

# **Will Circuit Activation Theory (WCAT) White Paper v1.0**

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**June, 2025  
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# White Paper on Will Circuit Activation Theory (WCAT) v1.0

## 1. Originality Statement

This document contains original theoretical work solely authored by Jiawei (嘉伟). The Will Circuit Activation Theory (WCAT) represents a novel interdisciplinary framework integrating metacognition, cognitive neuroscience, developmental psychology, and free will philosophy. This white paper serves as a timestamped record to assert theoretical originality and establish intellectual authorship as of June 2025.

## 2. Abstract

The Will Circuit Activation Theory (WCAT) proposes a meta-cognitive reactivation model of human volition, structured around a dynamic interaction between neural circuits (System 1/System 2), memetic constraints, and self-aware intentionality. WCAT theorizes that despite the deterministic conditioning imposed by genetics and cultural systems, human beings possess the capacity to reconstruct volitional circuits through deliberate metacognitive interventions, leading to a recursive ascent of conscious freedom.

### Key concepts include:

- Neural dual-system grounding (System 1/System 2)
- Circuit reactivation via meaning awakening
- Triple and “three-and-a-half” phase cognitive leaps
- Final leap toward ultimate meaning construction

This theory aims to bridge philosophy, neuroscience, and psychological growth, offering a scaffolding for educational, psychological, and AI symbiotic applications.

## 3. Core Framework

### 3.1 Foundational Premise:

Human cognition is shaped by dual constraints: genetic imperatives and cultural memes.

Willpower is not fixed but can be reprogrammed through metacognitive feedback loops.

### 3.2 Neurocognitive Basis:

System 1: fast, automatic, evolutionary survival-driven.

System 2: slow, reflective, enabling intentional override of System 1.

### 3.3 Volitional Circuit Activation:

A “will circuit” is a reconsolidated cognitive loop that binds awareness, intention, and neural reactivation.

Metacognitive cues trigger meaning re-awakening, leading to circuit reconfiguration.

### 3.4 Leap Model of Consciousness:

Three major cognitive leaps: instinct → self-intent → self-awareness of constraints.

“Three-and-a-halfth” leap: collective metacognitive co-construction.

Fourth leap (asymptotic horizon): integration of reflective freedom with ultimate meaning.

#### 4. Disciplinary Anchoring

This theory is academically situated at the intersection of the following research domains, aligned with arXiv's interdisciplinary categorization standards:

- **cs.AI (Artificial Intelligence)**: Focused on volition modeling, alignment, and human-machine value co-construction frameworks;
- **cs.HC (Human-Computer Interaction)**: Emphasizing symbiotic cognitive systems and embodied interaction architectures;
- **physics.soc-ph (Social Physics)**: Modeling volition and social cognition under systemic constraints;
- **q-bio.NC (Neurons and Cognition)**: Describing neurocognitive circuit dynamics and phase-transition mechanisms of consciousness.

#### 5. Application & Vision

- **Educational transformation**: Curriculum design based on volitional reactivation
- **Psychological intervention**: Therapeutic protocols enabling meaning-based recovery
- **AI symbiosis**: Embedding will-aware architectures in human-aligned intelligence
- **Cognitive civilization mapping**: Tracing societal evolution through cognitive leap models

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# 《意志回路激活理论（WCAT）》白皮书 v1.0

## 1. 原创声明

本文件包含由嘉伟（Jiawei）独立创作的原创理论工作。《意志回路激活理论（WCAT）》是一个融合元认知、认知神经科学、发展心理学与自由意志哲学的跨学科创新框架。本白皮书作为时间戳记录，用以确立该理论的原创性与作者的知识产权归属，确权时间为 2025年6月6日。

## 2. 摘要

《意志回路激活理论》（WCAT）提出了一个基于元认知的意志再激活模型，核心构建于神经回路（系统一/系统二）、文化模因约束与自我意向之间的动态交互机制。

该理论主张，即便人类受制于基因与文化的决定性规训，依然具有通过有意识的元认知干预来重构意志回路的能力，从而实现意识自由的递归式跃升。

主要概念包括：

- 神经双系统基础（系统一 / 系统二）
- 通过意义唤醒进行回路重塑
- 三次及“三次半”认知跃迁模型
- 指向终极意义建构的“第四次跃迁”

该理论旨在连接哲学、神经科学与心理发展三大领域，为教育、心理干预与人机共生应用提供理论支架。

## 3. 核心框架

### 3.1 基本前提

- 人类认知受到双重结构约束：基因驱动与文化模因
- 意志力不是固定不变的，而是可以被元认知反馈机制重新编程

### 3.2 神经认知基础

- 系统一（System 1）：快速、自动、进化导向、趋利避害
- 系统二（System 2）：缓慢、反思性，能够对系统一实现意向性干预

### 3.3 意志回路激活机制

- “意志回路”是一种重新整合的认知环路，连接意识、意向与神经再激活过程

- 元认知信号触发“意义唤醒”，进而引发回路重构

### 3.4 意识跃迁模型

- 三次主要认知跃迁：本能 → 自我意向 → 对约束的自觉
- “三次半跃迁”：集体元认知的协同建构
- 第四次跃迁（渐近地平线）：反思自由与终极意义的整合

## 4. 学科归属建议

推荐用于 arXiv 分类提交的学术领域标签：

- [cs.AI](#)：人工智能对齐、意志建模、人机价值共构
- [cs.HC](#)：人机共生、交互认知系统
- [physics.soc-ph](#)：系统约束下的社会认知演化
- [q-bio.NC](#)：神经认知动态与回路建模

## 5. 应用与愿景

- 教育转型：基于意志回路重建的课程设计
- 心理干预：唤醒意义感的治疗机制与干预协议
- AI共生：将“意志感知机制”嵌入人类导向智能架构
- 认知文明图谱：通过跃迁模型追踪人类社会的精神演化