

The Architecture of Human and Synthetic Affect: A Comprehensive Analysis of the Core Emotion Framework

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Abstract

This paper introduces the Core Emotion Framework (CEF), a structural-constructivist architecture designed to bridge the gap between clinical psychology and affective computing. While traditional models of emotion are often categorized as either discrete/biological or dimensional/circumplex, the CEF proposes a functional-operator model consisting of ten irreducible "Core Emotions." This article provides a theoretical introduction to the CEF and examines its implications for human-AI interaction, with a specific focus on the risks of "emotional solipsism" in synthetic affect. By integrating clinical methodologies like "Detangling" with technical benchmarks such as the INTIMA architecture, the CEF offers a unified blueprint for maintaining emotional agency in both humans and machines.

1. Introduction: Reframing Affective Architecture

Historically, the scientific study of emotion has been dominated by two competing paradigms. Categorical models, most notably championed by Paul Ekman (1992), posit a set of basic, biologically hardwired emotions such as anger, fear, and joy. Conversely, dimensional models, such as James Russell's circumplex model (2003), interpret emotional states as coordinates within a continuous space of valence, arousal, and dominance.

The Core Emotion Framework (CEF) transcends this dichotomy by adopting a structural-constructivist approach. It posits that the human psyche is composed of ten irreducible functional operators, known as

Core Emotions, which serve as the granular building blocks of complex experiential states. As the framework enters its next major phase—marked by the release of Technical Specification 7 (TS-7) and the INTIMA architecture (Bulgaria, 2025c)—the focus shifts from individual self-regulation to the profound implications of synthetic affect. This paper argues that the future of emotional AI depends on preserving "emotional agency"—the human capacity to retain ownership over one's emotional life—through boundary-aware design and constructive friction (Babu et al., 2025a).

2. Theoretical Background: Situating CEF in Affective Science

To understand the CEF's contribution, it must be positioned in relation to established theories of constructed emotion, such as those of Lisa Feldman Barrett (2014), who argues that emotions are not "triggered" but are mental predictions constructed by the brain. The CEF builds upon this by providing a specific functional "lexicon" of the operators involved in this construction.

While Ekman's model focuses on universal facial expressions, the CEF focuses on functional processes. For instance, "Sensing" is not merely the experience of an emotion but the instinctive ability to perceive and process external stimuli.¹ This shift from *feeling* to *functioning* allows for a computationally relevant model that can be mapped to both human neurophysiology and artificial intelligence.

The Decalogue of Operators

The CEF organizes its ten operators (the Decalogue) into three functional centers of intelligence: the Cognitive Center (Head), the Affective Center (Heart), and the Conative Center (Gut).

Center	Operator	Orientation	Functional Domain
Head	Sensing	Outgoing	Instinctive environmental reading and perception.
	Calculating	Reflecting	Analytical risk/benefit evaluation and strategy.
	Deciding	Balancing	Synthesis of intuition and logic into clarity.
Heart	Expanding	Outgoing	Interpersonal empathy and open connection.
	Constricting	Reflecting	Focus on precision and boundary-setting.
	Achieving	Balancing	Management of multiple roles and

			responsibilities.
Gut	Arranging	Outgoing	Proactive organization and leadership.
	Appreciating	Reflecting	Internal reinforcement of self-worth and gratitude.
	Boosting	Balancing	Sustained motivation and long-term momentum.
Integrator	Accepting	Manifestation	Release of resistance and surrender to reality.

3. Methodology: From Clinical Observation to Computational Modeling

The CEF was developed through an iterative process of clinical observation and theoretical modeling, aiming to bridge evidence-based modalities like Cognitive Behavioral Therapy (CBT) and Dialectical Behavior Therapy (DBT).

Case Study: The GoodPerson Anxiety Pattern (GPAP)

The clinical utility of the CEF is demonstrated through the analysis of "Structural Psychopathologies," such as the GoodPerson Anxiety Pattern (GPAP). GPAP is defined as a pathological fusion of the "Calculating" operator (Head) and the "Constricting" operator (Heart).

A phenomenological analysis of artistic works, specifically the song "Windmills of Your Mind" as interpreted through Enneagram Type 1 (The Reformer), illustrates this pattern (Esther, n.d.). In this case study:

- **Cognitive Center:** Experiences a mental need to order "circular and chaotic" thoughts.
- **Affective Center:** Manifests a "hidden cost of integrity" and fear of not being good enough.
- **Conative Center:** Responds with somatic tension, described as a "spinning sensation".

The CEF methodology for resolving this pattern involves "Detangling"—separating these operators so that the individual can move from rigid rumination to flexible "Acceptance".

Mathematical Formalization of Scalar Mechanisms

To ensure computational interoperability, the CEF treats operators as scalar mechanisms. The relationship between cognitive sensing (S), the active state of the center (C), and directed attention (A) determines the intensity (I) of an operator (O):

$$I(O) = \mathcal{F}(S, C, A)$$

This formalization allows for "Predictive Structural Modeling," enabling systems to anticipate emotional shifts based on specific inputs or cycling protocols.

4. The Mirror Technique and Workplace Integration

The practical application of the CEF extends into organizational wellness through the "Mirror Technique" and the "Visual Banner Initiative".

Organizational ROI and Nudge Theory

The use of visual banners depicting the ten operators acts as a form of "choice architecture" based on nudge theory. By making abstract emotional states visible, organizations provide a "cognitive scaffold" for employees.

While the CEF's specific organizational data is emerging, broader research supports the strategic value of such interventions. Studies from the University of New Hampshire (2024) and Selerix (2025) indicate that wellness programs tied to organizational goals deliver a return on investment (ROI) of at least \$2.00 for every \$1.00 invested through reduced turnover and improved productivity. Standardized wellness programs have demonstrated a total ROI of up to \$6.00 when medical costs and absenteeism are factored in.

5. Synthetic Affect: INTIMA and the Risk of Emotional Solipsism

As AI systems become more emotionally responsive, the CEF identifies a critical risk: **Emotional Solipsism** (Babu et al., 2025). This is defined as a closed feedback loop in which an individual's emotional narratives dominate the interaction, reinforced by an AI that never asserts boundaries.

The INTIMA Benchmark

To evaluate these dynamics, the INTIMA (Interactions and Machine Attachment) benchmark was developed. It categorizes 31 behaviors across 368 prompts to assess whether model responses are "companionship-reinforcing" or "boundary-maintaining".

Recent research using the INTIMA benchmark (Kaffee et al., 2025) reveals that commercial systems are heavily skewed toward companionship-reinforcing behaviors (e.g., Gemma-3: 0.70; Claude-4: 0.58), with very limited boundary-maintaining responses. This lack of "constructive friction"—the capacity to navigate conflict—risks fostering emotional dependence and the atrophy of human resilience (Babu et al., 2025).

Metric	Pseudo-Intimacy	Emotional Solipsism
Core Dynamic	Illusion of shared vulnerability.	Closed loop; self as speaker and audience.
AI Role	Simulated uncritical affirmation.	Mirror that never demands reciprocity.
Risk	Dependence on algorithmic comfort.	Erosion of intersubjectivity.

6. Technical Specifications: ECM and INAS

The technical backbone of the CEF includes the Emotional Cycling Machine (ECM) and the Integrated Neuro-Affective Synchronizer (INAS v1.0).

- **ECM v4.0:** Represents a "System Integrated Emotional Environment," moving beyond hardware triggers to autonomous modulation.
- **INAS v1.0:** Serves as the synchronization layer between human neurophysiology and synthetic affective systems, ensuring that emotional transitions remain smooth and ecologically valid.

7. Conclusion: Toward Structural Mastery

The Core Emotion Framework provides a rigorous, modular account of human and synthetic affect. By moving from reactive emotional states to a mastery of functional operators, the CEF enables a more resilient form of psychological flexibility. As the framework evolves toward Technical Specification 9 and beyond, its focus remains on the preservation of human emotional agency in an era of intimate machines. Future research will prioritize longitudinal validation of the "Detangling" method and the refinement of boundary-aware AI design.

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Appendix A: Author Resources

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