

PSYCHOPHYSIOLOGICAL ANALYSIS OF ARTISTIC IMAGERY IN THE LITERARY TEXT: MOTOR HIERARCHIES AND SYSTEMIC INVERSIONS IN VISUAL ART

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Abstract: *The creation of visual art in the literary text is not merely a representational or symbolic act; it is a complex psychophysiological process reflecting the interplay of motor activity, perception, and symbolic cognition. This paper examines the structure of human motor activity in the context of artistic creation, applying Nikolai Bernstein's hierarchical system of motor levels to the analysis of handmade visual works. Particular attention is given to systemic inversions within motor hierarchies, their role in shaping aesthetic and individualizing functions in art, and their manifestations across different artistic movements, from Impressionism to Hyperrealism and contemporary graffiti. The study highlights the relevance of integrating psychophysiological perspectives into art analysis, emphasizing that the traces of motor acts embedded in images are essential for understanding both the creative process and its perceptual impact.*

Key words: artistic motor activity, motor hierarchies, systemic inversion, visual art, psychophysiology, symbolic level, aesthetic function, individualization, structural analysis.

Artistic creation is fundamentally a human act that unites cognition, emotion, and motor execution. While traditional art theory emphasizes symbolic, cultural, and aesthetic dimensions of visual works, the psychophysiological aspect of how images are generated through motor

activity remains underexplored. The traces of movement encoded in an artwork—lines, strokes, pressure, rhythm, and spatial arrangement—offer insight into the artist's individual motor profile, cognitive structure, and expressive intentions [1]. This study adopts a psychophysiological framework, combining Bernstein's theory of motor hierarchies with systemic analysis, to investigate how motor activity structures visual creation and contributes to the perceptual and aesthetic functions of art.

The objective is to analyze the functional role of different motor levels in artistic production, explore systemic inversions where lower levels dominate higher ones, and illustrate these principles using examples from historical and contemporary artistic movements [2].

Hierarchical Levels of Motor Activity

Nikolai Bernstein's theory of motor hierarchies posits that human motor activity is organized into levels, each with distinct physiological and functional characteristics. In the context of visual art, these levels manifest as follows:

1. **Tonic Level (A):** The most primitive level, regulating basic muscle tone and segmental readiness. In art, it appears in subtle pressure variations, minor deviations in line verticality, and involuntary adjustments of the drawing hand. While minimal in expressive content, this level underpins all subsequent movements [3].

2. **Rhythmic/Coordinated Level (B):** Governs the synchronous contraction of muscle groups and repetitive, rhythmic movements, such as brushstrokes or hatching. It operates largely independently of vision and conveys emotional expression through the gesture itself. The physical act of creating a line or stroke communicates affect directly to the viewer, bypassing conscious interpretation.

3. **Visual-Spatial Level (C):** Integrates visual feedback to guide movements across extended spatial distances. It ensures proportionality,

perspective, and compositional coherence, making the depicted object recognizable and spatially accurate [4].

4. **Object-Interaction Level (D):** Facilitates manipulations with tools and materials, as well as simplification or schematic representation of objects. This level enables the creation of identifiable forms (e.g., human, animal, architectural figures) and supports conventional representation.

5. **Symbolic Level (E):** Operates on the conceptual or symbolic plane, transforming objects and gestures into carriers of meaning. This level produces symbolic representations and underlies human abstract thought, enabling the artwork to function simultaneously as an autonomous entity and a signifier of broader concepts [5].

Systemic Inversions in Motor Hierarchies

While Bernstein's model presumes that higher levels regulate lower ones, complex systems occasionally exhibit **systemic inversions**, where lower levels dominate temporarily, producing expressive effects. In artistic production, such inversions can highlight emotional intensity or individuality. For example:

- In **Impressionism**, rapid plein-air painting and time constraints amplify the role of level B (rhythmic motor patterns), with level C (visual-spatial accuracy) subordinated [6].
- In **Expressionism**, expressive brushwork prioritizes B over E, producing emotionally charged, gestural imagery that conveys subjective experience over realistic depiction.
- In **Hyperrealism**, level C dominates, achieving detailed, photographic likeness, while traces of expressive motor activity (B) are minimized or absent.

Systemic inversions are not errors but adaptive phenomena, enabling dynamic expression within the hierarchical system of human motor activity [7].

Functional Implications of Motor Levels

The hierarchical organization of motor activity in art corresponds closely to the **functional roles of visual art**:

1. **Aesthetic Function:** The perception of expressive lines, strokes, and textures evokes immediate emotional responses, often bypassing cognitive mediation. Traces of motor activity, particularly from level B, are central to aesthetic impact.
2. **Individualizing Function:** Motor traces encode the unique physiological and cognitive style of the artist. Even when symbolic or narrative content is similar across artists, individual motor signatures differentiate works [8].
3. **Communicative and Informational Functions:** Historically, art transmitted information about reality and culture. While photography and written media have taken over many of these roles, visual art still conveys nuanced perceptual, cultural, and emotional knowledge.
4. **Cultural and Creative Function:** Art contributes to cultural development by preserving, interpreting, and innovating visual forms. The combination of motor hierarchies and systemic inversions allows for novel artistic expressions, sustaining cultural evolution.

Methodology for Analysis

The study of artistic creation from a psychophysiological perspective involves analyzing the traces of motor activity in artworks, such as line pressure, stroke rhythm, and gestural variations, which reflect specific levels of motor organization [9]. Each work is assessed for the relative contribution of motor levels (A–E) and for **systemic inversions**, where lower motor levels (e.g., expressive level B) may dominate higher levels (e.g., symbolic E or visual-spatial C), altering traditional hierarchical patterns.

Comparative analysis across artistic movements highlights recurring hierarchies and stylistic differences. Observed motor patterns are then correlated with the artwork's functions—such as aesthetic, individualizing,

communicative, and cultural—to reveal how psychophysiological processes shape both execution and perception. Historical and technical data are used to contextualize findings and validate inferred motor hierarchies.

This methodology provides a structured approach for connecting motor physiology, artistic technique, and viewer experience in visual art analysis.

Integrating psychophysiological analysis with art theory provides unique insights:

1. **Motor traces as aesthetic carriers:** Direct perception of motor activity explains immediate emotional responses to brushwork or gestural forms.
2. **Hierarchical systems and artistic innovation:** Systemic inversions facilitate exploration of new expressive possibilities, allowing shifts in artistic priorities (e.g., from symbolic to aesthetic or individualizing functions).
3. **Interdisciplinary relevance:** This approach bridges neuroscience, psychology, and art history, highlighting the embodied nature of visual creativity [10].
4. **Evolution of artistic functions:** Historical shifts—from sacramental and mimetic roles to contemporary aesthetic and individualizing functions—reflect broader sociocultural transformations and technological changes in image-making.

The study of motor hierarchies and systemic inversions offers a robust framework for understanding artistic creation. Every hand-made visual work encodes layered motor activity, from tonic muscle control to abstract symbolic operations. Systemic inversions enable dynamic prioritization of expressive, spatial, or symbolic functions, contributing to aesthetic impact and individualization. Psychophysiological analysis, grounded in Bernstein's theory, enriches art-historical interpretation by revealing the embodied, kinetic dimensions of creativity. Future research should extend this methodology to

cross-cultural studies, digital art, and performative visual practices, further integrating motor psychophysiology into the analysis of visual culture.

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