Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167

Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception

Zhengxi Ge[1*] and Supachai Areerungruang[2]
Faculty of Decorative Arts, Silpakorn University, Thailand
[1*]E-mail: 345851145@qq.com, ORCID ID: https://orcid.org/0009-0009-5292-8779
[2]E-mail: supachai3833@gmail.com, ORCID ID: https://orcid.org/0009-0005-2431-3276
Received 08/03/2026 Revised 10/04/2026 Accepted 15/05/2026

Abstract

Background and Aims: In the context of contemporary visual culture and digital design, "writingness" in traditional calligraphy has gradually shifted from an experiential aesthetic concept to an analyzable visual theory. As type production becomes increasingly standardized and algorithmic, the temporal, bodily, and emotional qualities embedded in handwriting are often reduced to stylistic effects. This study aims to redefine writingness from a visual-analytical perspective by establishing it as a dynamic mechanism for visual generation. Through a cross-disciplinary theoretical framework, the research seeks to bridge traditional calligraphic theory and contemporary visual design discourse.

Methodology: This study adopts a qualitative theoretical research approach combining interdisciplinary literature review and conceptual analysis, without including empirical data analysis. The literature review covers three disciplinary domains: Chinese calligraphy theory (1960–2023), embodied cognition research (1991–2023), and visual psychology and Gestalt theory (1950–2023). Databases including CNKI, Google Scholar, and Scopus were searched using keywords such as "writingness," "embodied memory," "shi-state," and "visual force field," resulting in the inclusion of 45 key publications. The analytical method employs thematic conceptual analysis: first, the core conceptual chain of "writing behavior—embodied memory—visual trace" is extracted from the literature; second, correspondences among shi-state, visual dynamics, and emotional perception are established through theoretical mapping; finally, a unified terminological analytical framework is constructed.

Results: The study proposes that writingness should be understood as a time–structure coupled visual process rather than a stylistic attribute. Writing behavior generates visual traces through embodied memory, forming dynamic structural balance and directional visual force fields. The proposed generative chain of "writing behavior—embodied memory—visual trace" effectively counteracts the standardization and algorithmic reduction of handwriting in digital contexts by reintegrating bodily engagement, temporal rhythm, and structural tension—elements irreducible to parameters—into the core of visual generation. This finding directly addresses the research aim

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167

of resisting algorithmic reduction in digital typography. Writingness emerges from the interaction between bodily movement, structural tension, and perceptual rhythm, which together shape viewers' dynamic reading experience. Furthermore, emotional perception is revealed as a result of structural organization and visual dynamics rather than a purely subjective interpretation.

Conclusion: This research redefines writingness as a dynamic visual generation system composed of bodily action, structural relationships, and emotional perception. By integrating theories from calligraphy, embodied cognition, and visual psychology, the study establishes a conceptual framework that provides analytical language for future visual analysis and type design research. This dynamic visual generation model offers a concrete methodology for future type designers to move beyond mere "stylistic effects" toward authentic "writingness" through systematic analysis of trajectory, structural tension, rhythm, and emotional orientation.

Keywords: Writingness; Visual Generative Mechanism; Embodied Memory; Shi-state; Emotional Expression

Introduction

In traditional calligraphy theory, writing is understood as the unity of bodily movement and temporal unfolding. Character forms are not isolated visual outcomes but crystallizations of movement traces and structural organization. However, within contemporary visual design and digital media environments, text has gradually been standardized into stable symbols. Typeface production emphasizes consistency and controllability, while variations in speed, pause, turning, and force inherent in writing are often reduced to surface textures or brush-like filters. This reduction leaves viewers with only a decontextualized stylistic shell rather than a dynamic experience evoked by rhythmic movement and structural tension, causing writingness to degenerate from a "perceptible bodily trace" into a "replaceable visual skin"——a theoretical gap in current design research.

Although previous studies have discussed writingness from perspectives such as calligraphy history, stylistic analysis, and aesthetic interpretation, there remains a lack of systematic approaches that transform writingness from an experiential description into an analyzable visual generative mechanism within design research. For instance, several recent studies have attempted to capture handwriting sensation through brushstroke classification or digital brush simulation; however, their methodologies remain largely at the level of stylistic labeling and fail to explain the origin, intensity, or transferability of writingness (Li, 2019; Qiu, 2005). While instructive, these attempts lack a systematic analysis of the generative relationships among physicality, temporality, and structural tension in writing behavior.

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167

This study selects "embodied cognition" as the core theoretical bridge. The rationale is that the generation of writingness fundamentally depends on the writer's bodily actions, and embodied cognition theory——which emphasizes the body as a structural carrier shaping perception, memory, and emotion——can translate experiential expressions such as "the mind and hand in harmony" into an analyzable chain of "body schema——motor memory——visual trace."

Based on the above problem identification and theoretical gap, this study focuses on the theoretical investigation of writingness. The research aims to answer the following core questions: (1) How can the temporal and bodily dimensions of writing behavior be systematically described and analyzed from a visual analytical perspective? (2) Which structural features in calligraphic composition trigger viewers' dynamic perception and emotional responses? Through interdisciplinary literature synthesis, this study seeks to construct an explanatory framework connecting writing behavior with visual structure and to propose conceptual vocabulary and analytical dimensions oriented toward design research, thereby providing a theoretical foundation for subsequent layered analysis of calligraphic works and the translation of writingness into contemporary type design.

Research Objectives

1. To redefine the visual generative mechanism of writingness from a visual analytical perspective, tracing the origin and evolution of this concept within the Chinese calligraphic tradition. The scope of this study is limited to Chinese calligraphy.

2. To establish an interdisciplinary visual analytical framework focusing on the generative relationship among writing behavior, embodied memory, and visual trace, explaining how writing actions translate into formal information through temporal unfolding.

3. To provide a theoretical reference for contemporary type design research by integrating the dynamic structure of the shi-state with emotional perception mechanisms. Specific applicative transformations await future empirical investigation.

Literature Review

This section reviews existing studies from four thematic perspectives, each highlighting representative research to outline the scholarly trajectory and establish the theoretical basis for the framework proposed in this study.

1. The Emergence and Theorization of the Concept of Writingness

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167

Qiu Zhenzhong (2005) decomposed writingness into brush movement, spatial composition, and temporal rhythm. Li Botan (2019) proposed writingness as a dynamic structure in which "force unfolds in time and solidifies in space." Together, they indicate that writingness is decomposable into force, time, and space. Gombrich's Art and Illusion (2023 reprint) introduced a cognitive perspective through the "schema and correction" mechanism.

2. Writing Behavior, Embodied Memory, and Visual Trace

Calligrapher Wang Dongling's (2011) practice demonstrates the decisive role of bodily participation and action rhythm in shaping visual outcomes, while Mi Fu's (1987) discussion of "the brush guided by the mind" and multidirectional brush movement reveals the close relationship between writingness and motor control. The core literature on embodied cognition Varela et al., 1991) emphasizes that the body is a structural carrier that shapes perception and memory, providing theoretical support for understanding the "unity of mind and hand."Taken together, these studies point to "embodied memory" as the mediating link: writing behavior is not a one-time action but a body schema formed through long-term practice, whose traces ultimately crystallize into perceptible formal information.

3. Shi-state and Visual Dynamics: Explaining Structural Tension

ProfessorXu Liming (2022) highlights the relationship between intention (yi) and shi in Song-dynasty calligraphy, emphasizing that structural inclination and dynamic movement are key to understanding writingness. Li Botan (2019) further decomposes shi-state into directionality, intensity, and rhythmicity. When compared with Gestalt psychology's "apparent motion" theory and Wölfflin's formal analysis, it becomes evident that the Chinese calligraphic concept of shi and the Western psychological understanding of directional tension and movement perception are highly commensurable. This cross-cultural dialogue suggests that the dynamic structure underlying writingness is not culturally specific but rather a universal mechanism of human visual perception.

4. Emotional Perception and the Expression of Writingness

Gombrich (2023 reprint) regards emotion as a perceptual outcome, arguing that viewers generate psychological completion and emotional judgment based on visual cues. Qiu Zhenzhong (2005) emphasizes cross-character organization and overall rhythmic coherence, suggesting that temporal rhythm and spatial arrangement generate an integrated atmosphere at the compositional level. Together, these perspectives indicate that emotion is not a subjective projection but a perceptual response triggered by structural relationships—a conclusion that finds consensus across Chinese and Western theories, providing a foundation for cross-cultural analysis of the emotional dimension of writingness. This view is further supported by Li (2025), whose

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167

digital typography study demonstrates that bodily gesture and structural tension evoke emotion even in screen-based media.

Research Methodology

This study adopts a qualitative theoretical approach combining interdisciplinary literature review and conceptual analysis, without including empirical data. Literature searches were conducted in CNKI, Google Scholar, and Scopus using keywords such as "writingness," "embodied memory," and "shi-state" covering the period from 1960 to 2023. Mi Fu's system is the core case due to its typical writing characteristics. First, through literature research, key concepts of writingness are examined across traditional calligraphic discourse, modern calligraphy theory, and contemporary visual studies. Second, conceptual analysis extracts the "writing behavior–embodied memory–visual trace" chain and establishes correspondences among shi-state, visual dynamics, and emotional perception. The procedure involves extracting features like directionality and speed variation from qualitative descriptions, mapping them onto visual variables such as trajectory arrows and force lines, and verifying consistency to form a reproducible visual annotation language. Finally, these concepts are organized into a coherent terminological system through framework construction, providing a theoretical basis for subsequent layered visual analysis and typeface translation studies. The aim is to establish a reusable theoretical framework rather than step-by-step procedures for a single artwork.

Conceptual Framework

Based on the preceding literature review and theoretical discussion, this study defines writingness as a dynamic visual generative system. Its core consists of three interrelated elements—bodily action, structural relations, and emotional perception—which unfold temporally and manifest as perceptible visual traces on the surface. The system can be summarized through four interconnected dimensions (Figure 1).

Conceptual Dimension: Evolving from experiential expressions in traditional calligraphy, such as brush intention, brush momentum, and rhythmic vitality, toward analyzable issues within visual theory.

Embodied Dimension: Writing behavior forms embodied memory and motor schemas through long-term practice, determining the force, speed, and control of brushstrokes.

Shi-state Dimension: A dynamic structure composed of brush momentum, bodily posture, and compositional force, encoding temporality, movement, and spatial organization.

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167

Emotional Dimension: Formal language generates imagery and activates perceptual mechanisms that trigger emotional resonance, enabling the encoding and decoding of affect within writing expression.

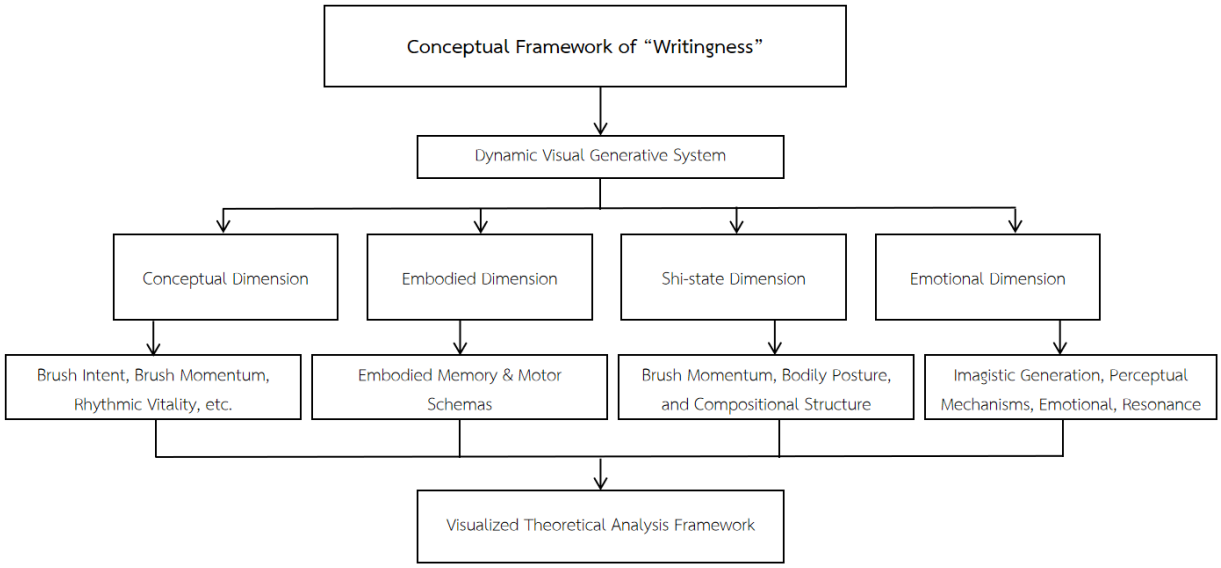


Figure 1 Research Framework of the Concept of Writingness

Note: Constructed by the researcher

Results

This section constitutes the main body of the study and is organized into three parts corresponding to the research objectives. Each part presents key findings, analyzable dimensional divisions, and translatable descriptive language to support subsequent visual analysis and design validation.

1. Redefining the Visual Generative Mechanism of Writingness

Through a systematic integration of traditional calligraphy theory, visual psychology, and contemporary design research, it is found that writingness does not merely refer to a particular brush style or visual appearance, but rather to a dynamic visual mechanism continuously generated through writing behavior (Figure 2). Concepts such as qi, shi, yun, and yi in traditional calligraphic discourse.

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167



Figure 2 Writingness Motion Trajectory of a Single Character by Mi Fu

Note: Constructed by the researcher

In Figure 2, the red trajectories represent directional paths and speed variations of brush movement—continuous arcs indicate smooth wrist rotation, while angled lines denote pauses and force exertion during directional shifts. The annotated density distribution reflects rhythmic intensity: dense clusters correspond to rapid sequential actions, sparse areas to extension and deceleration. Together, these visual variables constitute a "visual force field," endowing static character forms with dynamic tendency.

Essentially, these concepts describe the interactive relationship among bodily movement, psychological state, and formal structure. However, due to historical and cultural contexts, they have often remained at the level of experiential expression and lacked an operational framework for visual analysis. Building upon the aforementioned theoretical foundations, this study redefines writingness as a “time–structure coupled” visual generative process, transforming it from an intuitive aesthetic description into an analyzable academic framework.

First, from the perspective of writing behavior, brushstrokes should not be understood as isolated lines, but as trajectories of bodily movement unfolding in time. During writing, practitioners continuously adjust the motions of the wrist and arm through pressing, turning, and advancing actions, forming directional path systems within visual space. Qiu Zhenzhong’s theory of “brush movement traces” suggests that calligraphic form is essentially a crystallization of temporally condensed motion rather than a static graphic image. As these paths extend across

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167

space, viewers tend to follow the visual flow, generating a perceptual experience akin to observing motion trajectories. Gombrich's notion of "schema and correction" further explains that viewers actively reconstruct implied actions during perception, allowing static forms to convey a sense of latent dynamism.

Second, at the structural level, writingness manifests as a state of dynamic equilibrium. The inclined compositions commonly found in Mi Fu's calligraphic system do not disrupt overall stability; instead, they create new relationships of tension through shifts in the principal axis. This phenomenon can be interpreted through the concept of a "visual force field," in which strokes of varying directions form networks of energy, enabling asymmetrical structures to maintain balance. Li Botan's proposition that "force unfolds in time and settles in space" provides a contemporary academic language for describing this dynamic structure. Writingness, therefore, should not be understood as anti-structural, but rather as a mode of reconstructing structure through movement.

Third, from a temporal perspective, the generation of writingness exhibits a pronounced time dimension. Variations in stroke speed, pauses, and directional changes produce differences in rhythmic density within the composition, rendering time visible as part of the structural organization. These "temporal zones" not only reflect writing rhythm but also guide viewers' visual attention, shaping the rhythmic experience of reading. From the standpoint of digital media theory, even when writing traces are transformed into data trajectories, the essential relationship between bodily movement and visual structure remains intact. Consequently, this study regards the visual generative mechanism of writingness as a cross-media dynamic system that provides a theoretical foundation for subsequent research in type design and visual communication.

Finally, from an interdisciplinary perspective, this mechanism is closely related to embodied cognition theory. The body is not merely a passive tool but a central medium in the production of meaning. Motor schemas formed during writing leave traces within visual structures, making writingness a visual manifestation of embodied experience. This viewpoint expands the scope of writingness beyond the domain of calligraphy, positioning it as an important theoretical bridge connecting artistic practice and cognitive science.

2. The Generative Mechanism of Writing Behavior, Embodied Memory, and Visual Trace

Further analysis of writingness reveals that embodied memory plays a central role in its formation. The phenomenological concept of the "body schema" suggests that the body develops stable patterns of movement through long-term experience, which operate automatically as muscle memory during writing. Traditional calligraphic discourse, such as the states described as "the mind and hand in harmony" or "the hand acting beyond conscious awareness," can be understood as forms of motor automation. Through repeated practice,

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167

calligraphers transform complex brush control into procedural memory that functions without conscious intervention, allowing the writing process to achieve continuity and fluency.

From the perspective of generative mechanisms, writing behavior consists of immediate actions, while embodied memory provides a stable structural framework for these movements. During continuous writing, subtle changes in stroke direction often correspond to wrist rotation or adjustments in applied force. Visually, these variations appear as differences in rhythmic density: dense clusters of strokes are frequently interpreted by viewers as accumulations of energy, whereas elongated lines suggest the extension of motion. Research in modern motor science concerning the "degrees of freedom problem" indicates that skilled motor control does not increase complexity; rather, training reduces unnecessary movements, resulting in clearer and more directed trajectories.

Visual traces, as the materialized outcomes of writing behavior, carry rich information about movement. Wölfflin's method of formal analysis emphasizes the significance of line quality, directional variation, and tonal modulation, suggesting that these visual elements not only construct form but also imply spatial depth and kinetic tendencies. When trajectories remain continuous and directionally coherent, viewers tend to perceive a sense of flow; when abrupt directional shifts occur, visual attention is drawn toward nodal points. Such perceptual processes indicate that writingness exists not only within the writer's bodily actions but also within the viewer's perceptual engagement (Figures 3 and 4).

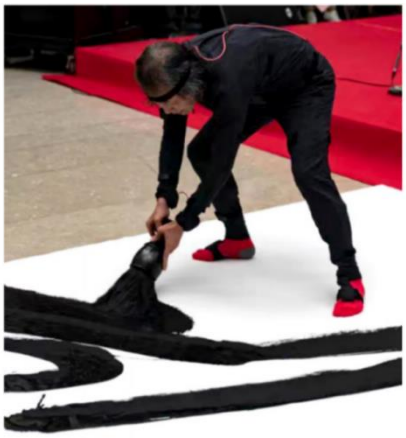


Figure 3 Calligrapher Wang Dongling in a live performance
Note: https://weibo.com/ttarticle/p/show?id=2309404702003988398436

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167



Figure 4 A still from Running Cursive Script by the Cloud Gate Dance Theatre, choreographed by Lin Hwai-min.

Note: https://www.sohu.com/a/297099635_701641?sec=wd

Research in neuroaesthetics provides scientific support for this phenomenon. The mirror neuron system suggests that when viewers observe brushstrokes with strong writingness, brain regions associated with motor planning are activated, generating a form of psychological simulation analogous to the act of writing itself. This indicates that writingness is an intersubjective visual phenomenon, establishing a connection between writer and viewer through visual traces.

Based on this generative mechanism, this study proposes a unified visual annotation language that translates bodily movement into readable visual information. For instance, annotations of trajectory direction, force-field distribution, and visual centers can reveal structural tension, while markings of rhythmic density and imagistic focal points help uncover the relationship between temporal organization and emotional orientation. Such an annotation system not only enhances analytical consistency but also provides a methodological foundation for comparative studies across different cases, offering new research pathways for translating writingness into contemporary type design.

3. An Integrated Framework of Shi-state and Emotional Perception

Based on the preceding analysis, the shi-state can be understood as a crucial link connecting action and structure. Traditional calligraphic discourse regards the “recognition of shi” as a key stage following brush technique, emphasizing the organization of a visual force field through which directional tension emerges within structural composition.

Visually, calligraphic shi-state manifests as a series of formal characteristics marked by directionality, rhythmicity, and a sense of force. In Bizhen Tu by Lady Wei of the Eastern Jin

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167

dynasty, as well as in the “Eight Principles of the Yong Character,” the dynamic qualities of strokes are described through natural imagery such as “cloud formations stretching for a thousand miles,” “ancient vines enduring for ages,” and “crashing waves and rushing thunder.” These metaphors initiated a long-standing tradition of analogizing calligraphic shi-state through natural phenomena. Such imagery not only depicts morphological features but also suggests underlying movement tendencies and energetic intensity (Figure 5).

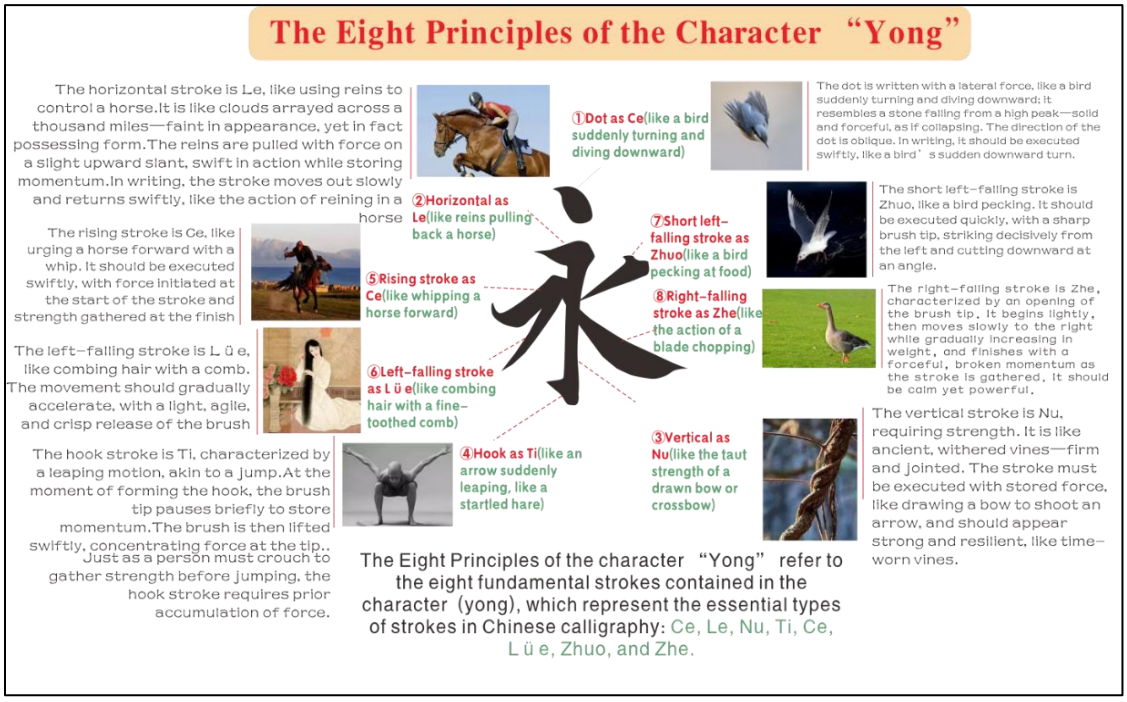


Figure 5 Diagram of the Eight Principles of the Yong Character

Note: Constructed by the researcher

From a philosophical perspective, shi can be understood as a process of energy accumulation and release. From the viewpoint of visual psychology, it represents a tension relationship characterized by directional tendency. The discussions of Cai Yong and Zhang Huaiguan reveal that the shi-state is not limited to the direction of individual strokes, but rather functions as a structural dynamic that permeates the overall composition.

Neuroaesthetic research on the mirror neuron system provides scientific support: when viewers observe brushstrokes with strong writingness, brain regions associated with motor planning are activated, generating a psychological simulation as if they were writing themselves. This indicates that writingness is an intersubjective visual phenomenon, establishing a connection between writer and viewer through visual traces. The Gestalt psychological concept of "apparent

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167

motion" further explains how static images can evoke a perception of movement through directional cues, a principle that underlies the visual vitality produced by calligraphic shi-state.

Within Mi Fu's calligraphic system, shi-state generates a sense of continuity through successive directional changes, creating a flowing momentum across the composition. (Figure 6)

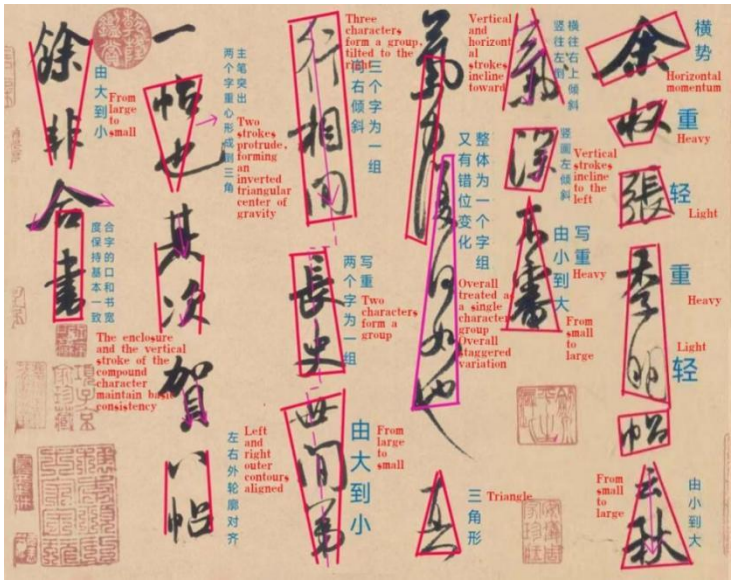


Figure 6 Mi Fu's Zhang Jiming Tie: An Integrated Expression of Writingness

Note: Constructed by the researcher

In Figure 6, the red trajectory annotations in Mi Fu's Zhang Jiming Tie reveal the continuous generation of shi-state: responsive relationships among strokes extend the visual flow throughout groups of characters, producing an overall sense of movement. The annotated density distribution shows that dense stroke clusters are often interpreted by viewers as accumulations of energy, whereas elongated lines suggest the extension of motion. When such motion is combined with rhythmic density, the composition exhibits strong visual dynamism.

Emotional perception is grounded in this dynamic structural framework. Research on the mirror neuron system indicates that when viewers observe brushstrokes with strong kinetic qualities, neural activities associated with similar actions are activated in the brain, thereby eliciting emotional resonance. Different emotional states can evoke specific facial expressions and bodily movement patterns. Likewise, in calligraphic creation, varying emotional conditions may produce distinctive stroke characteristics: anger may be reflected in vigorous brush force and rapid movement; sadness may appear through slower trajectories and darker, more subdued ink tones; and joy may be conveyed through expansive strokes and a lively rhythm. Rooted in the shared origin of Chinese calligraphy and painting, the concept of the “five tonal variations of ink” is

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Interdisciplinary Academic and Research Journal, 6 (5), September-October 2026
Old ISSN 2774-0374: New ISSN 2985-2749
Website: https://so03.tci-thaijo.org/index.php/IARJ/index
Article ID: e299167

frequently manifested across diverse works of both traditions. Emotion, therefore, should not be regarded as an external interpretation imposed upon the artwork, but rather as a perceptual outcome triggered by visual structure itself. When trajectories rise upward, and the visual force field becomes concentrated, viewers often experience tension and a sense of release; conversely, when structures appear balanced and rhythms unfold smoothly, a calmer and more composed visual experience tends to emerge.

From the perspective of imagistic generation, emotional expression in calligraphy is rooted in the traditional mode of "observing objects to derive imagery." The writer encodes emotional states into visual structures through formal language, while viewers decode these meanings through perceptual mechanisms. Studies in modern emotion psychology suggest that different emotional states correspond to distinct patterns of movement, a principle that is likewise reflected in writing processes: rapidly ascending strokes are often perceived as expressive or vigorous, whereas expanded and balanced structures are more readily interpreted as tranquil and restrained.

Discussion

Compared with the previous research approach

Ches that primarily focused on aesthetic interpretation or individual case studies, this study defines writingness as an analyzable visual generative mechanism and establishes connections between calligraphic theory, embodied cognition, and neuroaesthetics. Research primarily focuses on theoretical framework construction, while subsequent critical steps involve operational validation and empirical testing. Existing studies, such as Qiu Zhenzhong (2011), have examined writingness through brush movement and temporal rhythm, while Li Botan (2019) emphasized a dynamic structure in which force unfolds in time and settles in space. These perspectives are consistent with this study's understanding of the relationship between trajectory and structural organization. Meanwhile, Gombrich's (2023 reprint) theory of visual perception also supports the view that writingness should be understood as a perceptual outcome triggered by structural relationships rather than merely a stylistic attribute.

However, unlike traditional research that emphasizes aesthetic evaluation, this study transforms concepts such as "the harmony between mind and hand" and "rhythmic vitality" into analyzable generative relationships, allowing writingness to enter the discourse of visual analysis and design research. Within digital media contexts, although writing traces may shift from physical ink to data-based trajectories, the relationship among body, medium, and expression remains. Therefore, this study argues that the sense of handwriting in contemporary type design is not

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

simply a matter of stylistic imitation but the result of the interaction among trajectory, structure, and rhythm.

Conclusion

This study proposes defining writingness as a dynamic visual generation system composed of bodily action, structural relationships, and emotional perception. By integrating theories from calligraphy, embodied cognition, and visual psychology, the study develops a conceptual framework intended to provide analytical language for future visual analysis and type design research. This dynamic visual generation model offers a potential methodological direction for type designers to move beyond mere "stylistic effects" toward authentic "writingness" through systematic analysis of trajectory, structural tension, rhythm, and emotional orientation. It should be noted that this framework remains at the theoretical construction stage, and its validity awaits future empirical testing.

Recommendations

This study focuses primarily on theoretical framework construction, with subsequent critical steps involving operational validation and empirical testing. Future research may operationalize the mechanism dimensions proposed in this paper into a system of visual analytical indicators for systematic layered analysis of Mi Fu's representative works.

In type design, mappings between writingness features and typographic parameters can be established to examine how trajectory, structural tension, rhythm, and emotional orientation influence handwriting sensation.

Additionally, experimental methods such as eye-tracking, emotion scales, or motor resonance tests are recommended to examine the relationship between emotional perception and writing experience, thereby enhancing the framework's falsifiability and reusability. Completing these steps is essential to advancing the research agenda initiated in this study.

References

Gombrich, E. H. (2023 reprint). *Art and illusion: A study in the psychology of pictorial representation*. Princeton University Press. https://doi.org/10.1515/9780691252742

Li, B. (2019). *Form, force, and emotion: A study on the relationship between calligraphic form and emotion* (Doctoral dissertation, Nanjing University of the Arts).

Li, C. (2025). *Type ( ) body: A digital exploration of emotion, gesture, and typographic form* [Master's thesis, New York University]. ITP Thesis Archive. https://itp.nyu.edu/thesis/archive/2025/11658-cathy-li/

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167

Mi, F. (1987). *Haiyue mingyan: Annotated edition*. Shanghai Calligraphy and Painting Publishing House.

Qiu, Z. (2005). *The form and interpretation of calligraphy*. Renmin University of China Press.

Varela, F. J., Thompson, E., & Rosch, E. (1991). *The embodied mind: Cognitive science and human experience*. MIT Press. https://mitpress.mit.edu/9780262720212/the-embodied-mind/

Wang, D. (2011). *Wang Dongling on modern calligraphy*. Renmin University of China Press.

Xu, L. (2022). The expressive calligraphic style is represented by Su Shi, Huang Tingjian, Mi Fu, Cai Xiang, and Zhao Mengfu. *Chinese Calligraphy*, 11, 60–65.

Citation:
Ge, Z., & Areerungruang, S. (2026). Redefining Writingness: A Calligraphy-Centered Framework for Visual Analysis with Applications to Embodied Cognition and Perception. Interdisciplinary Academic and Research Journal, 6(5), e299167; DOI: https://doi.org/10.60027/iarj.2026.e299167