotion models often rely on categorical labels (e.g., "detecting anger"),

which can hide the subtler dynamics of internal states.[10] The CEF replaces these labels with a 10D vector that represents the activation levels of the Decalogue.[1]

$$V_{affect} = [s, c, d, e, k, a, r, p, b, t]$$

Where:

- s = Sensing
- c = Calculating
- d = Deciding
- e = Expanding
- k = Constricting
- a = Achieving
- r = Arranging
- p = Appreciating
- b = Boosting
- t = Accepting

By training AI on these functional operators, researchers can create agents that "think and act more like us" by associating situational patterns with concrete emotional dynamics.[11] Human observers in validation studies have shown high agreement and distinguishability when rating the internal "emotional states" of AI agents trained on CEF principles.[11]

From Sentiment to Structural Logic

The CEF reframes affect in Large Language Models (LLMs) and robotic systems as "internal transformations" that regulate how the machine processes information.[1] For instance, a "Constricting" operator in an AI could serve as a focal mechanism that limits attention to high-priority variables, while "Arranging" acts as the surge in task-oriented processing.[5] This approach moves beyond simple sentiment analysis toward a comprehensive "Human-Institutional OS" that rebuilds organizational systems for the 21st century.[5]

Empirical Validation and Open Science Initiatives

The Core Emotion Framework is not offered as an established taxonomy, but as a falsifiable working hypothesis committed to a fully open validation process.[1] Jamel Bulgaria's collaboration with the Open Science Framework (OSF) and Hugging Face ensures that all theoretical models, psychometric measures, and validation protocols are transparent and reproducible.[4]

Phase 1: Open Validation Program

Phase 1 of the CEF validation, registered on May 3, 2026, aims to psychometrically confirm the novel scale using a split-sample approach ($N \geq 800$).[4] The study focuses on three primary hypotheses:

- **H1:** Confirmation of a 10-factor oblique structure, modeling the high intercorrelations among the core operators.[4]
- **H2:** Confirmation that these factors load onto the three tripartite centers (Head, Heart, Gut).[4]
- **H3:** Confirmation that factor patterns are consistent with the Agency/Yielding polarity.[4]

Pilot Study 3 and Preliminary Constraints

Exploratory behavioral data from Pilot Study 3 ($N = 39$) suggests that individuals can distinguish between their reflexive (automatic) and idealized (flexible) responses, indicating a baseline capacity for operator recognition.[1] Furthermore, the framework incorporates short-term test-retest reproducibility patterns reported by Amano et al. (2026) as boundary conditions for future measurement.[1] These benchmarks are essential for transitioning the framework from a theoretical synthesis to an empirically grounded practice.[4]

The CEF Main Archive on Hugging Face

The authoritative repository for the CEF ecosystem is the CEF Main Archive, which is organized into seven canonical layers, ensuring that all computational, technical, and practitioner materials are available for research and peer review.[4]

Layer	Content	Purpose
1. Canonical Identity	Foundational documents (Exposition, Architecture)	Defining the system's identity.
2. Canonical Bundles	Modular, versioned zips of the architecture	Reproducible distribution.
3. Technical Specs	Formal computational definitions (TS-Series)	Machine-readable rules.
4. Practitioner Layer	Operational manuals (7-Step Protocol, PM-Series)	Applied clinical practice.
5. Lexicon Layer	Machine/Human emotional lexicons (EL-1 v1.0)	Semantic integrity.
6. Onboarding Layer	"Optimize Your Capabilities" onboarding docs	Public access and training.
7. Metadata	Git attributes and repo details	System maintenance.

This open-science ecosystem allows for the continuous audit and integration of reproducibility benchmarks, such as the logging of critical events to detect tampering in the research pipeline.[4]

Practical Methods and Applied Emotional Mechanics

The practical application of the CEF is facilitated through various protocols and tools designed to help individuals and organizations "master the machine".[5] These methods move away from vague advice like "follow your heart" and toward precise, actionable strategies.[5]

The 7-Step Detangling Protocol

The Detangling Protocol is the primary practitioner tool for resolving emotional rigidity.[1] It involves a top-down sequence for healthy psychological flow [4]:

1. **Sensing:** Acknowledging the raw data of the trigger without judgment.[5]
2. **Accepting:** Letting go of the resistance to the Sensing data.[5]
3. **Calculating:** Analyzing the variables and constraints of the situation.[5]
4. **Deciding:** Committing to a specific path of action.[5]
5. **Expanding/Constricting:** Setting the relational aperture and emotional boundaries.[6]
6. **Achieving/Arranging:** Executing the choice with assertive order.[6]
7. **Appreciating:** Reflecting on the process and reinforcing the system's worth.[6]

Emotional Cycling Machines (ECM)

Jamel Bulgaria has developed blueprints and hardware specifications for Emotional Cycling Machines, designed to serve as "exercise equipment" for the emotional system.[13] These machines, ranging from "ECM Lite" for mass adoption to the "ECM X" for experimental use, provide structured environments for individuals to cycle through different operators, thereby increasing their Emotional Flexibility and Agility.[1]

The ECM series includes the "Integrated Neuro-Affective Synchronizer" (INAS v1.0), which aims to align cognitive, somatic, and affective signals to prevent the scrambling of needs that often leads to interpersonal conflict.[13]

Conclusion: The Integrated Outlook for Human and Synthetic Affect

The Core Emotion Framework represents a major synthesis in the field of affective science, offering a structural-constructivist resolution to the debates that have defined the discipline for decades.[1] By reframing emotions as functional operators organized within a tripartite hub system, the CEF provides a universal blueprint for psychological health, character development, and artificial intelligence.[1]

The integration of James Russell's cross-cultural data validates the framework's claim to a universal affective architecture, showing that the Decalogue of Operators produces the very dimensions of pleasure and arousal found across diverse human populations.[1] Furthermore, the framework's focus on the Agency/Yielding polarity provides a clear transdiagnostic roadmap for treating complex psychopathologies like Avoidant Personality Disorder and the GoodPerson Anxiety Pattern.[4]

As the CEF moves through its open validation program on the OSF and Hugging Face, it stands as an exemplary model for the verifiable validation of structural theories in cognitive science.[4] Whether applied in the therapist's office through the Detangling Protocol or in the engineering lab through the design of synthetic affect, the Core Emotion Framework offers a rigorous and actionable system for optimizing human capabilities and ensuring the reliability of our internal and institutional operating systems.[2]

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