

The Reinforcing Effect of Stage Lighting Design on the Emotional Communication of Dance Performance

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Abstract: This study investigates the amplifying effect of stage lighting design on emotional expression in dance performances. It first defines the core components, principles, and foundational positioning of stage lighting design, then analyzes the interplay between lighting and dance emotions, including the intrinsic connection between emotional and visual arts, as well as the symbiotic relationship between dance and lighting. Building on this foundation, the paper elaborates specific implementation strategies from four aspects: color application, brightness control, light-shade shaping, and rhythmic synchronization. Finally, it reveals the enhanced functions of lighting design in creating emotional atmospheres, focusing expressive emphasis, deepening layered dimensions, and stimulating resonance effects. The research demonstrates that through systematic visual construction, stage lighting design can significantly improve the precision, depth, and emotional impact of dance expression, serving as an indispensable auxiliary system for modern dance performances.

Keywords: stage lighting design; dance performance; emotional communication; reinforcement effect; visual synergy

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Modern dance, rooted in personal expression and emotional freedom, transcends traditional dance conventions. Through diverse styles and rich expressive techniques, it has become a widely recognized art form. The improvisational nature and individualized interpretations of each performance lend them unique character. Stage lighting design, a crucial element of modern dance performances, goes beyond mere illumination. By manipulating visual elements like color, brightness, and light effects, it creates a stage environment that resonates with the performance. Lighting design is intrinsically linked to the emotional essence of dance. Through strategic implementation, it enhances the emotional delivery of dance works, guides audiences to perceive the core of the performance, and provides essential support for emotional expression. It serves as a vital medium connecting dancers and audiences on an emotional level.

1.The Basic Concept of Stage Lighting Design

As a core element of stage art, stage lighting design is a systematic creative process that enhances the visual expression of dance emotions. Based on visual communication principles and the expressive needs of dance art, it achieves this through professional lighting equipment configuration, optical parameter adjustments, and spatial light environment construction. The core value lies in using light as a medium to build a visual bridge between dance movements and audience emotional perception. It not only ensures the basic visibility of performances but also deepens the emotional communication effectiveness of dance works through artistic light treatment, serving as an indispensable auxiliary system for emotional expression in modern dance performances.

1.1 Core Constituent Elements

Stage lighting design comprises two core components: equipment systems and technical parameters. The equipment system includes functional luminaires and control devices. Functional luminaires encompass spotlights, floodlights, softboxes, LED array lights, and imaging lights. These luminaires perform diverse functions such as directional focusing, full-area illumination, soft lighting, and dynamic color rendering, based on optical characteristics like beam angle, light intensity range, and color accuracy. Control devices include dimmer consoles, signal processors, and lighting control panels, enabling precise management of switch operations, intensity adjustments, color transitions, and dynamic changes. Technical parameters involve critical metrics including light intensity, color temperature, color rendering index (CRI), beam angle, and projection distance^[1]. The scientific

combination of these parameters directly determines the lighting environment's visual impact and emotional resonance.

1.2 Core Design Principles

Stage lighting design adheres to three core principles: functionality, aesthetics, and synergy. The functionality principle focuses on dance performance requirements, ensuring adequate illumination in key stage areas to clearly present dancers' movements and stage details, while supporting the emotional transmission and transition of dance through light variations. The aesthetics principle emphasizes the unity of the lighting environment with the theme and style of the dance work, creating visual beauty that aligns with emotional expression through artistic treatment of color coordination, light and shadow modeling, and light-dark rhythm. The synergy principle requires organic coordination between lighting design, dance movements, musical rhythm, and stage scenery, adjusting the logic of light changes according to the emotional fluctuations of the dance to achieve coordinated expression of visual, auditory, and physical language.

1.3 Basic Positioning in the Conveyance of Dance Emotion

Stage lighting design serves dual roles as foundational support and visual translation in conveying dance emotions. The foundational support role is realized through creating a physical medium for emotional expression via lighting environments, establishing visual focal points, guiding audience attention, and building a perceptual framework for emotional communication. The visual translation role transforms abstract dance emotions into tangible visual elements like color, brightness, and light effects. By converting intangible emotions into perceptible visual signals through lighting variations, this approach enhances audience understanding and resonance with dance emotions, laying a technical and perceptual foundation for subsequent emotional delivery.

2.The Relationship between Stage Lighting and Dance Emotion

2.1 The Relationship between Emotion and Visual Art

The relationship between emotion and visual art is rooted in the interplay between human visual perception mechanisms and artistic expression principles, forming a bidirectional intrinsic connection. Visual art employs core elements like shape, color, light and shadow, and composition. These elements stimulate visual nerves to trigger emotional responses in the brain's emotional centers, achieving the visual translation of emotions. From a perceptual standpoint, there exists a fixed correlation between the physical attributes of visual elements and emotional experiences. Color spectrum characteristics, light-dark contrasts, and spatial relationships in compositions can all evoke specific emotional reactions through visual cognitive pathways—a universal connection across individuals. Fundamentally, one of the core functions of visual art is emotional transmission. Through deliberate arrangement of visual elements, creators transform inner emotions into perceptible visual symbols, while audiences achieve emotional resonance by interpreting these symbols. As a vital branch of visual art, stage lighting follows the same emotional transmission logic through its core elements like color, brightness, and lighting. This foundational logic provides theoretical support for the emotional connection between lighting and dance.

2.2 The relationship between dance and lighting

The relationship between dance and lighting forms a symbiotic synergy based on emotional communication objectives, characterized by dual attributes of functional complementarity and logical isomorphism. From the perspective of functional complementarity, dance employs physical movements as its core expressive medium, conveying emotional content through rhythm, intensity, amplitude, and posture. However, its emotional expression remains abstract and indirect. Lighting, as a visual medium, creates tangible visual stimuli through quantitative control of color, brightness, and light effects, effectively enhancing emotional expression. Together, they form an "emotional transmission combination of physical expression + visual reinforcement." Regarding logical isomorphism, dance emotions follow a clear logical progression: establishing emotional foundations, rhythmically

fluctuating emotional states, and progressive emotional layers^[2]. Lighting design references this logical framework to create corresponding visual changes, with parameter settings, transition points, and dynamic trends aligning with the emotional trajectory of the dance. In terms of interaction, dance emotions provide precise creative guidance for lighting design, where every lighting decision must align with the dance's emotional needs. Conversely, the visual presentation of lighting enhances the emotional transmission through focused visual elements, atmospheric rendering, and layered reinforcement, making the emotional expression more penetrating and compelling. This bidirectional interactive relationship forms an organic unity between dance and lighting in emotional communication, serving as the core premise for lighting design to amplify dance's emotional delivery.

3.Implementation Strategies of Light Design to Enhance Emotional Transmission in Dance

3.1 The Use of Color

The color application strategy is guided by the emotional core of the dance, establishing and regulating a tonal system. First, the dominant color is defined based on the emotional expression requirements, with auxiliary colors set according to emotional layers to create a clear hierarchy in the color framework. Color temperature parameters are adjusted to define warm or cool attributes, while saturation controls enhance expressive intensity. Color overlay techniques are employed to achieve tonal transitions. Following the logic of emotional shifts, color transition points and gradient durations are planned. Warm and cool tones contrast to highlight emotional conflicts, while same-color light-dark gradients demonstrate emotional progression. Complex visual colors corresponding to multifaceted emotions are constructed through multi-color mixing, ensuring precise alignment between color changes and the dance's emotional trajectory.

3.2 Brightness control

The brightness control strategy dynamically manages light intensity parameters in response to emotional intensity fluctuations during dance performances. Using the baseline emotional intensity as a reference, it establishes a base illumination level and adjusts brightness magnitude and rate according to emotional progression, transitions, and climaxes. Through precision control of light intensity output via a dimmer, linear dimming ensures smooth transitions, while stepwise dimming amplifies the visual impact of emotional shifts^[3]. Sudden transitions between intense and dim lighting effectively convey abrupt emotional changes. By integrating with the stage layout, the system strategically allocates brightness zones: localized intensification highlights core emotional focal points, while uniform illumination creates an overall emotional ambiance. The spatial hierarchy of emotional expression is constructed through differential brightness across areas, achieving synchronized synchronization between brightness variations and emotional intensity.

3.3 The creation of light and shadow

The lighting design strategy employs optical angles and spatial segmentation to enhance visual focus and dimensional expansion in emotional expression. By determining the combination of backlighting, front lighting, side lighting, and top lighting according to emotional emphasis, the system adjusts beam angles and projection distances to create specific light patterns. Through controlled light density—adjusted by modifying light source quantity and beam layering—precise light density arrangements are constructed. These patterns utilize light's virtual-real transitions to convey emotional ambiguity or determination. Fixed-point lights and contour lighting define core performance zones, while zoned lighting technology achieves functional spatial division. Blurred light boundaries facilitate natural transitions between emotional areas, and multi-zone light combinations present parallel emotional narratives. This approach ensures lighting designs directly serve the prominence and layered construction of emotional expression.

3.4 Rhythm synchronization

The rhythm synchronization strategy centers on the rhythmic logic of dance movements and emotional

expression, achieving precise alignment of lighting changes. First, it analyzes the rhythmic patterns of dance movements and emotional fluctuation cycles to determine the fundamental frequency and node distribution of lighting changes. Through preset programs in the lighting control console, precise synchronization is achieved between lighting transitions, parameter adjustments, dance beats, movement power points, and emotional climax points. Response durations for lighting changes are set to ensure synchronized activation between lighting and dance movements. The lighting transition rate is adjusted according to emotional rhythm variations: slow-paced transitions are used during calm emotional phases, while increased lighting transition frequency is applied during intense emotional moments. By regulating the proportion between lighting amplitude and dance movement intensity, visual rhythm and physical rhythm are coordinated. The rhythmic quality of dynamic lighting changes enhances the expression of dance emotions, ensuring organic unity between lighting rhythm and dance emotional rhythm.

4.The Reinforcing Effect of Stage Lighting Design on the Conveyance of Dance Emotion

4.1 Emphasizing the creation of an emotional atmosphere

Emotional atmosphere creation serves as the foundational reinforcement for lighting design in conveying dance emotions. Through the coordinated effects of color, brightness, and lighting, a stage visual environment is constructed that aligns closely with the emotional core of the dance. Colors trigger audience emotional perception through spectral characteristics, with primary and secondary tones determined by the dance's emotional tone forming an emotionally directional visual field. This allows audiences to initially establish psychological states corresponding to the dance's emotions during visual reception^[4]. Brightness, precisely controlled through light intensity parameters, creates illumination environments matching emotional intensity: bright lighting corresponds to positive emotions, while dim lighting matches negative emotions. The even distribution or localized variations of brightness further intensify the emotional attributes of the atmosphere. Lighting and shadow, through angle combinations and density control, construct spatial light-dark layers. The interplay of virtual and real shadows, along with their distribution patterns, resonates with the emotional tension of the dance, enhancing immersion. This atmospheric creation, achieved through the comprehensive superposition of visual elements, establishes a tangible perceptual carrier for emotional transmission. From the moment audiences enter the performance space, they are immersed in a specific emotional context, laying the foundation for subsequent deep emotional reception.

4.2 Focus on the key aspects of emotional expression

The core of emotional expression in lighting design lies in amplifying dance's emotional delivery. Through directional lighting and visual guidance mechanisms, it highlights key areas and pivotal moments in emotional expression. By leveraging the optical properties of spotlights and fixed-point lights, precise illumination is achieved for core performance zones and dancers' key movements. Focused beams create visual focal points, directing audience attention to the emotional core carriers while preventing weakened expression due to visual distraction. The use of contour lighting and backlighting enhances the visual distinctiveness of dancers' body lines and movement details, making their emotional language more visually penetrating and allowing audiences to clearly grasp the emotional essence behind the actions. At critical emotional transitions and climaxes, targeted adjustments to lighting parameters intensify visual focus, turning these pivotal moments into strong visual memory points. This focused approach ensures effective perception of core emotional content through precise visual attention allocation, thereby improving the accuracy and effectiveness of emotional communication.

4.3 Deepening the emotional dimension

The deepening of emotional dimensions in lighting design serves as an advanced enhancement for conveying dance emotions. Through dynamic changes and diverse combinations of lighting elements, it reveals the internal structure and progressive relationships of dance emotions. The gradual transitions, layering, and switching of lighting colors correspond to different stages of emotional development — emergence, progression, and transformation—creating phased variations in single-emotion expressions and forming vertical emotional layers. The

fluctuations in brightness intensity and transitions between light and shadow synchronize with the intensity changes of dance emotions, using brightness gradients to demonstrate the progression from calm to intense, from suppression to release, enriching the vertical dimension of emotional expression. Spatial segmentation and multi-zone combinations of light and shadow enable parallel presentation of emotions across different dimensions. By leveraging the distinct characteristics of light and shadow in various zones, it conveys the complex coexisting emotions in dance works, constructing horizontal emotional layers. The rhythmic variations in dynamic lighting changes align with the intrinsic rhythm of dance emotions, creating temporal layers of fast and slow, urgent and relaxed expressions^[5]. This deepening effect breaks through monotonous emotional expression patterns, presenting dance emotions with multi-dimensional, three-dimensional structural features and enhancing the depth and richness of emotional communication.

4.4 The effectiveness of evoking emotional resonance

The ultimate power of lighting design lies in its ability to amplify emotional resonance, transforming visual elements into emotional resonance. By precisely aligning visual stimuli with emotional perception, it guides audiences from initial emotional reception to genuine emotional identification. Grounded in visual perception principles and emotional psychology, lighting designers optimize color schemes, brightness levels, and light effects to create visual-linguistic synergy. This approach lowers emotional barriers, enabling rapid audience engagement with dance emotions. Through synchronized lighting changes, dance movements, and musical rhythms, a multi-sensory experience is crafted that intensifies emotional impact. The visual translation of abstract physical expressions into tangible signals helps audiences grasp the emotional essence of dance works, fostering shared emotional understanding. By maximizing lighting parameters during core emotional expressions, the technology amplifies visual impact, triggering deep emotional resonance and achieving two-way emotional transmission. This innovative approach transcends the physical boundaries of stage performances, creating cross-platform emotional connections that enhance both artistic appeal and emotional communication effectiveness.

5 Epilogue

As a pivotal auxiliary system in modern dance performances, stage lighting design collaborates with technical equipment and artistic principles to establish foundational support. Through systematic strategies of color, brightness, lighting effects, and rhythm, it creates multidimensional enhancements in emotional atmosphere, focal point emphasis, layered depth, and resonance stimulation. With visual synergy at its core, this approach significantly elevates the precision and emotional impact of dance expression, becoming an irreplaceable component of artistic performance. It demonstrates the organic unity between light and dance in conveying emotions.

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