The Wild Virtuosity of Beethoven's *Hammerklavier* Sonata

Tempo, metaphor, and experimental performance in Op. 106

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Abstract

Beethoven's metronome indication of minim = 138 for the first movement of the Hammerklavier Sonata, Op. 106, has long been regarded as impracticable, erroneous, or incompatible with the movement's musical substance. Although some performers and commentators have defended the marking as a genuine indication of Beethoven's intentions, the movement is generally performed considerably below the prescribed tempo, while explanations for the discrepancy have ranged from a defective metronome to theories proposing that nineteenth-century musicians understood the metronomic beat differently. Such proposals often begin from the assumption that a convincing performance at, or close to, minim = 138 is musically unfeasible.

This article approaches the problem through artistic research. Instead of accelerating an established interpretation, I ask what kind of interpretation would make Beethoven's tempo appear natural. The experiments suggest that the perceived impossibility of minim = 138 is partly produced by a performance tradition that associates the Hammerklavier with monumentality, solidity, a stable pulse, and the clear projection of every notated detail. As the tempo rises, the means used to communicate these qualities become increasingly difficult to sustain, creating a practical and imaginative ceiling.

As an alternative, I use performance practices associated with extreme virtuosity, particularly Ravel's *Scarbo* and Balakirev's *Islamey*. In this repertoire, explosive energy, temporal flexibility, large-scale gestural projection, and occasional obscuring of local detail can form part of the musical expression. The analogy also changes the pianist's preparation for velocity, power, risk, and rapid transfers of momentum. Applied selectively to Op. 106, this orientation reveals a movement characterised by volatility, impulsion, and intermittent bursts of almost uncontrollable energy, within which minim = 138 becomes technically and musically plausible.

The study forms part of the *HammerklavierX Project*—initially titled *A Thousand Hammerklavier Sonatas*—an experimental system in which repeated performances of Op. 106 are reconfigured through changing metaphors, stylistic transfers, physical approaches, and interpretative constraints. Adapting Hans-Jörg Rheinberger's concept of the experimental system through Paulo de Assis's work in artistic research, the project demonstrates how differentiated repetition can produce unforeseen knowledge. An experiment designed to investigate analogy and metaphor thus generated a new practical perspective on one of the most persistent questions in Beethoven performance practice.

Keywords: *Beethoven; Hammerklavier; tempo; virtuosity; artistic research; experimental systems; metaphor; piano performance*

Introduction

> *"It produces so fearful a prestissimo as Beethoven could never have intended."*
> **Ignaz Moscheles**
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> *"To play this movement at Beethoven's metronome mark—more or less—this is revolutionary and explosive music. It is not made of lead."*
> **András Schiff**
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> *"More than anything else, it is an explosion of energy."*
> **Charles Rosen**

Since its completion in 1818, Beethoven's Piano Sonata in B-flat major, Op. 106, the *Hammerklavier Sonata*, has occupied a singular position within the piano repertoire. Its immense technical demands, unprecedented scale, extreme contrasts of character, and formidable intellectual complexity have contributed to its reputation as one of the supreme challenges of the pianist's art, while its location at the threshold of Beethoven's late style has made it appear both retrospective and prophetic. The sonata has been described as monumental and majestic, yet also as enigmatic, labyrinthine, and strangely elusive; more than two centuries after its composition, it continues to challenge performers, listeners, and scholars.

Among the many questions posed by Op. 106, none has proved more persistent than that of tempo. The sonata belongs to the relatively small group of Beethoven's keyboard works for which the composer provided metronome markings, and for the opening Allegro he prescribed the astonishing tempo of minim = 138. Ever since publication, performers and commentators have struggled to reconcile this number with their practical and musical experience of the work.

The resulting controversy has produced a wide range of explanations. Some musicians have treated the number as a genuine expression of Beethoven's intentions, however extreme; others have suspected a mistake by Beethoven, his copyists, or his metronome; still others have proposed a lost historical understanding of the beat unit. Although a few pianists have attempted performances approaching Beethoven's indication, most interpretations remain considerably slower, creating the unusual situation of a tempo prescribed by the composer that has rarely functioned as a practical norm.

The objections extend beyond technical difficulty, since the question has concerned whether the movement can be understood at such a speed. Harmonic richness, contrapuntal detail, lyrical breadth, and expressive depth are repeatedly cited as qualities that would be compromised at minim = 138, and the number is therefore judged against an assumed identity of the work. The problem is aesthetic and imaginative as well as physiological.

It is therefore worth asking whether the impossibility resides in the tempo itself or in the interpretative framework through which the tempo is approached. A movement conceived as monumental, massive, architectonic, and steadily controlled demands a degree of weight, solidity, and comprehensive clarity that becomes increasingly difficult to sustain as the speed rises. A practical and imaginative ceiling is reached long before minim = 138.

The history of the *Hammerklavier* may consequently reveal the gradual consolidation of a particular image of the work. Charles Rosen argued that the first movement has suffered from being treated as a monument, while András Schiff describes the music as "revolutionary and explosive" and insists that it is "not made of lead." Such observations suggest a conception governed less by architectural mass than by propulsion, volatility, and rapid change.[1]

The experiments presented here pursue this possibility by approaching the opening movement through an analogy with Balakirev's *Islamey* and Ravel's *Scarbo*. The comparison does not posit stylistic identity; it investigates how performance attitudes associated with extreme virtuosity can unsettle

[1] András Schiff, "Sonata No. 29 in B-flat, Op. 106 'Hammerklavier'," in Beethoven Lecture-Recitals, lecture-recital recorded at Wigmore Hall, London, 2004–6, YouTube video, uploaded by "helloitismetomato," accessed September 4, 2026, https://www.youtube.com/watch?v=UD8Isld41k8.

inherited assumptions about Beethoven. In such repertoire, velocity, explosive changes of energy, gestural projection, temporal flexibility, and controlled instability are often integral to the work's character, and the pianist prepares physically and mentally for these conditions.

The study forms part of the *HammerklavierX Project* within my doctoral research on analogy and metaphor in musical interpretation. Inspired by Rheinberger's theory of experimental systems and its adaptation by de Assis, the project consists of repeated reinterpretations of Op. 106 under changing conditions. The question of Beethoven's metronome marking was not an initial research aim; it emerged when one iteration, organised through the performance practices of extreme virtuosity, made minim = 138 appear technically conceivable and musically coherent.

The pages that follow first review the reception of Beethoven's indication and the principal attempts to explain, reject, moderate, or defend it. The second part presents the artistic experiment, examining how changes in gesture, physical preparation, the hierarchy of detail, and local temporal flexibility altered the status of the metronome marking. The history of minim = 138 is also a history of competing conceptions of the movement, and before asking whether the tempo is possible, it is necessary to understand how it came to seem impossible.

A Fearful Prestissimo

Beethoven's *Hammerklavier Sonata* has long occupied a singular position in discussions of musical tempo. Disagreement over tempo is common in the performance of canonical works, yet few metronome markings have provoked controversy as sustained as the minim = 138 attached to the first movement of Op. 106, and few have generated such a range of attempts to explain the discrepancy between Beethoven's notation and later practice.

The debate is inseparable from the sonata's broader reception. Op. 106 quickly acquired a reputation as one of Beethoven's most difficult compositions, whose unprecedented dimensions, dense textures, contrapuntal complexity, and extraordinary technical demands distinguished it even within the composer's own output. A widely repeated anecdote has Beethoven describing the work as a sonata that would give pianists something to do for fifty years; whether apocryphal or not, the remark reflects the work's historical fate, since performers continue to wrestle with problems that remain unsettled.

As Basilio Fernández Morante observes, the sonata has accumulated a considerable burden of cultural and interpretative associations, appearing at once "monumental and majestic" and enigmatic or labyrinthine. The fascination exerted by the work derives partly from this coexistence of authority and resistance, through which its reception history has become an intellectual and performing tradition in its own right.[2]

The first movement is marked Allegro and assigned minim = 138, a number that has appeared exceptional even to pianists generally sympathetic to Beethoven's markings. As Morante notes, departures from the prescribed tempo gradually consolidated into what he calls a "fossilized tradition," although the controversy began surprisingly close to Beethoven's own period.

One frequently cited piece of evidence comes from a remark added to the manuscript of the song *Nord oder Süd*: "100 according to Mälzel, but this must be considered applicable only to the first bars, for sentiment also has its tempo and cannot be completely expressed by this number." The statement may imply flexibility around a governing tempo, or it may simply distinguish an underlying pulse from local modifications required by character; in either case, Beethoven recognised that a single number could not exhaust the temporal life of a performance.

The earliest major objection appears in the writings of Ignaz Moscheles, who in 1841 described minim = 138 as producing "so fearful a prestissimo as Beethoven could never have intended" and recommended approximately minim = 116. Even this alternative remains very fast by the standards of many twentieth-century performances, but it establishes a pattern that recurs across the reception history: acceptance of an energetic conception of the movement combined with rejection of Beethoven's exact

[2] Basilio Fernández Morante, "A Panoramic Survey of Beethoven's 'Hammerklavier' Sonata, Op. 106: Composition and Performance," Notes 71, no. 2 (December 2014): 237–62.

figure. Moscheles disputes degree rather than velocity itself, implying a threshold beyond which musical intelligibility is compromised.[3]

Carl Czerny adopted a different position. Writing the following year, he described the tempo as "unusually quick and impetuous" but did not treat the marking as erroneous. Given his close contact with Beethoven and familiarity with the composer's piano music, Czerny's acceptance carries substantial historical weight, although it cannot establish how steadily Beethoven expected the number to be maintained. The divergence between Moscheles and Czerny created a polarity that has shaped later discussion: one tradition accepts the indication as a challenge to performance, while another regards it as incompatible with the musical substance of the work.[4]

Edwin Fischer offered one of the most influential twentieth-century arguments against Beethoven's tempo, connecting the opening theme to a surviving sketch for a projected cantata celebrating Archduke Rudolph. The gesture can be fitted to the words "Vivat, vivat Rudolfus," and Fischer interpreted this quasi-choral origin as evidence against the numerical indication, concluding that it was "wrong, because too quick." His objection was primarily musical: the movement's harmonic richness, vocal quality, and expressive content could not, in his view, be adequately apprehended at such a speed. He singled out the G-flat major passage following the beginning of the recapitulation, where the harmonic progression and Beethoven's cantabile indication appeared especially difficult to realise.[5]

Fischer's argument marks a significant shift, because the marking is rejected through a claim about the movement's identity. For Moscheles the problem had largely concerned excess velocity; for Fischer, the tempo conflicts with what the music fundamentally is. Questions of pianistic feasibility thereby become inseparable from musical character and interpretation.

Charles Rosen provided a powerful modern defence of the marking by locating it within the late eighteenth-century system of tempi ordinarii. From this perspective, minim = 138 is not an eccentric tempo assigned through the prerogative of genius, but a relatively standard Allegro inherited from earlier practice; the extraordinary difficulty arises because Beethoven places unprecedented technical and contrapuntal demands within that standard tempo. Rosen consequently rejects the familiar image of the sonata as a pyramid or musical mammoth and concludes that the opening movement is, "more than anything else," an "explosion of energy."[6]

Rosen thus reverses the assumptions of earlier criticism: later performance traditions, rather than Beethoven's number, become the object requiring explanation. Recent performers often occupy an intermediate position. Schiff calls the marking "virtually unplayable," yet regards it as crucial information about the movement's revolutionary and explosive character; Murray Perahia similarly describes the first movement as a comet or rocket and speaks of its wildness. Neither advocates a metronomically literal performance throughout, but both treat the indication as an expressive datum rather than an error.[7]

Performance history presents an equally mixed picture. Artur Schnabel's 1935 recording remains among the fastest major interpretations and is often cited as one of the closest practical approximations of Beethoven's indication. More recently, Igor Levit has pursued a similarly ambitious conception, although such performances still remain below the prescribed speed when measured across the movement as a whole. Their importance lies in making audible an image of the movement within which Beethoven's tempo can at least be imagined.[8]

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[3] Ignaz Moscheles, editorial note in Anton Schindler, *The Life of Beethoven, Including His Correspondence with His Friends, Numerous Characteristic Traits, and Remarks on His Musical Works*, ed. Ignaz Moscheles, 2 vols. (London: Henry Colburn, 1841), 2:252n1.

[4] Carl Czerny, *On the Proper Performance of All Beethoven's Works for the Piano: Czerny's "Reminiscences of Beethoven"* and Chapters II and III of the "Complete Theoretical and Practical Piano-Forte School," Op. 500, facsimile of the English translation, ed. and commentary by Paul Badura-Skoda (Vienna: Universal Edition, 1970), 64.

[5] Edwin Fischer, *Beethoven's Pianoforte Sonatas: A Guide for Students and Amateurs*, trans. Stanley Godman (London: Faber and Faber, 1959), 103–5.

[6] Charles Rosen, *Beethoven's Piano Sonatas: A Short Companion* (New Haven, CT: Yale University Press, 2002), chapter on the Hammerklavier Sonata.

[7] The Juilliard School, "Qi Xiu: Beethoven's 'Hammerklavier' Sonata | Juilliard Murray Perahia Piano Master Class," YouTube video recording of a master class held at Paul Hall, New York, October 12, 2017, https://www.youtube.com/watch?v=4bcCUwODTaQ.

[8] Igor Levit, "Beethoven Piano Sonata No. 29, Op. 106, 'Hammerklavier,'" recorded August 17, 2020, at the Salzburg Festival, YouTube video, 41:11, uploaded by "2nd movement," https://www.youtube.com/watch?v=vHo4CIZJccA.

The debate has also produced more radical explanations, including a defective metronome and the so-called double-beat theory, according to which nineteenth-century musicians counted both sides of the pendulum's oscillation, effectively halving the number. These proposals remain controversial, partly because they create difficulties elsewhere in Beethoven's repertory and do not offer a convincing general account of markings in triple metre.

After two centuries, no consensus has emerged, but the lines of disagreement are clear. Some writers accept the marking and regard its difficulty as part of Beethoven's challenge; others reject it as incompatible with the movement's character; still others seek explanations that preserve Beethoven's authority while avoiding the practical consequences of the number. The historical record therefore reveals a struggle over the identity of the movement itself: is the opening of the *Hammerklavier* monumental or explosive, architectonic or volatile, majestic or impetuous? The answer given to that question often determines the answer given to the metronome marking.

The Experimental Analogy

The historical discussion suggests that the disagreement surrounding minim = 138 concerns the identity of the movement as much as its speed, since Moscheles, Fischer, Rosen, Schiff, and Perahia respond to the same numerical indication through markedly different images of the music: choral declamation, monumentality, revolutionary energy, explosion, rocket, and comet. Each image favours particular forms of articulation and phrasing, prepares the pianist for a particular kind of physical engagement, and establishes expectations regarding pulse and temporal organisation. The tempo cannot, therefore, be isolated from the interpretation through which it is realised.

My approach emerged within the *HammerklavierX Project*, initially entitled *A Thousand Hammerklavier Sonatas*. The project investigates how metaphors, analogies, stylistic transfers, physical approaches, and interpretative constraints alter the pianist's relation to Beethoven's score. Op. 106 remains the relatively stable object of the research, while selected conditions of its performance change across successive iterations.

The project adapts Hans-Jörg Rheinberger's concept of the experimental system[9] to musical performance, following its development within artistic research by Paulo de Assis.[10] Experimental systems proceed through differentiated repetition: certain elements remain sufficiently stable for emerging differences to become perceptible, while others are varied across successive iterations. Such a system establishes conditions in which previously unforeseen relations, questions, and objects of knowledge may emerge.

Within the *HammerklavierX Project*, the score provides the principal point of stability, while the changing parameters include metaphors, analogies, performance attitudes, references to other repertoire, physical approaches to the instrument, dramatic situations, and technical or interpretative constraints. Each iteration is prepared, performed, recorded, and described, after which the resulting performance becomes material for comparison and further experimentation.

The project did not begin as an investigation of Beethoven's metronome markings. Its initial subject was the generative role of metaphor and analogy in interpretation, and the question of minim = 138 emerged during one experiment in which I approached the opening movement through performance practices associated with extreme virtuosity.

Extreme Virtuosity as a Source Domain

The principal source works were Balakirev's *Islamey* and Ravel's *Scarbo*, both of which occupy familiar positions within the mythology of pianistic difficulty. They demand velocity, precision, endurance, rapid changes of texture, large-scale gestures, and the capacity to project musical character through passages that approach the physical limits of execution.

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[9] Hans-Jörg Rheinberger, *Toward a History of Epistemic Things: Synthesizing Proteins in the Test Tube* (Stanford, CA: Stanford University Press, 1997), 24–37, 74–83.

[10] Paulo de Assis, *Logic of Experimentation: Reshaping Music Performance in and through Artistic Research* (Leuven: Leuven University Press, 2018), 107–22.

The analogy concerned neither stylistic identity nor compositional language. I did not attempt to make Beethoven sound like Balakirev or Ravel; the transfer involved the attitudes, expectations, and forms of physical preparation that pianists bring to this repertoire.

Performances of *Scarbo* commonly accept qualities that would be treated with suspicion in many performances of the *Hammerklavier*: explosive outbursts, unstable surfaces, abrupt changes of direction, extreme local velocities, flexible pacing, and occasional losses of complete transparency. Although the individual note remains necessary, it does not always function as the listener's primary unit of attention, since waves, eruptions, accelerations, and larger gestural formations may assume greater perceptual importance.

This acceptance of partial obscurity does not imply technical carelessness. The performer practises the details extensively, yet organises them towards an effect that exceeds their separate projection; in some passages, complete transparency would weaken the sense of apparition, agitation, or sudden violence of the musical event, and virtuosity therefore includes the controlled production of effects that border on instability.

The usual expectations surrounding the first movement of the *Hammerklavier* are different. The movement is frequently approached through ideals of monumentality, structural weight, stable pulse, comprehensive clarity, and continuous control, according to which each quaver should remain distinct, the counterpoint should be projected, the harmonic rhythm should be perceptible, the lyrical episodes should retain breadth, and the large form should preserve architectural coherence.

These aims have produced compelling performances, but their combination also establishes a practical limit. As the tempo rises, it becomes increasingly difficult to retain weight, steadiness, breadth, and the clear projection of every detail, creating a glass ceiling beyond which the interpretative means cease to function convincingly. Beethoven's number then appears to stand outside the available conception of the movement.

The experiment introduced another set of expectations, approaching the movement as music in which volatility, risk, impulsion, rapid energetic transfer, and occasional obscuring of local detail could belong to its expressive character. The resemblance to *Scarbo* and *Islamey* remained selective, concerning primarily the preparation for extreme velocity and the organisation of detail within larger gestures.

From Notes to Gestures

One immediate effect concerned the scale at which the music was perceived. At slower tempos, the opening figure can be organised note by note, with the left-hand leap, chordal response, articulation, and dynamic profile remaining separate elements within a clearly projected thematic statement. Near Beethoven's tempo, however, such an organisation becomes physically restrictive, since the attempt to control each component individually produces tension and inhibits the propulsion of the gesture.

The analogy with extreme virtuosity shifted attention towards larger units. The opening was experienced as a single projection across the keyboard followed by an emphatic response, while the left-hand leap ceased to function primarily as a dangerous interval that had to be secured and became the initiating impulse of a larger musical action.

A similar change occurred in passages of rapid figuration, where groups of notes were heard as trajectories, waves, or transfers of momentum. This encouraged a more economical physical approach and reduced the tendency to prepare every event through a separate muscular adjustment, allowing direction and arrival to take precedence over the equal emphasis of intermediate notes.

Articulation changed accordingly, since continuous clarity no longer required every quaver to receive the same degree of projection. Some details moved into the foreground while others contributed to texture and momentum, and articulation could vary according to musical direction, register, harmony, and the larger gesture. Such hierarchy belongs to ordinary pianistic practice; the experiment extended it into passages where the inherited monumental image of the sonata had encouraged more uniform projection, producing textures that were occasionally less transparent in local detail but more coherent in movement and character.

Tempo as a Variable Field

The analogy also changed my relation to pulse and tempo. Minim = 138 is often discussed as though the performer's principal task were to maintain a fixed metronomic speed throughout the movement, yet such an approach soon becomes rigid and sits uneasily with Beethoven's acknowledgement that "sentiment also has its tempo."

Performances of *Scarbo* rarely derive their effect from an inflexible pulse. Their velocity is articulated through acceleration, suspension, hesitation, eruption, and release, so that a rapid basic tempo remains perceptible while operating within a changing temporal field. The performer continually adjusts the relation between local gesture and larger momentum.

Applied to the *Hammerklavier*, this attitude made the metronome indication more plausible. The number functioned as an orientation towards the movement's principal energetic state, without prescribing identical pacing for every phrase, transition, lyrical episode, or point of structural articulation.

This distinction proved particularly important in the G-flat major passage following the beginning of the recapitulation, which Fischer identified as evidence against Beethoven's marking. A literal continuation of the preceding velocity can cause the harmonies to pass without sufficient differentiation, whereas excessive broadening may separate the passage from the movement's prevailing impetus.

Within the experimental interpretation, the passage was approached as a local transformation of the movement's energy. The bass direction, harmonic changes, melodic line, and cantabile character produced a temporary expansion of time, while the broader pacing remained connected to the rapid tempo surrounding it; the passage thereby gained expressive space without requiring the movement's general conception to become slower and heavier.

This approach treats tempo as a field of related temporal behaviours in which Beethoven's number defines one important region, while local modifications respond to phrase, character, harmony, and physical feasibility. A performance need not maintain minim = 138 with metronomic consistency in order to take the indication seriously.

Bodily Retuning

The most significant changes concerned the pianist's physical and mental preparation. Extreme virtuosity requires a particular state before the most difficult passages begin: the body must be ready for velocity, rapid directional changes, sudden releases of force, and transitions between delicacy and power, while the nervous system remains highly active without producing general muscular tension.

I use the term bodily retuning for this process. It refers to changes in physical readiness, anticipatory hearing, the acceptance of risk, and the distribution of effort, as well as to the scale at which movement is prepared. A pianist who expects massive weight and continuous stability approaches the instrument differently from one who anticipates volatility, flight, and rapid transfers of momentum.

Received ideas of Beethoven playing can discourage this state, since solidity, seriousness, structural control, and dense sonority may lead the performer to place weight into the keyboard before the gesture has acquired direction. The pianist becomes prepared to hold and stabilise, and near minim = 138 this preparation can obstruct the movement it is intended to control.

The analogy with *Scarbo* produced a different preparation, oriented towards release, rebound, lateral movement, rapid relocation, and the continuation of momentum across groups of notes. Weight remained available, particularly in chordal passages, but was applied within movement rather than established as a constant underlying condition.

The resulting experience involved less security in the conventional sense and a greater acceptance of risk and temporary disequilibrium. This instability belonged to the expressive world of the interpretation; it was neither sought as an autonomous effect nor treated as a substitute for preparation, but emerged from the attempt to realise speed, impulsion, and extreme contrast without suppressing them through excessive control.

Such a change cannot be reduced to a collection of technical instructions. Fingering, rotation, release, grouping, and pedalling remain important, but their use depends upon the performer's prior conception

of the musical action. The analogy helped form that conception and prepared the pianist's body and mind for a different kind of performance.

Risk, Error, and Obscured Detail

The experiment raised an obvious question concerning accuracy, since a performance near Beethoven's tempo increases the likelihood of wrong notes, unevenness, incomplete attacks, blurred pedalling, and diminished contrapuntal clarity. These consequences cannot be accepted indiscriminately as signs of expressive freedom.

The standards by which accuracy is judged are nevertheless shaped by tempo and interpretation. In extreme virtuoso repertoire, listeners distinguish between technical failure and a controlled saturation of the musical surface, and a rapid passage may be perceived primarily as a sweep, eruption, or transformation of texture; complete identification of each pitch is not always necessary for the intended musical event to register.

The first movement of Op. 106 contains passages where a similar hierarchy may be relevant. The score remains exact, and the pianist continues to work towards its realisation, yet the sounding identity of a passage may depend more strongly on propulsion, register, harmonic direction, accentuation, and texture than on the equal audibility of every note.

This position requires care because obscurity can become an excuse for insufficient preparation. The experiment therefore distinguished between accidental loss of detail and deliberate subordination of detail within a larger gesture, with comparative recordings providing a means of asking whether a blurred passage continued to communicate harmony, direction, articulation, and character, or whether the musical relation had collapsed.

Musical consequence provided the criterion. A reduction of local clarity could be accepted when it strengthened the larger action and preserved the passage's structural function, while it became unproductive when it obscured harmonic change, weakened rhythmic direction, or reduced the music to undifferentiated speed.

The Emergence of Minim = 138

As the new performance attitude became established, Beethoven's metronome indication gradually changed status, ceasing to appear as an external numerical demand imposed upon an otherwise complete interpretation. The interpretation itself had been reorganised around qualities compatible with the tempo.

This development did not arise through a continuous effort to accelerate an existing performance. The principal changes concerned gesture, physical preparation, the hierarchy of detail, local temporal flexibility, and the expressive role of risk; speed followed from this altered configuration.

The experiment consequently reformulated the central question. Much of the historical debate asks whether minim = 138 can be reconciled with an established conception of the movement, whereas the experiment asked which conception of the movement would make minim = 138 appear musically intelligible.

Within this framework, the tempo became plausible because the movement was no longer governed primarily by monumentality and continuous weight. It appeared as a succession of volatile energetic situations held together by strong large-scale momentum, within which chordal proclamations, lyrical expansions, contrapuntal passages, sudden interruptions, and rapid transitions became different states of one changing field.

Beethoven's number could then be understood as information about the movement's identity. Schiff's description of the music as "revolutionary and explosive," Rosen's "explosion of energy," and Perahia's comet and rocket all point towards such an understanding. These formulations do not establish that minim = 138 must be maintained literally, but they indicate that the marking may encode a quality of motion and intensity that slower monumental performances tend to suppress.

Comparative Listening and Documentation

The experiment was documented through recordings, annotated scores, practice notes, and reflective descriptions, each of which provided access to a different aspect of the process. Recordings made audible the divergence between intention and result: a performance that felt dangerously fast at the piano could sound coherent at a distance, while a performance experienced as energetic could sound heavy because accents, pedalling, or local hesitations repeatedly interrupted its momentum.

Annotated scores recorded the images, constraints, and technical decisions associated with particular iterations. They could not provide a complete account of the process but preserved enough information to reconstruct the starting conditions of an experiment and relate them to the resulting performance. Reflective descriptions registered changes that recordings could not reveal directly, including perceived effort, physical readiness, danger, attentional focus, and the subjective plausibility of the tempo; such accounts remain situated and retrospective, and become most useful when placed alongside recordings and comparative performances.

The documentation does not demonstrate a simple causal sequence in which an analogy automatically generates a specified result. The process is recursive: the analogy changes the playing, the resulting sound changes my understanding of the analogy, and later iterations select, modify, or abandon aspects of the initial transfer.

Further stages of the project will require more systematic comparative analysis. Selected passages can be recorded under contrasting conditions, including monumental clarity, extreme virtuosity, strict metrical continuity, and locally flexible velocity, after which the differences can be examined through close listening and relevant performance parameters.

An Unforeseen Historical Insight

The experiment produced an insight extending beyond the individual performance: the perceived impossibility of minim = 138 appears partly to result from the interpretative assumptions with which the number has been combined. This finding does not settle the historical question of Beethoven's intention, establish that every passage should be maintained at an exact minim = 138, or invalidate slower performances; it identifies a practical condition under which Beethoven's number becomes musically coherent.

The distinction matters because many proposed solutions to the tempo controversy begin by accepting the marking's musical implausibility, after which a defective metronome, scribal error, misunderstanding of the beat unit, or lost historical convention is introduced to explain the discrepancy. The present experiment suggests that the discrepancy may also arise from later performance traditions and the physical habits formed within them.

Reception history, from this perspective, has affected technical possibility. Monumentality, comprehensive clarity, continuous control, and weight have become embedded in the pianist's physical preparation, so that the historical image of the work operates within the technique through which the work is played. Changing that image can therefore change what the pianist experiences as possible.

Artistic Research and the Yet Unknown

This outcome illustrates the methodological importance of the experimental system. Although the project was designed to investigate metaphor and analogy in performance, it generated a practical insight into Beethoven's metronome marking that had not formed part of its initial research questions.

Rheinberger describes experimental systems as arrangements capable of producing the yet unknown, their value lying in the creation of conditions under which epistemic objects may emerge without having been fully anticipated. De Assis adapts this principle to artistic research, where works, scores, instruments, archives, concepts, bodies, and technologies can be placed in new configurations.

The analogy with extreme virtuosity functioned as one such intervention. Beethoven's score, the received image of the *Hammerklavier*, the pianist's body, the modern concert instrument, recordings of the sonata, and the performance traditions of *Scarbo* and *Islamey* entered into a new relation, from which the practical plausibility of minim = 138 emerged.

The historical contribution of the experiment rests on artistic practice, since it arose through playing, listening, physical adjustment, and repeated comparison. Historical sources remain necessary for evaluating the result, but the result itself could not have been reached through documentary study alone.

Towards a Wild Virtuosity

The expression wild virtuosity names the performative orientation disclosed by the experiment. “Wild” refers neither to disorder, arbitrary speed, nor the abandonment of technical discipline, but to a controlled openness towards volatility, risk, extreme velocity, bodily intensity, and rapid transformation.

Virtuosity, understood in this way, becomes an interpretative category concerned with how technical difficulty is given musical form. A monumental approach may seek to master difficulty through stability and comprehensive control, whereas wild virtuosity treats difficulty as part of the expressive material, allowing the danger of the leap, the instability of the texture, and the proximity of technical limits to contribute to the movement’s character.

This conception changes the relation between control and expression. Control remains indispensable but is directed towards the creation of impulsion, rupture, saturation, and release, so that the performer establishes conditions under which the music may sound close to escaping control.

Such an approach accords with Rosen’s description of the movement as an explosion of energy and with Schiff’s insistence that the music is not made of lead, while also giving practical content to Perahia’s comet and rocket. These metaphors point towards a movement projected through space at a velocity that transforms the listener’s perception of musical detail.

Beethoven’s minim = 138 can then be heard as an invitation to enter this field of wild virtuosity. The marking requests a tempo, and in doing so changes the scale of gesture, the hierarchy of detail, the physical preparation of the pianist, and the temporal identity of the movement.

The experiment supports a limited but significant claim: Beethoven’s indication becomes musically plausible when the movement is approached through velocity, volatility, gestural projection, flexible local timing, and an acceptance of risk. The tempo then ceases to function primarily as a technical number imposed from outside and becomes a consequence of a particular incarnation of the score.

The wider implication concerns the relation between interpretation and historical evidence. A metronome marking does not enter performance as an isolated fact, since it interacts with inherited images of the work, physical habits, instrumental technologies, and aesthetic expectations. Artistic experimentation can expose these relations by changing their configuration.

Conclusion

The first movement of the *Hammerklavier* may require a different question: what forms of performance become possible when Beethoven’s tempo is allowed to challenge the tradition through which the movement has been received? This study suggests that the perceived impossibility of minim = 138 arises partly from the combination of the tempo with an inherited image of the movement as monumental, weighty, architectonic, and continuously controlled. When Op. 106 is approached through the performance practices of extreme virtuosity—velocity, volatility, gestural projection, flexible local timing, and a greater acceptance of risk—the indication acquires a practical and musical plausibility that is difficult to experience within the monumental model.

The experiment does not establish a single correct tempo or invalidate slower performances. It demonstrates that tempo, character, pianistic technique, physical preparation, and the hierarchy of musical detail form an interdependent configuration, and that changing this configuration changes the status of the metronome marking itself. Minim = 138 can then function as evidence concerning the movement’s performative identity, pointing towards an intensity and impulsion that slower traditions may understate.

The methodological significance lies in the way this insight emerged. An experiment designed to investigate metaphor and analogy unexpectedly produced a new perspective on a historical performance problem; through differentiated repetition, the analogy with *Scarbo* and *Islamey* changed my hearing

and playing of Beethoven's movement and made another incarnation of the score available in practice. Artistic experimentation thereby contributed to historical enquiry by exposing assumptions embedded in interpretation and pianistic habit. The claim remains situated and open to further testing through comparative performances, recordings, and analysis, yet it suggests that Beethoven's tempo can be approached as a force capable of transforming interpretation rather than as a number awaiting obedience or correction.