Appendix C

This appendix is an independent analysis based on the framework presented in:
A dynamic model of subjectivity integrating emotional gain, internal bias, and self-regulation

Raskolnikov's Psychological Trajectory in Dostoevsky's 'Crime and Punishment': A Case Study Applying a Dynamic Model of Subjectivity

Takeo Imaizumi

Independent Researcher, Kyoto City, Japan

June 8, 2025

Abstract

This analysis applies the theoretical framework from Takeo Imaizumi's "A dynamic model of subjectivity integrating emotional gain, internal bias, and self-regulation"—specifically its concepts of emotional gain (G), internal bias (μ), and their regulation by a Self-System (S)—to interpret Raskolnikov's psychological trajectory in Fyodor Dostoevsky's novel "Crime and Punishment." The study illustrates how this framework can conceptualize complex literary character development through a cognitive science lens. Interpretations of G and μ values are informed by the model's core concepts, including the Self-System (S), its objective ($\mathcal{L}$), meta-parameters ($\boldsymbol{\theta}_{\mathrm{S}}$), the Mind Topography Map, and the Ideal Dynamic Equilibrium (IDE).

Raskolnikov's Psychological Trajectory: Phasic Changes in Subjective State and Parameter Dynamics

Fyodor Dostoevsky's "Crime and Punishment" (1866), a seminal work of world literature, chronicles Rodion Raskolnikov, an impoverished ex-student in Saint Petersburg. Driven by his nihilistic "extraordinary man" theory, he murders an old pawnbroker, an act that plunges him into profound psychological torment. The novel masterfully explores his ensuing journey through guilt, paranoia, and alienation, towards the possibility of redemption, particularly through his relationship with Sonya Marmeladova. This profound psychological and philosophical narrative has significantly impacted subsequent literature and thought, cementing its status as a timeless exploration of the human condition.

This section now presents a conceptual narrative of Raskolnikov's evolving emotional gain (G), internal bias (μ), and subjective state (M_s) as he progresses through various psychological stages towards a glimmer of regeneration. Within this framework, the Self-System (S) pursues an objective $\mathcal{L}$—initially validating his "extraordinary man" theory, later seeking liberation from suffering and the restoration of humanity. The Self-System's metaparameters ($\boldsymbol{\theta}_{\mathrm{S}}$) are posited to be learned and updated (or to become dysfunctional) at each stage. This narrative is informed by concepts from Imaizumi's model, such as the Mind Topography Map and the Self-System's regulation towards an Ideal Dynamic Equilibrium (IDE).

- **Stage 1: Pre-Crime "Extraordinary Man" Ideation and Agitation ($G > 0, \mu > 0$)**

  - G: High (e.g., ≈ 1.6), leading to hypersensitive reactions to his own theories and trivial external information, resulting in thought loops.
  - μ: Positive but unstable (e.g., $\approx +0.7$), dominated by a distorted self-affirming bias and a sense of omnipotence suggesting "chosen" individuals can transgress old morality. However, he also endures significant stress from poverty and social isolation.
  - M_s: A state of taut tension, rumination, and abnormal fixation on his plan, occasionally interrupted by extreme self-doubt and agitation.
  - S: Clings to the objective $\mathcal{L}$ of realizing his "extraordinary man" theory, attempting to maintain the corresponding G and μ settings. Internal contradictions, however, render $\boldsymbol{\theta}_S$ unstable, leading to a large deviation from $\mathcal{L}$.

- **Stage 2: Commission of the Crime and Immediate Aftermath – Confusion and Pathological State ($G < 0, \mu < 0$)**

  - G: Negative (e.g., ≈ -0.8), causing a tenuous grip on reality and an extremely destabilized internal state. The shock of the crime and ensuing guilt act as a positive feedback loop, corrosively affecting his psyche.
  - μ: Strongly negative (e.g., ≈ -1.2), characterized by intense guilt, fear, misanthropy, suspicion, and self-loathing.
  - M_s: Marked by high fever, nightmares, hallucinations, and delirium. Communication with others is impaired, deepening his sense of isolation and alienation. He may oscillate between hopeless states and momentary excitement (indicative of a bistable region) or become fixated.
  - S: Overwhelmed by his actions and their consequences, S loses control. Its objective $\mathcal{L}$ collapses, and $\boldsymbol{\theta}_S$ become dysfunctional, resulting in a significant and persistent divergence from $\mathcal{L}$.

- **Stage 3: Encounter with Sonya and the Struggle with Humanity ($G < 0$ but absolute value decreasing, $\mu < 0$ but fluctuating)**

  - G: Remains negative, though its absolute value slightly decreases (e.g., ≈ -0.4). Sonya's presence and words begin to marginally impact his rigid psyche, but internal agitation remains intense.
  - μ: A strong negative bias persists (e.g., ≈ -0.7). However, encountering Sonya's unconditional love, self-sacrifice, and the world of faith she embodies causes slight fluctuations towards $\mu = 0$.
  - M_s: Experiences violent oscillations between the crushing weight of his sin, empathy for Sonya, and the moral/religious values she introduces. His self-justifying logic clashes with his conscience.
  - S: Dialogue with Sonya implicitly suggests a new objective $\mathcal{L}$ (confession, atonement, restoration of humanity). Yet, an intense internal struggle with the existing $\boldsymbol{\theta}_S$ (remnants of his "extraordinary man" theory, arrogant pride) prevents a redefinition of $\mathcal{L}$.

- **Stage 4: Agony over Confession and Eventual Resolve ($G > 0$ and $0 < G < 1, \mu < 0$ moving towards $\mu \to 0$)**

  - G: Shifts into the positive domain but remains low (e.g., ≈ 0.5). He slowly begins to face reality, but his mental energy is depleted, and he remains prone to confusion.
  - μ: A negative bias lingers (e.g., ≈ -0.3). Nevertheless, the desire for spiritual release through confession and his bond with Sonya strengthen his will to move towards $\mu = 0$ (liberation from bias, a characteristic of an Ideal Dynamic Equilibrium, or IDE).
  - M_s: Intense internal conflict between the fear of confession, anxiety about social punishment, and a faint hope for spiritual salvation through revealing the truth.
  - S: The existing $\mathcal{L}$ (self-preservation, ideological justification) fiercely conflicts with the new $\mathcal{L}$ (confession and atonement). The words of Sonya and Porfiry influence S's learning process, and $\boldsymbol{\theta}_S$ gradually begin to adjust towards achieving the new $\mathcal{L}$.

- **Stage 5: Glimmers of Spiritual Regeneration in Siberia ($G \to 1, \mu \to 0$)**

  - G: Gradually approaches 1 (e.g., ≈ 0.8). Hypersensitivity diminishes. His ability to accept reality and introspect recovers amidst hard labor and interactions with others. $G = 1$ is a component of IDE.
  - μ: Approaches 0, becoming neutral (e.g., $\approx \pm 0.1$). Signs of liberation from his distorted ideology, intense guilt, and self-centeredness emerge, allowing for a more objective and calm perspective. $\mu = 0$ is another component of IDE.
  - M_s: A sense of inner calm begins to develop. Through his love for Sonya, empathy for others and an affirmation of life itself start to bud, gradually moving towards IDE.
  - S: A new objective $\mathcal{L}$—human harmony based on love and faith, coexistence with others—starts to solidify. $\boldsymbol{\theta}_S$ are optimized, and he shows signs of acquiring the ability to maintain G and μ towards IDE. The possibility of achieving and sustaining $\mathcal{L}$ (true mental health, harmony, and insightful presence) is indicated.

Table 1: Summary of Raskolnikov's parameter dynamics through stages of mental transformation in Dostoevsky's 'Crime and Punishment'.

Stage	G (Emotional Gain)	μ (Internal Bias)	M_s (Subjective State)	S $(\boldsymbol{\theta}_S, \mathcal{L})$
1 Pre-Crime	~ 1.6 (+) !!	$\sim +0.7$ (+)?	Thought loops, tension, mix of elation & anxiety	Clings to $\mathcal{L}$; $\boldsymbol{\theta}_S$ unstable; large deviation from $\mathcal{L}$
2 Post-Crime	~ -0.8 (-)? !!	~ -1.2 (-)? !!	Pathological state; isolation; disconnected from reality; bistable?	$\mathcal{L}$ collapsed; $\boldsymbol{\theta}_S$ dysfunctional; severe deviation from $\mathcal{L}$
3 Sonya's Emergence	~ -0.4 (-)?	~ -0.7 (-)? but fluctuating $\to 0$	Intense conflict between sin & empathy	Possibility of new $\mathcal{L}$; intense conflict with existing $\boldsymbol{\theta}_S$
4 Towards Confession	~ 0.5 (+)	~ -0.3 (-)? $\to 0$	Fear & hope regarding confession; intense internal conflict	Conflict of $\mathcal{L}$'s; $\boldsymbol{\theta}_S$ begins adjusting to new $\mathcal{L}$
5 Siberia	~ 0.8 (+)? $\to 1^*$	$\sim \pm 0.1 \to 0^*$ (Neutral)	Glimmers of inner peace; empathy for others; towards IDE	New $\mathcal{L}$ establishing; $\boldsymbol{\theta}_S$ optimizing*; S maintaining towards IDE*; $\mathcal{L}$ achieved/sustained*

Note: Cell symbols denote state or change: + (positive/high); - (negative/low); 0 (zero/neutral); $\sim$ (approximate); $\uparrow$ (increase); $\to$ (towards); ? (unstable/uncertain); !! (strong/marked); * (optimized/achieved, often in relation to an Ideal Dynamic Equilibrium, or IDE). For detailed descriptions, refer to the narrative text of this section.