

A Study on the Musical Language and Performance Interpretation of Prokofiev's "Cello (Symphonic) Concerto in E Minor"

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Abstract: The core artistic value of Prokofiev's "Cello (Symphonic) Concerto in E minor" (Op. 125) lies in reconfiguring the dialogue mechanism between the solo part and the orchestra based on the "symphonic" principle, and thereby generating a performance technical load far beyond the conventional cello literature. The research path of this paper starts from the structural form of the work, then traces the continuous and transformed process of the core pitch motive throughout the three movements of the entire piece, and finally focuses the analytical focus on several key technical aspects such as chord plucking, double notes of extreme intervals, high-thumb position operation, and complex bowing transitions. The basic judgment of the argument is that the generation of these technical difficulties does not stem from the composer's preference for display effects, but from his continuous "percussive" color concept, the rhythmic driving logic of the tarantella form, and the inevitable requirements of the monumental structural will for the performer in the solo discourse layer. Therefore, the performer must reconstruct a balanced performance strategy with internal tension between the traditional singing-like pronunciation system and Prokofiev's modern sound demands, and only in this way can the performance potential contained in this work be substantially released.

Keywords: Prokofiev; Cello Symphony Concerto; Musical Characteristics; Performance Techniques.

1. Introduction

Sergei Prokofiev (1891 - 1953) completed the "E Minor Cello (Symphonic) Concerto" (*Sinfonia Concertante* for Cello and Orchestra in E minor, Op. 125) in 1952. This work was his last orchestral composition featuring the cello as the principal instrument during his lifetime. It was originally the "E Minor First Cello Concerto" (Op. 58) composed in 1938, which was later revised with the participation of cellist Mstislav Rostropovich, resulting in the current classic version.

As contemporary music studies entered a new stage, the academic community has continuously re-examined and deeply explored Prokofiev's creative value and artistic status. The related research results have been increasingly abundant and the research dimensions have continued to expand. However, compared to the composer's popular piano and violin concertos, there is still a lack of research on his "E Minor Cello (Symphonic) Concerto" (Op. 125). Moreover, in core research topics such as the definition of the work's form, technical characteristics, and creative logic, there have not yet been unified and recognized academic conclusions, and there are still many research controversies and insufficient space for improvement.

Based on the existing research results in China, monographs and journal articles have established a fundamental research system. However, there are obvious differences in the research focuses of these results. In his book *Research on the Concerto Composition of Prokofiev*, Yang Zhengjun systematically summarized the overall compositional characteristics of Prokofiev's concerto genre [1-3]. He conducted a specific analysis of the cycle structure, movement layout, and formal logic of Op. 125, clearly pointing out that this work features an inverted movement structure, and the second movement has typical characteristics of marginal musical forms. This provides important academic references for subsequent music - form

analyses in the academic community. Nevertheless, the book's discussion on the core harmonic language and harmonic technique characteristics of the work is relatively brief, lacking in research depth.

In the international research field, academic studies mainly focus on three dimensions: musical form determination, the composition and collaboration process, and performance techniques [6-9]. Leonard DUMITRIU (2017) clearly argued that the first movement of Op. 125 has a standard sonata - form structure and put forward three supporting arguments based on the work's tonal layout, paragraph division, etc. However, this research did not fully explain core issues such as the special logic of tonal regression and tonal conflicts within the movement, so the research conclusion has certain limitations. From the perspective of performance practice, Ivashkin A.V. (2009) carefully investigated the collaborative origin between Prokofiev and Rostropovich. He systematically sorted out the key role that Rostropovich played in the revision and finalization process of Op. 125, clarifying the core context of the work's composition and revision. Jiyeon Hwang (2016) centered on the performance techniques of the work. Through a large number of score comparisons and detailed performance analysis, Hwang summarized Prokofiev's exploration and innovation in the cello's range, performance skills, and timbre expressiveness in this work, enriching the research on the work's performance techniques.

A comprehensive review of the existing research results at home and abroad reveals that the academic community has accumulated a certain research foundation on Prokofiev's Op. 125, achieving initial exploration of the work's basic background, core musical forms, and basic performance techniques. However, the overall research system still has obvious shortcomings. Firstly, the existing research mainly focuses on the definition of musical form structure, and there are significant differences in the research conclusions of

different scholars, with no unified understanding yet formed. Secondly, the research perspectives are relatively single, mostly limited to single dimensions such as musical form analysis and performance skills, lacking systematic and comprehensive research on the work's core compositional techniques, including harmonic language, orchestration logic, thematic material development, and symphonic construction. Thirdly, the amount and depth of specialized domestic research on this work are relatively small, showing an obvious gap compared with international research. Given the existing research deficiencies in the academic community, this paper takes compositional techniques as the core entry point to conduct a multi - dimensional and systematic in - depth analysis of Op. 125, which has sufficient research value and academic potential.

2. The Creative Background and Musical Analysis of the "Cello (Symphony) Concerto in E Minor" (Op. 125)

2.1. Section Headings

2.1.1. The Creative Context and the Shift Toward Symphonic Composition

The final version of Prokofiev's Cello (Symphonic) Concerto in E minor, Op. 125, was not created in one go but was the result of long - term refinement, reconstruction, and improvement based on his earlier works. The blueprint for this work was the composer's First Cello Concerto in E minor, Op. 58, composed in 1938. Influenced by multiple factors such as the aesthetic of the era, the work's structure, and performance suitability, this early work did not gain wide recognition in the industry after its premiere, and its overall dissemination and academic influence were relatively limited. In 1952, Prokofiev heard Rostropovich's cello performance at the Moscow Conservatory. The virtuoso's superb playing skills and unique interpretation of the works made the composer re - focus on this old work that had been for many years, and he immediately initiated a systematic revision and reconstruction.

During the revision and creation stage, Prokofiev attached great importance to the suitability for performance practice. He communicated and discussed with Rostropovich multiple times, fully absorbing the latter's performance experience and professional suggestions, and comprehensively rewriting and optimizing the solo part of the work. Compared with the 1938 draft version, the revised work not only significantly expanded the thematic materials of the solo part and enriched the levels of melodic development but also achieved a fundamental innovation in the function of the orchestra part. The entire work breaks through the traditional creative paradigm of solo concertos, constructs a highly - tensioned musical drama structure, and forms a mature symphonic development logic.

From the perspective of the creative context and the core of the style, there are significant intrinsic stylistic connections between the texture structure, structural scale, and symphonic tension of this work and Prokofiev's late - period works, the Fifth Symphony and the Sixth Symphony. Moreover, the delicate, long - lasting, and poetic lyrical thematic writing in this work is also highly consistent with the aesthetic characteristics of the Seventh Symphony, which comprehensively reflects the typical characteristics of the

composer's late - period symphonic creation.

Based on the structural changes of the work itself and the iterative upgrade of the creative concept, Prokofiev officially named the reconstructed final version Cello (Symphonic) Concerto (Sinfonia Concertante) and dedicated this work, which embodies his late - period creative concept, to Rostropovich. The change of the number from Op. 58 to Op. 125 and the adjustment of the genre naming are by no means simple modifications of the text title but directly reflect the deepening and reconstruction of the symphonic concept in Prokofiev's late - period creative thinking. The work completely breaks away from the traditional creative paradigm of cello concertos centered on the virtuosity of the solo instrument, breaks the inherent pattern of a clear distinction between the solo part and the orchestra part, and achieves a deep integration, balanced co - existence of the solo part and the orchestra in theme construction, sound levels, and development techniques. This innovation in the creative mode, brings and haltsell before ho aau to 4 the actualization of the work's transformation of genre attributes, realizes the high unity of the musical connotation and the genre positioning, and also marks the composer's comprehensive shift towards a symphonic mindset in his concerto creation.

2.2. The Musical Structural Characteristics and Functional Role of the Work

2.2.1. The First Movement

The first movement of the work is in E minor, in 2/4 time signature, with a total of 249 measures, and the tempo marking is Andante. Compared with the standard sonata - form paradigm commonly used in the first movement of classical concertos, this movement shows distinct innovation and particularity in its structural design. The composer abandons the traditional paradigm and adopts the recapitulatory compound ternary form (A-B-A') to construct the overall framework.

First Movement					
Musical Structure	Introduction	Section A	Section B	Recapitulation (A')	Coda
Measures	1-6	6-94	93-197	197-241	241-249

Figure 1. Analysis of the musical form of the first movement

This structural choice fundamentally defines the functional orientation of this movement within the entire work: it is not the core vehicle for unfolding dramatic conflicts and advancing musical contradictions as in the first movement of traditional concertos, but rather assumes the introductory function of lyrical foreshadowing and atmosphere introduction. In terms of the specific paragraph layout, the introduction of the movement spans from measures 1 to 6, using simple musical materials to set the overall tone. The main section A covers measures 6 to 94. The core theme is characterized by long and expansive melodic lines.

The continuous long - duration phrases pose high technical requirements for the performer's bowing stability, breath control, and dynamic level regulation, making it the core difficulty of the basic performance techniques in this movement. Section B corresponds to measures 93 to 197. The new musical materials within this section have a deep intervallic relationship with the opening introduction. The core intervals of fourths and seconds run throughout, fully

reflecting Prokofiev's structural creative concept of "upholding unity in change" in his late - stage works. The recapitulation A' is located from measures 197 to 241. The composer streamlines and condenses the core theme materials, achieving a concise reconstruction of the musical materials while retaining the essence of the theme. The coda of the movement spans from measures 241 to 249, played at an Adagio tempo, creating a quiet and soothing closing atmosphere. It not only completes the full - circle structure of the first movement but also, through the distinct contrast in tempo and sonic texture, constructs a pre - contrast context for the lively and active musical character of the second movement, ensuring the logical connection between the movements of the whole piece.

2.2.2. The Second Movement

The second movement of the composition is in the key of A major, with a 2/4 time signature. The total duration is 510 measures, and the tempo marking is Allegro moderato. This is the longest and most complex movement among the four sections of the entire piece, featuring the richest musical imagery and the most intricate structure. This movement follows the sonata form structure as a whole, but does not adhere strictly to the fixed pattern of the classical sonata form. The internal sections, material application, and structural design have all been innovatively expanded, breaking through the rigidity limitations of the traditional structure.

Second Movement									
Exposition				Development Introduction		Recapitulation		Coda	
				Part II	Cadenza				
Main	Main Theme	Episode	Subordinate Theme	179–	188–	244–	360–	455–	
1–62	62–72	72–92	93–178	187	244	360	454	510	

Figure 2. Analysis of the musical form of the second movement

In the exposition section of the movement, the main section is located from measure 1 to measure 62, introduced by the solo cello in a free-like cadenza-like style. The continuously extended melody line in the high register maintains a high-density sound tension, establishing the core musical character of the movement. The connecting section is from measure 62 to measure 72, responsible for the transition and connection of the tonality and emotions; the insert section corresponds to measures 72 to 92, enriching the musical layers through the introduction of new materials; the secondary section is located from measure 93 to measure 178, with the tonality changing to E major. In terms of tonal color and musical emotion, it forms a sharp contrast with the main section, constructing a unified yet opposing relationship of the dual musical images.

The most innovative structural design of this movement is the stereotyped cadenza section (measures 179 to 244). Traditional cadenza sections are mostly performed by the performer's improvisation, but Prokofiev abandoned the improvisation mode and integrated, reorganized, and developed the core musical materials of the main section, insert section, and insert section, allowing multiple themes to be organically integrated in the cadenza section. This design not only retains the virtuosity attribute of the solo instrument but also gives the cadenza section an important structural connection function, significantly reducing the improvisation space of the performer, and achieving the composer's

comprehensive control over the structure, sound, and rhythm of the work. The development section corresponds to measures 244 to 360, with a dense double-note texture and continuous sixteenth-note patterns as the core texture, shaping a dual sound atmosphere of harmonious agility and intense agitation, driving the music emotion to continuously rise. The recapitulation section is located from measure 360 to measure 454, with a reasonable reduction in length compared to the exposition section, with concise and focused materials and key points; the coda section (measures 455 to 510) concludes the entire movement with a vigorous and heavy musical touch, completing the dual conclusion of structure and emotion. The recapitulation section A' is located from measure 197 to measure 241, where the composer simplifies and condenses the core theme materials, achieving the concise and restructured musical materials while retaining the core of the theme. The coda section is from measure 241 to measure 249, with a slow movement speed (Adagio), creating a quiet and soothing concluding atmosphere, completing the complete loop of the first movement structure and establishing a pre-existing contrast context for the lively and active musical character of the second movement, ensuring the logic of the chapter connection of the entire piece.

2.2.3. The Third Movement

The third movement is in D major, 2/4 time, with a total of 401 bars. The overall tempo follows the sequence of Andante → Allegretto → Allegro, presenting a dynamic progression. The overall structure is a double variation form, relying on two independent themes to construct the variation sequences. This structural form is extremely rare in the composition of the final movements of classical and romantic concertos, fully demonstrating Prokofiev's innovative and personalized reformation of the traditional variation composition principles.

Third Movement										
Part A				Part B				Recapitulation (A')		Coda
A	Theme Variation	Cadenza	Second Variation	B	B1	B2	B3	Third Variation	Fourth Variation	
1–18	19–71	72– 103	187– 190	188–264				264–312	337–371	371–401

Figure 3. Analysis of the musical form of the third movement

The movement begins with a strong forte E major chord introduction by the orchestra. Then, the solo cello presents the A theme from bars 1 to 18, with a simple and transparent melody line and a lively rhythm. Overall, it presents a fresh and simple pastoral musical atmosphere. The first variation (bars 19 to 71) breaks the original rhythmic pattern and restructures the theme into a triplet rhythm. The trumpet solo leads the theme material first, then transfers it to the orchestra for overall continuation. The solo cello responds with a scale-like variant pattern, gradually transforming the theme's character into a lively dance style. The 72nd to 103rd bars are a transitional section, laying the atmosphere for the subsequent variations; the second variation (bars 104 to 190) combines staccato playing and humorous instrumentation techniques to give the theme a rich Yugoslavian folk dance rhythm characteristic, further enriching the folk music color of the movement. The B theme is officially introduced from bars 188 to 264. In terms of melody character and sound quality, it forms a sharp contrast with the A theme,

constituting the confrontation of the dual core themes of the movement. According to Yang Zhengjun's research conclusion, the B theme and its subsequent three variations (B1, B2, B3) have a high degree of regularity. Each variation section strictly follows a 16-bar syntactic structure, with uniform variation techniques, belonging to a typical strict variation composition.[2-3]

The recapitulation section returns to the core material of the A theme through two theme variations: The third variation (bars 264 to 312) continues the core rhythm of the first variation's latter part and innovatively changes it. The brass section interprets the first theme with a thick and heavy sound, while the solo cello interweaves and superimposes with a lyrical singing melody, forming a multi-layered sound texture. The fourth variation (bars 337 to 371) incorporates the clear and transparent sound of the xylophone and reflects the theme melody in the high register of the solo cello, creating a serene and bright musical atmosphere. The tail section from bars 371 to 401 has extremely high structural value and creative ingenuity. Prokofiev ingeniously reused the core material of the dance section of the second movement in this section. This cross-movement theme correspondence composition technique broke the traditional composition convention of the final movement of a concerto and achieved the linkage and logical connection of the themes between all movements, significantly strengthening the overall structure integrity and cohesion of the entire work. At the end of the movement, the solo cello's pitch range continues to ascend, interpreting an uplifting sound like a bugle, accompanied by three steady and powerful strikes of the bass drum, drawing a solemn and magnificent conclusion for the entire piece. Shostakovich once compared the performance effect of the solo cello's high-pitched section in this section to "sound under the dome", this comment accurately summarizes the unique sound characteristics of this section, which are ethereal and vast, with a sense of ceremony and solemnity.

2.3. The Continuous Presence of the Core Motivation and the Overall Logic of the Playing Techniques

Looking at the three movements of the entire piece, their distinct structural forms - the recapitulation ternary form in the first movement, the innovative sonata form with embedded stereotyped cadenzas in the second movement, and the double variation form in the third movement - collectively reflect Prokofiev's core structural innovation strategy of "building on traditional structural paradigms while incorporating modern creative concepts". A mere analysis of the structural forms can only clarify the external structural framework of the work, but it cannot establish a deep connection between the musical structure and the performance practice, and it is difficult to provide effective theoretical guidance for actual performances. In fact, the structural logic and performance technique system of the entire work are all unified and comprehensively controlled by a core pitch motive. This motive continuously transforms, expands, and reconstructs in the three movements, forming a unified and progressively developing musical development thread, and also defining the core performance technical demands of each movement.

This core motive first appears in the opening introduction of the first movement (bars 1-2), with an ascending fourth interval (F-bB) played by the woodwind and string sections as the core form. It is the fundamental cellular material for

constructing the music language of the entire piece. In the A section of the first movement (bars 7-10), this fourth motive is deeply integrated into the long and expansive melody line, and the musical function transforms from the commanding and preparatory vocabulary of the introduction to the statement of the thematic core material. The performance form also changes from the strong block-like sound of the ensemble playing to the continuous linear sound of the long bow plucking of the solo cello, posing basic requirements for the player's bowing continuity and sound uniformity. In the development section of the second movement (before and after bar 260), the form and performance method of the core motive undergo significant changes. The originally complete fourth interval motive is decomposed into short rhythmic units, combined with dense sixteenth-note toccata-like patterns, and the fourth interval stacking is incorporated into double notes and chord textures. The corresponding performance technique changes to highly percussive pizzicato and accent playing, highlighting the tension and dynamism of the music. In the coda of the third movement (after bar 385), the core motive returns in its ultimate expansion form, gradually expanding from the original fourth interval to a sixth or eighth interval span. It is presented in the highest pitch range of the solo cello at full volume (ff), posing extremely high requirements for the player's ability to sustain in the high pitch range, breath endurance, and control of volume precision. From the overall evolution of the motive, it can be clearly seen that the core technical difficulties of each movement are not isolated virtuoso segments: the continuous playing with long bows in the first movement, the double-note technique and percussive staccato in the second movement, and the endurance control in the high pitch range in the third movement, are essentially the diverse sound transformation forms of the same core pitch motive under different symphonic contexts and different structural levels. Based on this core logic, the following text will conduct a specialized analysis of five core performance techniques: cello pizzicato, changing positions, double notes, thumb position, and bowing. It will systematically explain how each technique adapts to the evolution rules of the core motive and precisely responds to the core performance demands of the work's structure and musical expression.

3. Performance Technique Analysis of the Cello (Symphonic) Concerto in E-flat Major

Prokofiev's Cello (Symphony) Concerto in E minor puts forward comprehensive requirements for cello playing technology. The performer must have a variety of techniques such as fast playing three, six and eight double notes, chord pulling and plucking, bow jumping and bow pausing, and need to maintain the coordination and balance of left and right hand strength, so as to effectively present the musical connotation of the cello part of the work.

3.1. Chord Plucking

Chord plucking has appeared many times in this work (such as sections 169-176 in the first movement and sections 210-214 in the second movement). Its function has gone beyond the level of traditional accompaniment or color embellishment, and has become a musical vocabulary with independent expressiveness. For example, music score example 1 and music score example 2, the above two chord

plucks are located in the turning sections of the movement, and undertake the function of "bridge" connecting different musical character regions. The distinctive crisp and short sound of chord plucking is in sharp opposition to the long tone of long bow playing in the front and back paragraphs, thus strengthening the structural division of music at the tone level.



Sample music score 1



Sample music score 2

At the level of technical operation, the performer should choose different plucking methods according to the direction of the chord, and the middle finger should be used for the downward chord (sweeping from the high chord to the low chord) to produce a smooth and impact effect; The ascending chord (from the bass chord to the treble chord) should use your thumb to highlight the clarity of the melody lines. In addition, the following points should be noted: first, pitch control. When plucking, the accuracy of pressing the string with the left hand is more critical than playing. Because the plucking time is very short, the performer has no room for adjustment after pronunciation. Second, the matching of intensity and timbre. Different chords have different sound requirements. Densely arranged chords need to be evenly distributed, while open arranged chords may need to highlight a specific voice part. The performer should adjust the plucking force and touch angle according to the sound function of chords. Third, the balance between coherence and independence. In the passage of continuous playing, the performer must not only maintain the continuity and stability of the rhythm, but also ensure that each chord is pronounced clearly and independently to avoid blurring into pieces.

The technical difficulty of chord plucking in this work is not only reflected in the plucking itself, but also that the performer needs to frequently complete the conversion between plucking and playing in the fast music. This requires the right hand to quickly switch between plucking the string and holding the bow, which puts forward a high degree of comprehensive test for the basic skills of the performer.

3.2. Change the Handle

The replacement technique occupies a key position in the cello performance system, and its operation efficiency depends on the coordination of the center of gravity transfer, the familiarity of the handle space and the accurate perception of the finger distance relationship. The above factors jointly restrict the one-time arrival rate. The fragment (bars 7-12) shown in the score example 3 is the first presentation of the Solo Cello in the whole song. The implementation of the replacement technique here is not only related to the accuracy of pitch, but also directly involved in the shaping of the sound image at the beginning of the work.



Sample music score 3

From the perspective of technical regulations, this fragment focuses on long-distance handlebar replacement. The performer shall quickly transfer from the low handlebar position to the high handlebar position in a short time, and then turn back, with the displacement range covering multiple handlebar positions. To ensure the reliability of such large-scale replacement, it is necessary to focus on the following operation links. First, predictive arm posture adjustment. Before changing the handle, the performer should preset the shoulder abduction angle, elbow flexion and extension degree and wrist flexion/dorsiflexion state according to the handle position of the target phoneme, so that the entire left upper limb is in the optimal force configuration in mechanics at the moment of contact with the new handle position, so as to avoid pitch sinking or fingertip landing point deviation caused by posture lag. Second, the control of the glide effect in the process of changing the same finger. In this clip, the same finger pressed the new phoneme after changing the position for many times. In order to achieve the balance between timbre cleanliness and connection smoothness, the performer needs to reduce the finger pressure to the critical contact threshold during the sliding phase, that is, to maintain the weak touch of the string without over exciting its vibration, so as to not only suppress the glide noise, but also avoid the front and back tone fracture caused by the complete separation of the fingers from the string. The accuracy of this operation is very high, and its actual implementation effect directly depends on the collaborative antagonistic regulation ability between the palmar muscles and the extensor flexor digitorum. Third, real-time pitch correction guided by auditory feedback. After a long-distance displacement, the deviation probability between the falling finger and the standard phoneme increases significantly, and the performer must implement rapid correction through the audio feedback loop within a very short time after the fingertip is set. The cultivation of this correction ability depends on the deep internalization of the position map and the perceptual memory of the distance accumulated in the daily slow scale and arpeggio training, rather than the visual reference fingerboard. In terms of musical expression, this segment carries the emotional narrative function of the beginning of the whole song, and needs to achieve a delicate transition between the two characters of "low back and introverted" and "sharp edges and corners". The smoothness of the action of changing the handle directly affects the breath coherence of the melody voice, which determines whether the emotional transition has a sense of natural progression on hearing. Once the action of changing the handle produces a setback or pitch drift, the narrative logic of the opening will be destroyed.

3.3. Two Tone and Chord Playing

In the left-handed skill system of cello, double tone occupies a pivotal position. Prokofiev's two tone technique in this work has gone beyond the conventional technical category of Cello Concerto literature. It not only covers the traditional three, six and eight tone, but also introduces the ten tone (score example 4). This interval is close to the physiological limit of finger extension on the cello fingerboard, reflecting the composer's bold expansion of the musical instrument's range boundary. The difficulty of playing this kind of extreme two tone is first reflected in the coordination of left hand independence and extension. Press two tones far apart at the same time in the low handlebar position, and each finger needs to complete a large extension

on the basis of maintaining independent movement; The second is the precise control of intonation. When two tones are pronounced, they resonate at the same time, and the slight deviation of any tone will be amplified by hearing. Especially in fast paragraphs, the left hand has to press the string and change the handle in a very short time, which constitutes a double test of tactile response speed and intonation judgment; Thirdly, the balance of force distribution is involved. The bow hair must contact two strings at the same time when moving the bow. The performer needs to balance the pronunciation of the two strings through the fine adjustment of bow pressure and bow speed to avoid the imbalance of sound structure due to uneven stress. At the training level, the mastery of such two tones usually follows the gradual steps: at the beginning, the left hand presses the string in isolation at a very slow speed to ensure accurate intonation and finger position; Then with the right hand bow, focus on the articulation and balance of strength; Finally, gradually speed up to the speed required by the work. This process must establish a dynamic balance between accuracy and fluency, otherwise it is difficult to ensure the stability of intonation and sound quality.



Sample music score 4

3.4. Thumb Position

The thumb handle position is one of the most difficult links in the left hand technique of this work. The work requires the cello to carry out a long melody statement in the extreme high range (three groups of small characters), which forces the performer to rely heavily on the thumb position. Hwang (2016) pointed out that the melody "must be played with the thumb across the strings, which in itself limits the flexibility of the hand, thus affecting the intonation and projection"[7]. The technical core of thumb handle position is the stability of hand shape. Different from the conventional handlebar position, the thumb handlebar position must place the thumb horizontally on two strings to form a supporting base point, and the other four fingers complete the string pressing action above the thumb. Three technical points should be emphasized in the performance: the horizontal placement of the thumb should be stable to avoid distortion with the change of pitch, so as to ensure the stability of the touch point and the uniform transmission of strength; The third finger (ring finger) bears an important chord pressing function in this position, and its joints must be fully upright, which depends on the joint action of the finger's own strength and the coordinated support of the wrist and forearm; The first and second fingers are usually kept slightly bent to provide necessary operation space for the three fingers.

Music score example 5 shows the combination of the thumb position and the rapid running of the sixteenth and thirty second quavers. The mastery of such paragraphs needs to go through a gradual process of speed gradient, and its core lies in the organic unity of each tone clarity and rhythm stability. The arpeggio section shown in score Example 7 further tests the fluency of the thumb handle. The performer not only needs to accurately control the speed and strength of the arpeggio, but also needs to have sufficient function to support the strong ending of the whole song in the extreme high range after completing this technical section. It can be seen that this technical requirement has gone beyond the

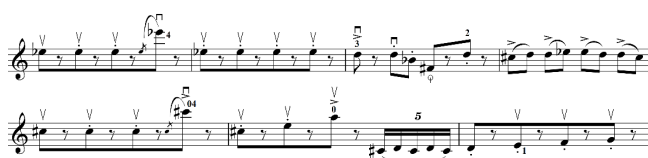
scope of pure skill training, and has risen to the overall performance strategy level of physical distribution and endurance management.



Sample music score 5

3.5. The Comprehensive Application of Bows and Staccato

In the technical system of cello performance, the alternate use of the continuous bow and staccato has always been the key index to measure the right hand control ability and the depth of music interpretation. Prokofiev's requirements for bow technique in this work also push this index to a level close to the limit. As the academic circle has noticed, the composer "needs to hold the bow arm especially strong for the representative long melody and endless phrases, and the bow change is perfect". The example 6 of the score shows the typical paragraphs in which the continuous bow and staccato frequently change in the same phrase, which constitutes the core difficulty of the bow technique in this work.



Sample music score 6

As far as the technical essence of this difficulty is concerned, its challenge is mainly reflected in the effective playing of interruptions during the continuous bow pushing process. The upper bow (push bow) itself is in a relatively disadvantageous position in the force mechanism, and the short and clear staccato is embedded in this kind of bow sequence, which further increases the coordination difficulty between strength control and sound quality definition. The performer must carefully adjust the pressure exerted on the bow rod by the right index finger, so that each push of the bow not only maintains the uniformity of force, but also has the necessary elasticity and granular feeling.

Aiming at this technical problem, the selection of bow segment, the connection of bow transformation and the dynamic allocation of strength constitute three interrelated control dimensions. At the level of arch segment, it is suggested to take the middle and upper arch segment as the starting position to avoid the arch tip area as much as possible; Because of its relative advantages in force and control, the middle and upper arch segment is more conducive to ensure the clear presentation of the broken tone. At the level of bow technique conversion, when the bow is quickly turned to the bow after continuous pushing, the pressure of the index finger needs to be released and redistributed in time to prevent the timbre splitting caused by sudden change in strength. At the level of strength control, the pressure of the index finger on the bow rod must change elastically with the fluctuation of the phrase. If the pressure is too small, the notes will lose their proper edges and corners, and if the pressure is too large, the sound quality will be damaged. This micro scale regulation mechanism actually requires the performer to have highly

sensitive tactile feedback ability and the accuracy of right hand muscle memory. From the perspective of musical expression, the alternation of the continuous bow and staccato is not pure technical ostentation, but an important rhetorical device to shape the character of the work. The continuous bow paragraph often carries the lyrical melody, while the staccato paragraph strengthens the characteristics of banter and motivation in music. The tension transformation between the two is just the microcosmic embodiment of the juxtaposition of "irony" and "lyricism" in Prokofiev's vocabulary. Therefore, the performer needs to establish a conscious echo relationship between the technical implementation and the expression of meaning, so that the choice of bow technique can truly serve the transmission of musical connotation.

4. Conclusion

Prokofiev is a representative outstanding composer from the 19th to the 20th century. His creation always combines the preciseness of traditional composing paradigm and the innovation of modern music language, realizing the organic integration of classical techniques and modern aesthetics, traditional structure and contemporary thinking. Taking Prokofiev's Cello Symphony Concerto in E minor as the research object, this paper systematically combs the creation and revision of the work, the structural characteristics of the music form and the evolution logic of the core motivation, disassembles the core difficult techniques of the work combined with the performance practice, and deeply discusses the internal relationship between the creation characteristics of the work and the performance interpretation. The study found that the overall creative logic of the work is coherent and the style is unified. In terms of theme construction, mode harmony, musical structure, orchestration language and so on, the work has formed a highly recognizable personal creative style.

From the perspective of creative iteration and structural design of the work, the revision process of Op.125 from the early draft to the final draft is not only the optimization and improvement of detail techniques and paragraph materials, but also the continuous deepening and cognitive upgrading of Prokofiev's "symphonic" core of the work. The three movements of the whole song adopt a differentiated and innovative musical form structure. The reproduction of the first movement is a three part musical form, the second movement is a new sonata form that integrates stereotyped colorful forms, and the third movement is a double variation form. It not only inherits the traditional structural core of the classical Concerto genre, but also integrates the innovative structural thinking of modern music in the 20th century, and constructs an overall framework with both traditional details and modern characteristics. It is a typical model for the modernization of the traditional paradigm.

From the perspective of the relationship between the performance techniques and the musical vocabulary, the highly difficult techniques covered in this work, such as the ten degree extreme double tone, the extension of the thumb position in the high pitch area, the fast bow switching, and the alternate pluck and pull performance, are not the technical flashy passages deliberately set by the composer, but are deeply bound with the core musical vocabulary such as the iconic percussion timbre, the tokata rhythm, and the long breath Lyric melody. The precise presentation of all kinds of difficult techniques is essentially to adapt to the unique sound characteristics and emotional expression of the work,

requiring the performer to break through the single technical training thinking, build a dynamic balance between precise and standardized technical operation and full three-dimensional music expression, and achieve the performance interpretation goal of technology serving the content and techniques fitting the style.

This work has been gradually polished into a masterpiece of symphonic concerto with both epic pattern and artistic depth from the strict techniques and extreme tension of the early version, and has been evaluated as a classic work of "monumental and epic" by the academic circle. This creative iteration process is not only an important symbol of Prokofiev's mature and stereotyped personal creative style, but also a concentrated reflection of the overall development trend of Concerto genre in the middle of the 20th century: the boundary between solo instruments and Symphony Orchestra gradually melted away, the orchestra was no longer limited to the simple accompaniment function, but formed a dialogue symbiotic relationship with the solo voice, and the symphonic thinking gradually replaced the traditional showmanship logic and became the core creative driving force of the whole Concerto.

At the same time, this study still has some limitations. Limited by the length and perspective of the study, this paper did not carry out a comparative analysis of the recording versions of different performers, and failed to explore the style differences and artistic characteristics of different performance interpretations. At the same time, the orchestration details of the total score of the band and the hierarchical logic of the symphony texture still need to be further refined. The above deficiencies can be used as the expansion direction of the follow-up research, and the research system of this work can be further improved through the comparison of multiple versions and the analysis of refined orchestration. It is expected that the technical analysis and theoretical combing of this paper can provide useful theoretical and practical reference for Cello players to accurately understand the style of the work, standardize the performance techniques, and deepen the interpretation of music.

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