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Form-Functional Ambivalence in Performance: The Third Movement of Beethoven's "Hammerklavier" Sonata in Recordings by Gulda, Brendel, and other Pianists

Abstract

Generalized theories of formal functions have yet to adequately capture the temporal experience of musical form. Recent research into musical performance suggests that sounded interpretation may generate temporal formal functions of its own. This thesis is elaborated through a discussion of Friedrich Gulda's and Alfred Brendel's contrary readings of Beethoven's *Adagio sostenuto*, the third movement of the "Hammerklavier" Sonata Op. 106, within a corpus of 27 analyzed recordings of this movement between 1936 and 2021. Both Brendel and Gulda were in contact with post-Schoenbergian methods of musical analysis in Vienna around 1950. A review of Erwin Ratz's analysis of Op. 106, iii and the recordings' differing temporal designs demonstrate the conflict between an architectural conception of the movement, in which caesuras are strengthened, and a process-like interpretation that sustains the impression of continuity and flow across the sections by means of superordinate tempo progressions. This tension between interpretations is superimposed onto the specific formal ambiguity of this movement, which oscillates between sonata and variation form. To incorporate such dimensions of sounded interpretation more consistently into form-analytical methods, a music-theoretical "quantum theory" is required that respects the basic ambivalence of formal function in performed time.

Keywords

Ludwig van Beethoven, Hammerklavier Sonata, formal function, performance analysis, formal ambiguity

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Form-Functional Ambivalence in Performance: The Third Movement of Beethoven's "Hammerklavier" Sonata in Recordings by Gulda, Brendel, and other Pianists[1]

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We begin with a brief diversion to popular models for explaining modern physics. According to Werner Heisenberg, quantum mechanics and quantum theory upset our understanding of the smallest elements or particles, since they can no longer be clearly identified as discrete bodies; rather, matter must be imagined as wave-like, as an energy state, or as a probability function.[2] This modern physics discourse, now nearing its centenary, unquestionably still has considerable appeal today, as it confronts us with paradoxes in the strange intermediate world of matter, reality, and consciousness. It is by no means certain how exactly the "reality" we perceive is constituted. Doubts about the "reality of reality" are particularly appropriate where, as in the case of art or music, we are dealing with psychological, spiritual, and bodily-material qualities of experience. These experiences are specifically constituted by the senses and consciousness, which are also historically shaped and mediated in a complex manner. Studies in the aesthetic experience of

1 This essay was written as a kind of postscript to the research project *Performing, Experiencing and Theorizing Augmented Listening* (1 September 2017–31 August 2020; https://petal.kug.ac.at) led by the author at the University of Music and Performing Arts Graz, funded by the Austrian Science Fund FWF (P30058-G26). In particular, the case study presented here is directly linked to a publication on Beethoven's "Diabelli Variations" Op. 120: Christian Utz, "Zwischen Kohärenz und Dissoziation: Performative Form in der Interpretationsgeschichte von Beethovens 'Diabelli-Variationen,'" in Christine Siegert and Tobias Janz (eds.), *Musikwissenschaft nach Beethoven: VII. Internationaler Kongress der Gesellschaft für Musikforschung* (Schriften zur Beethoven-Forschung) (Bonn: Beethoven-Haus, forthcoming). Much of the research and data presented in this article was compiled in accordance with the author's instructions by Laurence Sinclair Willis, who also translated this article into English from the original German (including German quotations) and provided numerous suggestions for clarifying and improving the text. To him I extend my thanks. All internet addresses were last checked on 7 December 2022. The research data for this article are available in a public repository at https://github.com/petal2020/petal_beethoven_op_106; audio examples as well as an annotated score can be accessed at https://phaidra.kug.ac.at/o:127822; the video example is available at https://youtu.be/MdiW_WGPsWw.

2 See Werner Heisenberg, *Der Teil und das Ganze: Gespräche im Umkreis der Atomphysik* (Munich: Piper, 2019 [1969]), 74–100, esp. 93.

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music attempt to account for these uncertainties, also in reference to our understanding of musical form.[3]

A theory of musical form must attend to these kinds of aesthetic and experiential quandaries, yet atomistic models have largely dominated the discipline. This influence can still be felt within the reception and development of Arnold Schoenberg's *Formenlehre* as disseminated through William Caplin's successful book *Classical Form*.[4] Although temporal qualities lie at the heart of Caplin's theory of form (see below), his segmentation of musical works into small and micro-elements continues a paradigm of hierarchically organized formal models and groupings of phrases that has shaped the history of *Formenlehre*, from Heinrich Christoph Koch and Adolf Bernhard Marx to the generative theory of tonal music developed by Fred Lerdahl and Ray Jackendoff in the 1980s.[5]

This article does not seek to defend a neo-organicist position, insisting on the indivisibility of musical form (for example, with reference to Schoenberg's holistic understanding of the musical idea), nor is it concerned with presenting an ontological critique of the concept of a formal function (as most recently broached by Stefan Rohringer, Ulrich Kaiser, and Matthew Arndt, though each with different emphases and objectives).[6] Instead, this article critically examines the generalizing principle of formal-*temporal* functions, a means of justifying analytically and theoretically the position of a musical element within the temporal unfolding—a principle fundamental not only to Caplin's work, but to other theories as well. This criticism is developed through a performance analysis of 27 recordings of Beethoven's *Adagio sostenuto*, the third movement of the "Hammerklavier" Sonata Op. 106. More specifically, this article examines the conflict between an architectural reading, in which moments of caesura are given a special weight, and a process-oriented reading that sustains continuity across sections by means of superordinate tempo

3 See, for example, Cosima Linke, *Konstellationen—Form in neuer Musik und ästhetische Erfahrung im Ausgang von Adorno. Eine musikphilosophische und analytische Untersuchung am Beispiel von Lachenmanns "Schreiben. Musik für Orchester"* (Mainz: Schott Campus, 2018), https://schott-campus.com/konstellationen_form_in_neuer_musik.

4 William E. Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven* (New York: Oxford University Press, 1998).

5 See Joel Galand, "Formenlehre Revived: *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven*, by William E. Caplin (New York: Oxford University Press, 1998)," *Intégral* 13 (1999), 143–200, esp. 143; Heinrich Christoph Koch, *Versuch einer Anleitung zur Composition*, 3 vols. (Leipzig: Böhme, 1782–93); Adolf Bernhard Marx, *Die Lehre von der musikalischen Komposition, praktisch theoretisch*, 4 vols. (Leipzig: Breitkopf & Härtel, 1837–47); Fred Lerdahl and Ray Jackendoff, *A Generative Theory of Tonal Music* (Cambridge, Mass.: MIT Press, 1996 [1983]), https://doi.org/10.7551/mitpress/12513.001.0001.

6 Stefan Rohringer, "Prolegomena zu einer Systematik der syntaktischen Formen 'Satz' und 'Periode'. 1. Teil: Carl Dahlhaus und die Schönbergschule," *Zeitschrift der Gesellschaft für Musiktheorie* 13/Special Issue (2016), 155–291, https://doi.org/10.31751/866; Ulrich Kaiser, "Formfunktionen der Sonatenform. Ein Beitrag zur Sonatentheorie auf der Grundlage einer Kritik an William E. Caplins Verständnis von Formfunktionen," *Zeitschrift der Gesellschaft für Musiktheorie* 15/1 (2018), 29–79, https://doi.org/10.31751/956; Matthew Arndt, "Form – Function – Content," *Music Theory Spectrum* 40/2 (2018), 208–26, https://doi.org/10.1093/mts/mty024.

progressions. This tension between architecture and process is apparent in the formal ambivalence of this movement, which oscillates between sonata and variation form. The incorporation of such dimensions of sounded interpretation into form-analytical methods requires a music-theoretical "quantum theory" that respects the basic ambivalence of formal function in performed time.

1. EXPRESSING FORMAL FUNCTIONS IN PERFORMANCE

In later publications, Caplin systematically expanded the "beginning-middle-end paradigm," first introduced by Kofi Agawu on the basis of Heinrich Schenker and already quoted in Caplin's *Classical Form*,[7] to include all dimensions of musical temporality. With regard to the macroform, Caplin had already expanded this paradigm in *Classical Form* to a five-part model by adding the two temporal functions "before-the-beginning" and "after-the-end," although he argues that the three-part model is usually sufficient to capture formal functions in smaller dimensions.[8] If this three-part temporal succession is to apply to all formal dimensions, then, according to Caplin, experienced listeners should be able to interpret, for example, mm. 77–80 in the first movement of Beethoven's First Symphony as "the 'beginning,' of the 'middle,' of the 'end,' of the 'beginning,' of the entire movement."[9] He sees such precision of formal-temporal localization as special proof of a compositional technique that takes experienced listeners by the hand, so to speak: "I would suggest that a composer's ability to realize in a convincing manner these kinds of temporal multiplicities accounts for experienced listeners (that is, those who are familiar with the host of compositional conventions informing this style) being able to discern quickly just where a particular passage lies within the overall temporal extent of a work."[10]

Many writers have pointed out a fundamental contingency of formal-temporal progressions (even in tonal music):[11] The conception of a discursive-teleological inevitability of the musical discourse, of a compelling musical logic—developed primarily on the basis of Beethoven's works—is not least an aesthetic construction grounded in a significant

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7 See Kofi Agawu, "Concepts of Closure and Chopin's Op. 28," *Music Theory Spectrum* 9 (1987), 1–17, https://doi.org/10.2307/746116; Kofi Agawu, *Playing with Signs: A Semiotic Interpretation of Classical Music* (Princeton: Princeton University Press, 1991), 51–79, https://doi.org/10.1515/9781400861835; and Caplin, *Classical Form*, 259, note 6.

8 Caplin, *Classical Form*, 15, 147, 179–81, 203, and William E. Caplin, "What are Formal Functions?," in William E. Caplin, James Hepokoski, and James Webster, *Musical Form, Forms and Formenlehre: Three Methodological Reflections* (Leuven: Leuven University Press, 2010), 21–40, here 25–27.

9 Caplin, "What are Formal Functions?," 25.

10 Ibid.

11 See Christian Utz, "Das zweifelnde Gehör: Erwartungssituationen als Module im Rahmen einer performativen Analyse tonaler und posttonaler Musik," *Zeitschrift der Gesellschaft für Musiktheorie* 10/2 (2013), 225–57, here 233–34, https://doi.org/10.31751/720.

trend in the musical literature of the late nineteenth and early twentieth centuries and as such is fundamentally contestable.[12] Some scholars, for example, have provided evidence that switching larger formal sections does not entail any significant change in the aesthetic evaluation of the musical result for a majority of listeners.[13] In addition, there are no empirical studies supporting the relevance of clearly identified *contextual* temporal functions on different formal levels, although a tendency toward the relevance of an *intrinsic* formal functionality has been claimed for a restricted stylistic context.[14] Certainly, a fundamental efficiency of formal organization in the classical style can hardly be disputed: that is, the works of Haydn, Mozart, and Beethoven (and many of their contemporaries, forerunners, and successors) impress us by the coherence of their formal structure. In particular, tonal-cadential closure, surely the most important process defining formal functionality, can in most cases clearly be identified on both a rhetorical and a syntactic level, even by non-expert listeners.[15] It seems doubtful, however, that this experience of closure can be (or generally is) related to formal hierarchies and temporal location spontaneously during the listening process, as suggested in Caplin's essay on Beethoven's First Symphony.

The starting point of this article is a model that I explored extensively with colleagues during the research project PETAL (*Performing, Experiencing and Theorizing Augmented Listening*):[16] the model of a sounded interpretation *as* analysis, based on, among other things, Nicholas Cook's early concept of "performing analysis"[17] and Robert Hill's assumption that every musical performance is a "formal analysis in real time."[18] Against this background, this article proceeds from the assumption that nearly every performance creates something like "temporal" or "formal functions" *sui generis* and thus presents an independent, non-verbal, analytical reading or listening of the performed piece. These "per-

12 See, among others, Scott Burnham, *Beethoven Hero* (Princeton: Princeton University Press, 2000 [1995]), 147–68.

13 Barbara Tillmann and Emmanuel Bigand, "The Relative Importance of Local and Global Structures in Music Perception," *The Journal of Aesthetics and Art Criticism* 62/2 (2004), 211–22. ("[…] small-scale musical units are so rich for aesthetic experience that processing larger musical units may fulfill no crucial need." Ibid., 219.)

14 A majority of listeners were able to correctly assign implicit temporal functions based on isolated theme fragments from Mozart's piano sonatas, with a clear influence of musical expertise being discernible. See Michel Vallières, Daphne Tan, William E. Caplin, and Stephen McAdams, "Perception of Intrinsic Formal Functionality: An Empirical Investigation of Mozart's Materials," *Journal of Interdisciplinary Music Studies* 3/1–2 (2009), 17–43. See also David Sears, "The Perception of Cadential Closure," in *What is a Cadence? Theoretical and Analytical Perspectives on Cadences in the Classical Repertoire*, ed. Markus Neuwirth and Pieter Bergé (Leuven: Leuven University Press, 2015), 251–83, https://doi.org/10.2307/j.ctt14jxt45.

15 See William E. Caplin, "The Classical Cadence: Conceptions and Misconceptions," *Journal of the American Musicological Society* 57/1, 51–118, https://doi.org/10.1525/jams.2004.57.1.51; and Sears, "The Perception of Cadential Closure," 262–68.

16 See footnote 1.

17 Nicholas Cook, "Analysing Performance and Performing Analysis," in Nicholas Cook and Mark Everist (eds.), *Rethinking Music* (Oxford: Oxford University Press, 1999), 239–61.

18 Robert Hill and Claus-Steffen Mahnkopf, "Quo vadis, 'Alte Musik'? Zur Rolle der Zeitgestaltung in der historisierenden Aufführungspraxis der Zukunft: Ein Gespräch mit Robert Hill," *Musik & Ästhetik* 19/75 (2015), 5–23, here 19.

formative functions" do not have to be congruent with written or aural analytical readings, but they are of course in dialogue with them. I will single out the interpretations of the third movement of Beethoven's "Hammerklavier" Sonata Op. 106 (1817–18) by Alfred Brendel (b. 1931) and Friedrich Gulda (1930–2000) as case studies. Both pianists can, albeit in different ways, be regarded as artists who were at least indirectly influenced by (post-) Schoenbergian methods of analysis and hermeneutics, as represented especially by Erwin Ratz (1898–1973) and Karl Heinz Füssl (1924–92) in Vienna from the mid-1940s to the 1970s. Thus, Brendel's and Gulda's understanding of musical structure emerged from an approach that formed the most important point of departure for Caplin's theory of form, which is an extension of the work of Schoenberg and Ratz.

Before going into more detail about Beethoven's Op. 106, I would like to briefly characterize how differently formal-temporal functions can materialize in sounded interpretations. Edward Steuermann, the leading pianist of the Schoenberg School, consistently played the third piece of Schoenberg's *Sechs kleine Klavierstücke*, Op. 19 (1911), entitled "Sehr langsame ♩," very quickly; in fact, in a corpus of 46 recordings, one of his two recordings from 1957 features the fastest main tempo of ♩ = 53 (52.6).[19] At this unusually fast tempo, one can more easily understand the nine-measure piece as a "theme" that follows the thematic type of a "sentence" in the Ratz-Caplin tradition. The repeated basic idea (which can also be analyzed as a composite basic idea) of mm. 1–4 constitutes a presentation function, whereas the following phrases clearly fulfill continuation and cadential functions: the increasing motivic acceleration and fragmentation and omission of the polyphonic layering in mm. 5–7 are followed by the "cadence"-like closing area of mm. 8–9.

In contrast to Steuermann's "top-down" account of the piece, Glenn Gould's 1965 interpretation begins at an extremely rapid and volatile tempo of between 60 and 90 beats per minute and abruptly comes to a standstill in the fourth measure; he then takes the second part in a contemplative and reserved manner, such that the average tempo drops from 61.1 to 37.6 beats per minute. In Gould's performance, the piece is thus divided into two sections extremely contrasting in tempo and character, making it more difficult to perceive the work as the coherent "theme" that Steuermann provides. When listening to

19 See Christian Utz and Thomas Glaser, "Gestaltete Form. Interaktion von Mikro- und Makroform in 46 Interpretationen (1925–2018) von Arnold Schönbergs *Sechs kleinen Klavierstücken* op. 19," in Claus Bockmaier and Dorothea Hofmann (eds.), *Zur performativen Expressivität des KClaviers: Aufführung und Interpretation – Symposium München, 27.–28. April 2018* (München: Allitera, 2020), 155–220, here 192–98, https://doi.org/10.48795/3pr4-sz09. See also Christian Utz and Thomas Glaser, "Shaping Form: Performances as Analyses of Cyclic Macroform in Arnold Schoenberg's *Sechs kleine Klavierstücke* op. 19 (1911) in the Recordings of Eduard Steuermann and Other Pianists," *Music Theory Online* 26/4 (2020), https://doi.org/10.30535/mto.26.4.9, [4.20]–[4.25] and Christian Utz, "Zur Plastizität verklanglichte Form. Tempo-, Klang- und Formgestaltung in Eduard Steuermanns Einspielungen von Arnold Schönbergs *Sechs kleinen Klavierstücken* op. 19 im Kontext der Interpretationsgeschichte des Werkes," in Lars E. Laubhold (ed.), *Eduard Steuermann. Musiker und Virtuose* (Munich: edition text + kritik, 2022), 341–413, here 379–86, https://e-book.fwf.ac.at/o:1726.

Gould's interpretation, we may ask ourselves whether the passage beginning in m. 5 can still be heard as a "continuation" of the previous one, or whether our listening experience is instead dominated by contrasting moments and processes of disintegration of coherent thematic structures.

Through this example, we see how formal functions can be created, problematized, and reinterpreted through performance. Steuermann's nuanced temporal regularity emphasizes the classical thematic structures in Schoenberg's Op. 19 No. 3 in accordance with the more "traditional," structure-oriented analytical methodology of the Schoenberg school. In contrast, Gould's abrupt temporal changes stress the latent modernity of the piece, which is evident precisely in the disintegration of such structures. Both performances, in turn, differ fundamentally from most interpretations since the late 1960s, which have an *adagio* character with sustained tempi of between 25 and 30 beats per second, through which the short piece is stretched into a "slow movement," complicating its perception as a single "theme."[20] The moments of decay in the second part are also particularly impressive at such a consistently slow tempo, such that these interpretations stage the deconstruction of the romantic gesture that opens the piece.

2. Erwin Ratz's Analysis of the "Hammerklavier" Sonata and Alfred Brendel's Performance

I have chosen the third movement of the "Hammerklavier" Sonata as a case study for two main reasons: first, based on an anecdote from Brendel; and second, in order to focus specifically on the observation of a slow interior movement, since research on the performance history of Beethoven's piano music has thus far largely been dominated by accounts of sonata first movements.[21] In addition, there are particularly impressive examples of formal-temporal ambivalence in this *Adagio sostenuto*, linked to its multifarious structure, which allow various sounded performances—and the new interpretations of formal functions associated with them—to be clearly distinguished from one another.

As a starting point, let us take Erwin Ratz's analysis of the "Hammerklavier" Sonata, which occupies the prominent place of an extensive forty-one-page concluding chapter in the first edition of his *Formenlehre* book from 1951.[22] Ratz taught at the Vienna Music

20 See Utz and Glaser, "Gestaltete Form," 194–95.

21 See, for example, Heinz von Loesch and Fabian Brinkmann, *Tempomessungen in Klaviersonaten Beethovens* (Berlin: Staatliches Institut für Musikforschung, Preußischer Kulturbesitz, 2013, revised 2021), https://www.simpk.de/forschung/themen/interpretationsforschung/tempomessungen-in-klaviersonaten-ludwig-van-beethovens.

22 Erwin Ratz, *Einführung in die musikalische Formenlehre: Über Formprinzipien in den Inventionen J.S. Bachs und ihre Bedeutung für die Kompositionstechnik Beethovens* (Vienna: Österreichischer Bundesverlag, 1951), 201–41; third edition (Vienna: Universal Edition, 1973), 213–51. Further citations throughout refer to the first edition of the book.

Academy beginning in 1945 and was appointed professor in 1957. Alfred Brendel, born in 1931, reported on several occasions how, after moving to Vienna in 1950, he played the "Hammerklavier" Sonata twice on one evening in his early twenties in a Viennese private house, with the two performances framing a lecture by Ratz on this very sonata.[23] What exactly impressed Brendel about Ratz's analysis remains somewhat unclear. We obtain only hints in a text from 1970, where Brendel refers to the central and movement-spanning importance of opposing tonal areas emphasized by Ratz (B♭ major confronted with B major, G♭ major, and B minor in the first movement),[24] and in a recent correspondence with Peter Gülke, Brendel refers to Ratz's characterization of the "eminently lyrical content" of the concluding fugue.[25] Yet beyond these two points, Brendel's discussion of Op. 106 mainly critiques Beethoven's metronome markings, which Ratz does not address at all.[26] Nevertheless, it seems quite possible that the young Brendel understood Ratz's analysis as a guideline for a successful interpretation, or at least as a challenge of sorts to develop his own analytical understanding of the work. He certainly did so in the sense of a conviction, particularly widespread in the Schoenberg school, that successful interpretation requires analytical penetration, the aim being "clarity, sound and plasticity of the representation,"[27] without holding analysis to be the only criterion for successful performance.[28] This model, in which the sounding result emerges from an analytical understanding of the notation, is fundamentally questioned by many representatives of musical performance studies, especially by Cook, who characterizes it as a "page-to-stage approach."[29] For Cook, scores are "social scripts" whose meaning, in the sense of a semiotic transfer, only materializes at the moment of the performance.[30] In contrast, the PETAL research project along with this article specifically seek an intermediary position

23 See Alfred Brendel, "[Rede zum] Preis der Wiener Beethoven-Gesellschaft" [2004], in *Über Musik: Sämtliche Essays und Reden* (Munich: Piper, 2007), 523–25, here 525; Alfred Brendel in Alfred Brendel and Peter Gülke, *Die Kunst des Interpretierens: Gespräche über Schubert und Beethoven* (Kassel: Bärenreiter, 2020), 121–22.

24 Alfred Brendel, "Form and Psychology in Beethoven's Piano Sonatas" [1970], in *Music, Sense and Nonsense: Collected Essays and Lectures* (London: Robson, 2015), 41–55, here 46–47. See also Brendel in Brendel and Gülke, *Die Kunst des Interpretierens*, 123. Another early text by Brendel on the first movement of Beethoven's Piano Sonata Op. 2 No. 1 from the same year (1970) clearly refers, without explicit quotation, to Schoenberg's and Ratz's analysis of the main idea of this movement; Alfred Brendel, "The Process of Foreshortening in the First Movement of Beethoven's Sonata Op. 2, No. 1" [1970], in *Music, Sense and Nonsense*, 56–62.

25 Brendel in Brendel and Gülke, *Die Kunst des Interpretierens*, 125. See Ratz, *Einführung in die musikalische Formenlehre*, 225 ("eminent lyrischen Gehalt").

26 See Brendel in Brendel and Gülke, *Die Kunst des Interpretierens*, 121–25.

27 Collection program (November 1921), ASC, T84.01, cited in Eike Feß, "Aufführungspraxis der Wiener Schule im Verein für musikalische Privataufführungen," *Journal of the Arnold Schönberg Center* 15 (2018), 31–51, here 32 ("Klarheit, Klang und Plastik der Darstellung").

28 See Utz and Glaser, "Gestaltete Form," 190–91.

29 See Nicholas Cook, *Beyond the Score: Music as Performance* (New York: Oxford University Press, 2013), 33–55.

30 See ibid., 249–87.

in accepting the idea that analytical understanding can be a highly valuable tool in creating new performative concepts and ideas, while also appreciating sounded readings as manifestations of "analytical" approaches in their own right.

The lack of mediation between analysis and performance is certainly inherent to Ratz's analysis of Op. 106, which is characterized by the odd juxtaposition of quite technical bar grouping and motivic analysis on the one hand with an often disconnected hermeneutic interpretation on the other—an interpretation that is strongly influenced by the nineteenth-century concept of genius, as well as by esoteric and neo-Pythagorean tropes.[31] Against this background, Kaiser argues that neither Ratz nor Caplin adequately reflect on such inconsistencies between "form" and "content," which imbues their conception of formal function with a certain degree of dogmatism.[32] A strain of dogmatism typical of its time unquestionably pervades Ratz's restricted comments on performance as well. In an essay written in 1970, he emphasizes the principle of analytical interpretation of Beethoven's works, stressing

> how important it is for the performer to properly grasp the musical content. Only then will he be able to achieve a meaningful structure and a dramatic sequence of this organic process and help the work to have a corresponding effect on the listener. He must be able to adapt to each phase extremely quickly, he must work out every part vividly through the smallest of caesuras and, above all, he must bring to life the transformations of the thematic substance through appropriate presentation.[33]

Ratz's analysis of the macroformal principles of the third movement of Op. 106 contains a more concrete instruction to performers. Ratz sees the *Adagio sostenuto* "as a consequence of the moments of tension shown in the two previous movements, which were most clearly evident in the polarity B♭ major: B minor."[34] Although exactly what this introductory sentence means is left largely unexplained, Ratz likely perceives the B♭ major/B minor [B major] pole (according to Neo-Riemannian theory, a *slide* transformation) that plays an

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31 This becomes particularly clear at the end of Ratz's analysis of Op. 106. See ibid., 239–41.

32 See Kaiser, "Formfunktionen der Sonatenform," 34–35. See also Rohringer, "Prolegomena zu einer Systematik der syntaktischen Formen 'Satz' und 'Periode'," 225–34, and Arndt, "Form – Function – Content," 208–11.

33 Erwin Ratz, "Analyse und Hermeneutik in ihrer Bedeutung für die Interpretation Beethovens" [1970], in Friedrich C. Heller (ed.), *Gesammelte Aufsätze* (Vienna: Universal Edition, 1975), 53–64, here 56 (first publication in *Österreichische Musikzeitschrift* 25/12 [1975], 756–66). ("[…] wie wichtig es für den Interpreten ist, den musikalischen Inhalt richtig zu erfassen. Erst dann wird er einen sinngemäßen Aufbau und einen dramatischen Ablauf dieses organischen Geschehens erzielen und dem Werk zu einer entsprechenden Wirkung auf den Hörer verhelfen können. Er muß äußerst rasch sich jeder Phase anpassen können, muß jeden Teil durch kleinste Cäsuren plastisch herausarbeiten und vor allem die Verwandlungen der thematischen Substanz durch entsprechenden Vortrag lebendig werden lassen.")

34 Ratz, *Einführung in die musikalische Formenlehre*, 214 ("als Folge der den beiden vorangegangenen Sätzen aufgezeigten Spannungsmomente, die am deutlichsten in der Polarität B-Dur : h-moll in Erscheinung traten").

important role in the first, second, and fourth movements as continued in the "Neapolitan" relationship F♯ minor [F♯ major]/G major, which dominates the third movement (see the brackets in Example 1).

Ratz prominently emphasizes the simultaneous presence of two-part and three-part principles in this *Adagio sostenuto*: the development (mm. 69–86) can be seen as an independent middle section of a three-part sonata form with coda, but may also—not least because of its brevity—be conceived as a retransition to a recapitulation of the previous part in a two-part form.[35] Ratz draws the following conclusions about this formal juncture, with "interpretation" clearly referring to musical performance:

> In the interpretation, [the two-part reading of the form] will be expressed in the fact that the development follows the exposition more closely, such that the entrance of the recapitulation does not so much represent a resumption of part a' following part b in the three-part scheme a-b-a', but rather can be construed as the beginning of a repetition encompassing the entire previous process according to the schema A-A'.[36]

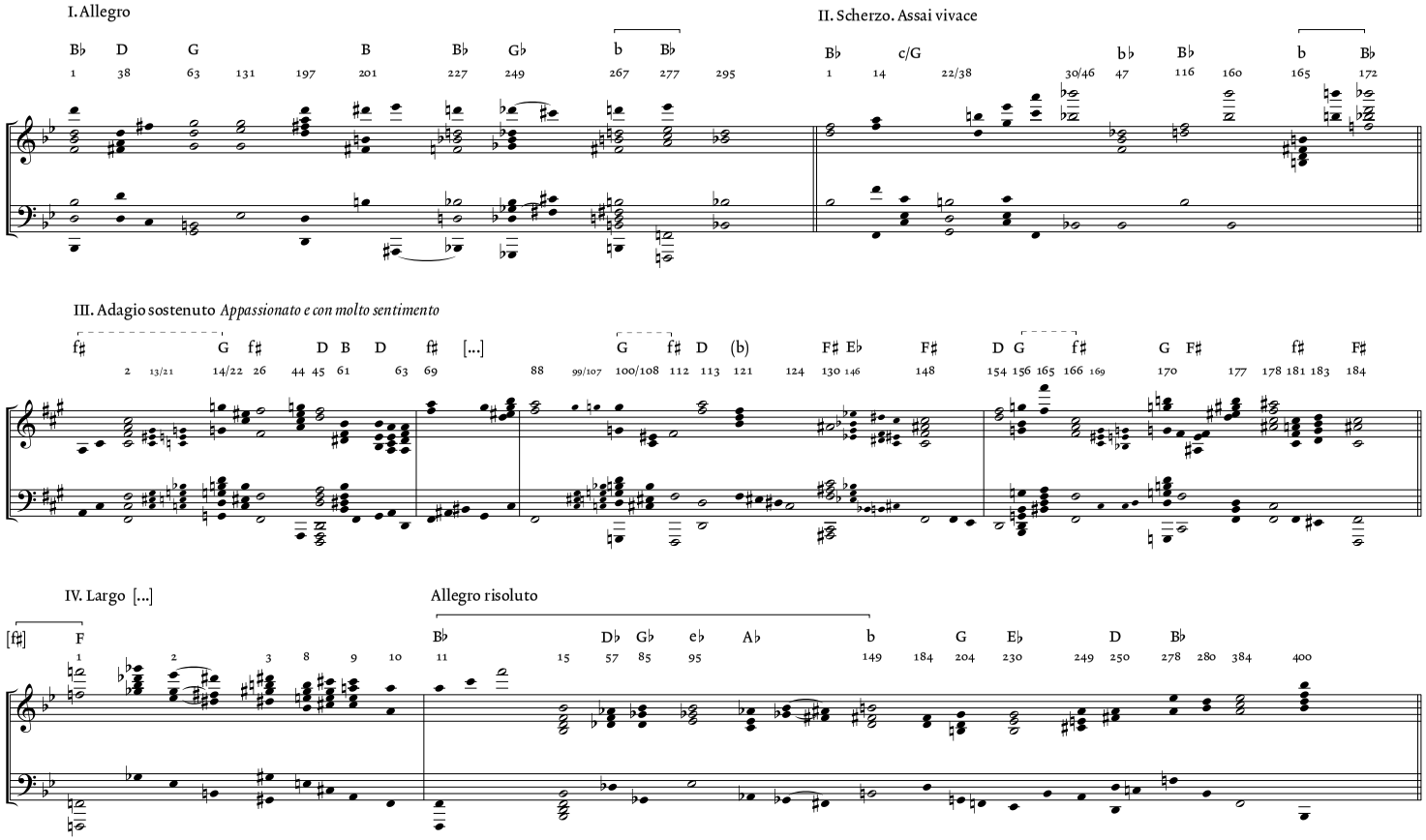
How did Brendel design his sounded reading in response to Ratz's analysis? When Ratz writes that "transformations of the thematic substance" should be made audible "through appropriate presentation," one assumes that in a case like this, in which the return of the main theme from the exposition (mm. 1–26) in the recapitulation (mm. 87–112) is engaging and transformative, an *analogous* tempo would make it easier to recognize the common thematic substance. In Brendel's readings, however, the different character of the two versions of the main theme material is pronounced. A distinctive feature of all three Brendel recordings of the sonata from the years 1962, 1970, and 1995 examined for this article (Fig. 1a) is that he resumes the main theme in figured form after the development much more slowly than at the movement's beginning (1962 and 1995: –0.25, 1970: –0.16).[37] Even if this is a slight general trend (mean: –0.08), in the 24 other recordings examined, Brendel's extent of deceleration is only surpassed by András Schiff 2006 (–0.27), Claudio Arrau 1966 (–0.30), and Rudolf Buchbinder 1981 (–0.47) (see Table 4 below). This deceleration is not limited to the beginning of the recapitulation, as a kind of temporal "fade-in." In fact, a

35 Ibid., 215.

36 Ibid. ("In der Interpretation wird dies darin zum Ausdruck kommen, daß sich die Durchführung enger an die Exposition anschließt und so der Eintritt der Reprise nicht so sehr die Bedeutung einer Wiederaufnahme des Teiles a' nach einem Teil b im dreiteiligen Schema: a-b-a' erhält, sondern mehr im Sinne des Beginns einer den gesamten bisherigen Ablauf umfassenden Wiederholung gemäß dem Schema A-A' aufgefaßt werden kann.")

37 The relationship between two tempo values is always given logarithmically in this article: –1 denotes half tempo, +1 double tempo. In the case of the *ritardandi* in m. 86 below, two values are given. The first value results from the quotient of the tempo values of mm. (85–)86 and m. 84, the second value from the quotient of the tempo value of mm. (85–)86 and the average tempo of the entire formal section (mm. 84–86). Two more ritardando rates (m. 26 and m. 112, see below) are calculated analogously. For the calculation of the (main) tempo values using segments and average tempi, see section 3 of this article, footnotes 47 and 48.

Example 1: Beethoven, Piano Sonata Op. 106, i–iv, harmonic reduction

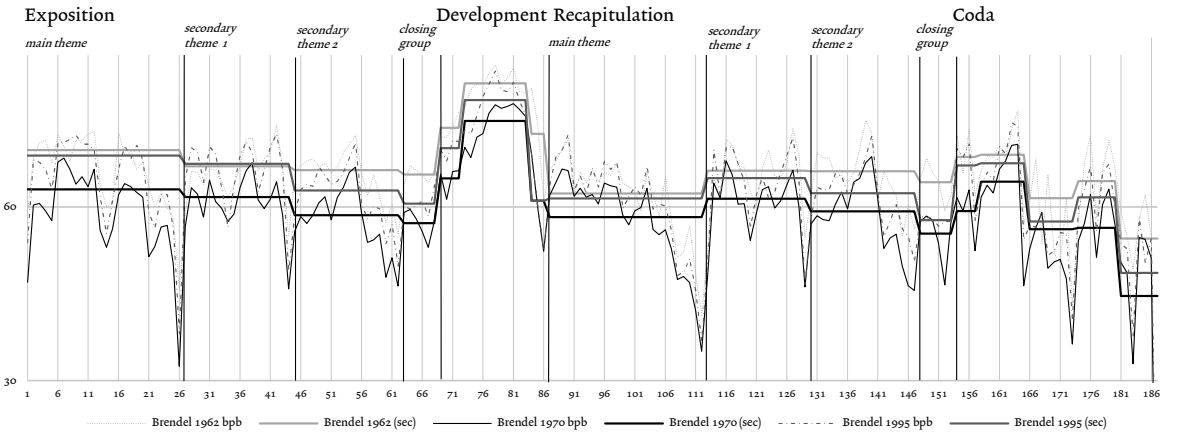


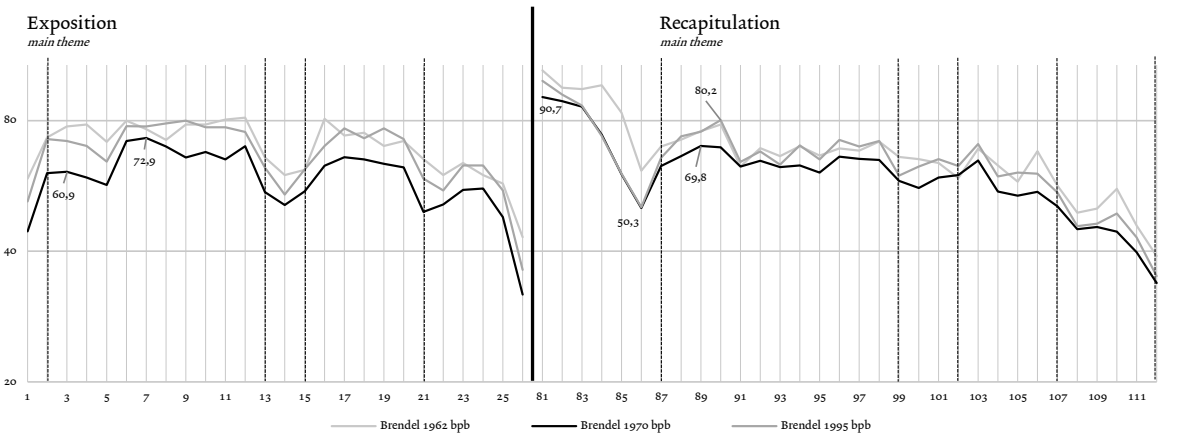
more detailed curve (Fig. 1b) comparing the micro-tempo structure of the two main theme instances in all three Brendel recordings reveals that the slower take in the recapitulation affects the continuation of the complex idea more than its beginning. The graph shows that Brendel does not significantly reduce the tempo until the fifth measure of the theme in the recapitulation (m. 91); before that, the tempo area is largely the same as in the exposition, although the micro-timing differs substantially: in the recordings from 1970 and 1995, the recapitulation accelerates until the fourth measure of the theme (mm. 87–90), intensifying the expressive character of the figurated lines, while in the exposition a continuous ritardando characterizes the analogous solemn phrase (mm. 2–6). After m. 90, the tempo is continuously slowed over the entire section. Therefore, the contrast between the two main themes in Brendel is less due to a deviation of absolute tempo after the caesura around m. 87, and more due to a contrast in character, which is not only caused by the figurations themselves but also by the dynamics: Brendel's considerable increase in loudness leads, especially in the earliest recording, the *pp cresc.* from m. 87 to a *forte* already after one or two measures. Together with the momentum prompted by the thirty-second-note figurations, this contributes to the substantial contrast to the main theme's original solemn character, with the broader tempo enhancing this contrast only in further course. Of course, this contrasted reading of the two main themes could be understood as fulfilling Ratz's requirement to make "transformations of the thematic substance" audible "through appropriate presentation," even more than an analogous tempo design could have achieved.

Brendel clearly favors the three-part over the two-part interpretation of this movement: In all three of his recordings, he executes the *smorzando* in m. 86 before the figured reformulation of the beginning particularly impressively, achieving the strongest three *ritardandi* among all 27 recordings (1962: –0.65, –0.39; 1970: –0.56, –0.29; 1995: – 0.54, –0.28; mean: –0.12, –0.05). The particularly broad basic tempo in the recording from 1970 makes the music almost come to a standstill at this point, with the subsequent thirty-second-note figurations acquiring the significance of a crucial macroformal turning point (Audio Example 1). Although this supports Ratz's emphasis on this juncture, one might assume Brendel's caesuras *before* the development to be acting against Ratz's advice to let the "development follow the exposition more closely." If we compare the main tempo values for the exposition's second secondary theme with those of the pre-core and core of the development, Brendel's three recordings are among the five most pronounced deviations (together with Backhaus 1956 and Barenboim 1969), indicating that he uses tempo to clearly demarcate the boundaries of exposition and development (Brendel 1970: main tempi from secondary theme 2 to development core 58.1–[56.2]–67.2–84.6; deviations 0.21/0.03, 0.54/0.31).[38]

38 Here and in the following, values after the slash indicate the mean value for the reader's orientation.

Figure 1: a. Beethoven, Piano Sonata Op. 106, iii, tempo curves of recordings Brendel 1962, 1970, and 1995 (see Table 1) with main tempo values for each formal section; b. Beethoven, Piano Sonata op. 106, iii, main Theme in exposition (mm. 1–26) and recapitulation (mm. 87–112) compared, tempo curves of recordings Brendel 1962, 1970, and 1995 (the segments marked by dashed lines were excluded from the calculation of the main tempo values of these sections; see footnote 48)





Audio Example 1: Beethoven, Piano Sonata Op. 106, iii, mm. 45–95 (exposition: secondary theme 2, closing group; development; recapitulation: main theme/ beginning), recording Brendel 1970 (https://phaidra.kug.ac.at/o:127815)

Did Brendel ultimately fail to follow Ratz's "instructions"? One could counter that Brendel's strategy emphasizes the beginning of the recapitulation as a macroformal event and thus, quite in the Ratzian sense, clarifies the two-part structure (A-A') against the backdrop of the three-part structure (a-b-a'). However, his equally strong emphasis on

the development's beginning suggests an overall concept of architectonic form that is in conflict with at least one strain of Ratz's analytical ideas.

3. *AUGMENTED LISTENING*: BRENDEL'S AND GULDA'S TEMPO STRATEGIES IN A BROADER CONTEXT

At this point, we can widen our purview by comparing Brendel's performance to others. Following the model of *augmented listening* as outlined in Cook and further developed in PETAL,[39] a corpus of 27 recordings of the third movement of Beethoven's Op. 106 from the period 1936 to 2021 forms the object of investigation (see Table 1 below). In this corpus, Friedrich Gulda's sounded readings prove to be the polar opposite of Brendel's. This is hardly surprising, since Brendel is generally regarded as a pianist who produces balanced designs, in contrast to Gulda's sometimes "anti-traditional, even 'polemical' understanding" of the standard repertoire.[40] The provocative aspect of Gulda's Beethoven recordings lies in an anti-expressive sparseness combined with particularly rapid tempi, which in this sonata come unusually close to Beethoven's original metronome markings.[41]

Unlike Brendel, there is little evidence of Gulda's direct proximity to the analytical concepts of the Schoenberg school, although a case can be made for a more indirect connection. Gulda studied at the Vienna Academy of Music from 1942 on, taking theory and composition lessons with Joseph Marx (1882–1964), who had attracted attention since the early 1930s with derogatory articles against Schoenberg and other representatives of modern music.[42] In his acceptance speech upon receiving the Beethoven Ring in 1969 (which he

39 Cook understands "augmented listening" as a combination of "distant listening" and "close listening," two methods that he introduces in analogy to "close reading" and "distant reading" as proposed in literary studies (Cook, *Beyond the Score*, chapters 5 and 6). Cook's basic suggestion is to combine the advantages of corpus studies of musical sound recordings (distant listening)—such as the avoidance of tautological research results, in which only what researchers hear in recordings is highlighted—with the close listening that has always been applied in musicology via analytical methods, such that micro- and macroscopic perspectives on sound recordings (and thus on the interpreted works) can continuously comment on and correct each other.

40 Jürg Stenzl, "'das Heiligste mit dem Harlequino vereint…'? Auf der Suche nach einer Rezeptions- und Interpretationsgeschichte von Beethovens *Veränderungen über einen Walzer von Anton Diabelli*," in Ulrich Tadday (ed.), *Ludwig van Beethoven: "Diabelli-Variationen,"* Musik-Konzepte, vol. 171 (Munich: edition text + kritik, 2016), 48–95, here 73 ("anti-traditionelles, gar 'polemisches' Werkverständnis").

41 I dispense with the long-standing discussion of the plausibility of Beethoven's metronome indications in this sonata, which has continued to this day. See Loesch and Brinkmann, *Tempomessungen in Klaviersonaten Beethovens*, chapter 5, as well as Heinz-Klaus Metzger and Rainer Riehn (eds.), *Beethoven. Das Problem der Interpretation*, Musik-Konzepte, vol. 8 (Munich: edition text + kritik, 1979); Ulrich Bartels, "Zur Interpretation von Beethovens *Hammerklaviersonate* op. 106: Eine diskographisch-analytische Studie," *Musiktheorie* 14/2 (1999), 143–69; and Basilio Fernández Morante and Charles Davis, "A Panoramic Survey of Beethoven's 'Hammerklavier' Sonata, Op. 106: Composition and Performance," *Notes* 71/2 (2014), 237–62.

42 See Berkant Haydin, "Joseph Marx: Rückkehr eines 'romantischen Realisten,'" *Österreichische Musikzeitschrift* 61/3 (2006), 30–41, https://doi.org/10.7767/omz.2006.61.3.30.

returned soon afterwards as a consequence of critical reactions to his speech), Gulda criticized the training of students at the Vienna Academy to become "docile music officials."[43] At the same time, he also railed against "modern music," calling its restriction to Stravinsky, Bartók, Schoenberg, Stockhausen, or Boulez a "mental suicide,"[44] against the background of his idealizing enthusiasm for jazz. It is therefore surprising that Ratz's student and successor at the Vienna Music Academy from 1974, Karl Heinz Füssl, defended Gulda in his liner notes to the pianist's second complete recording of the Beethoven sonatas (published in 1968) against accusations that the musician had "become a slave to one's own perfection early on" and sought to achieve a "'sound-unsensual' interpretation." Rather, Füssl discovered in Gulda's playing an "extreme, probably almost painfully felt, sensitivity."[45] In Füssl's support for Gulda, as well as in the reflected analytical rigor of Gulda's Beethoven interpretations (which is by no means incompatible with his subsequently revived practice of the extemporaneous "expansion" of the musical text, which he primarily based on Mozart's works), one may recognize evidence of a general affinity between Gulda's performance style and the aesthetics of performance of the Schoenberg-Ratz school.

The criteria for including the 27 recordings in the corpus of this study were both the performers' reputations and the assumption that these recordings had a significant impact on performance history through ample dissemination and reception. The corpus contains 21 pianists, including multiple recordings by Gulda and Brendel (three recordings each) as well as by Wilhelm Kempff and Daniel Barenboim (two recordings each) (Table 1).[46] The chronological overview of the 27 recorded total durations in the point diagram (Fig. 2)

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43 Friedrich Gulda, "Rede anläßlich der Verleihung des Beethovenringes durch die Wiener Musikakademie" [1969], *Worte zur Musik* (München: Piper, 1971), 95–99, here 95 ("fügsamen Musikbeamten").

44 Friedrich Gulda, *Friedrich Gulda: Aus Gesprächen mit Kurt Hofmann* (Munich: Langen Müller, 1990), 117 ("geistige[r] Selbstmord").

45 Karl Heinz Füssl, "Die Klaviersonaten Beethovens," liner notes to the LP-box *Ludwig van Beethoven, Sämtliche Klaviersonaten, Friedrich Gulda*, Amadeo AVRS 1101, 1968, 3–7, here 7 ("zum Sklaven eigener Vollendung geworden"; "'klangunsinnliche' Interpretation"; "äußerste, vermutlich fast schmerzhaft empfundene Sensibilität").

46 The inclusion of multiple recordings generally makes statistical values such as the mean and the relative standard deviation less meaningful. However, when the corpus is reduced to 21 recordings with 21 unique pianists (in the case of multiple recordings, the earliest recording in the corpus was retained), the mean value for the total duration changes only very slightly, and that of the mean tempo does not change at all: 17:13; 68.6 (27 recordings with multiple recordings of four pianists)—17:10; 68.6 (21 recordings). The limited corpus here mainly serves as a tool to contextualize Brendel's and Gulda's readings, without aiming at definite claims about the performance history of Op. 106. It must be conceded that the selective list of included recordings omits many prominent pianists, including Malcolm Bilson, Emil Gilels, Glenn Gould, Tatiana Nikolayeva, Ursula Oppens, Fazil Say, Grigory Sokolov, Solomon, and Maria Yudina. Morante and Davis's table of durations in 51 recordings of Op. 106, iii indicates three recordings with a duration above the maximum of the 27 recordings considered here (Gerhard Oppitz 2006: 21:55, Solomon [Cutner] 1952: 22:15, Christoph Eschenbach 1976: 25:17), but none with a shorter duration than Gulda 1967 (Morante and Davis, "A Panoramic Survey of Beethoven's 'Hammerklavier' Sonata," 255–56). In this table, Gulda's recordings are indicated with the shortest durations for all four movements of the sonata Op. 106 (first movement: Gulda 1970 – 7:48; second movement: Gulda 1967 – 2:19; fourth movement: Gulda 1970 – 10:57). My related study on the "Diabelli Variations" ("Zwischen Kohärenz und Dissoziation," see footnote 1) is based on a larger corpus of 66 recordings (1937–2018).

Table 1: Beethoven, Piano Sonata Op. 106, iii, 27 examined sound recordings with total durations and main tempo values (beats per minute)

pianist	year of recording	label	duration	main tpo
Schnabel, Artur	1936	Beethoven Society	18:03	66.0
Gieseking, Walter	1949	Tahra	14:46	78.9
Gulda, Friedrich	**1953**	ORF	14:43	79.3
Kempff, Wilhelm	1953	Deutsche Grammophon	15:15	74.9
Backhaus, Wilhelm	1956	Profil	15:37	73.6
Petri, Egon	1956	Westminster	14:17	80.7
Brendel, Alfred	**1962**	Vox-Turnabout	16:40	69.9
Kempff, Wilhelm	1964	Deutsche Grammophon	16:25	70.0
Rosen, Charles	1965	EPIC	18:21	63.6
Arrau, Claudio	1963	Philips	20:22	56.8
Gulda, Friedrich	**1967**	Amadeo	13:36	85.5
Barenboim, Daniel	1969	EMI	21:50	53.8
Brendel, Alfred	**1970**	Decca	15:21	75.1
Gulda, Friedrich	**1970**	EuroArts classic archive	19:32	60.0
Serkin, Rudolf	1971	Sony Classics	16:18	71.4
Richter, Sviatoslav	1976	Stradivarius	17:38	65.4
Pollini, Maurizio	1977	Deutsche Grammophon	17:10	67.8
Badura-Skoda, Paul	1978	Auvidis Astrée	16:51	68.7
Buchbinder, Rudolf	1979–81	Telefunken/Telarc	20:26	57.0
Barenboim, Daniel	1982	Deutsche Grammophon	21:48	54.3
Goode, Richard	1988	Nonesuch	17:03	68.1
Brendel, Alfred	**1995**	Philips	17:45	66.0
Schiff, András	2006	ECM	15:26	75.9
Uchida, Mitsuko	2007	Philips	19:43	60.5
Levit, Igor	2013	Sony Classics	17:02	68.7
Perahia, Murray	2016	Deutsche Grammophon	16:17	70.7
Aimard, Pierre-Laurent	2020	Pentatone	16:43	68.3
		mean	17:13	68.6
		maximum	21:50	85.5
		minimum	13:36	53.8

clearly demonstrates the fundamental contrast between Gulda's very rapid interpretations, which in the recording from 1967 include the fastest (or shortest) interpretation within the corpus (total duration 13:36; main tempo 85.5), and Brendel's in the mid-range, noting the much slower interpretation of the 1970 Decca recording (19:32; 60.0).

For the purpose of realizing a systematic comparison of the pianists' tempo strategies, the *Adagio sostenuto* was divided into 120 segments on the basis of Ratz's analysis and pa-

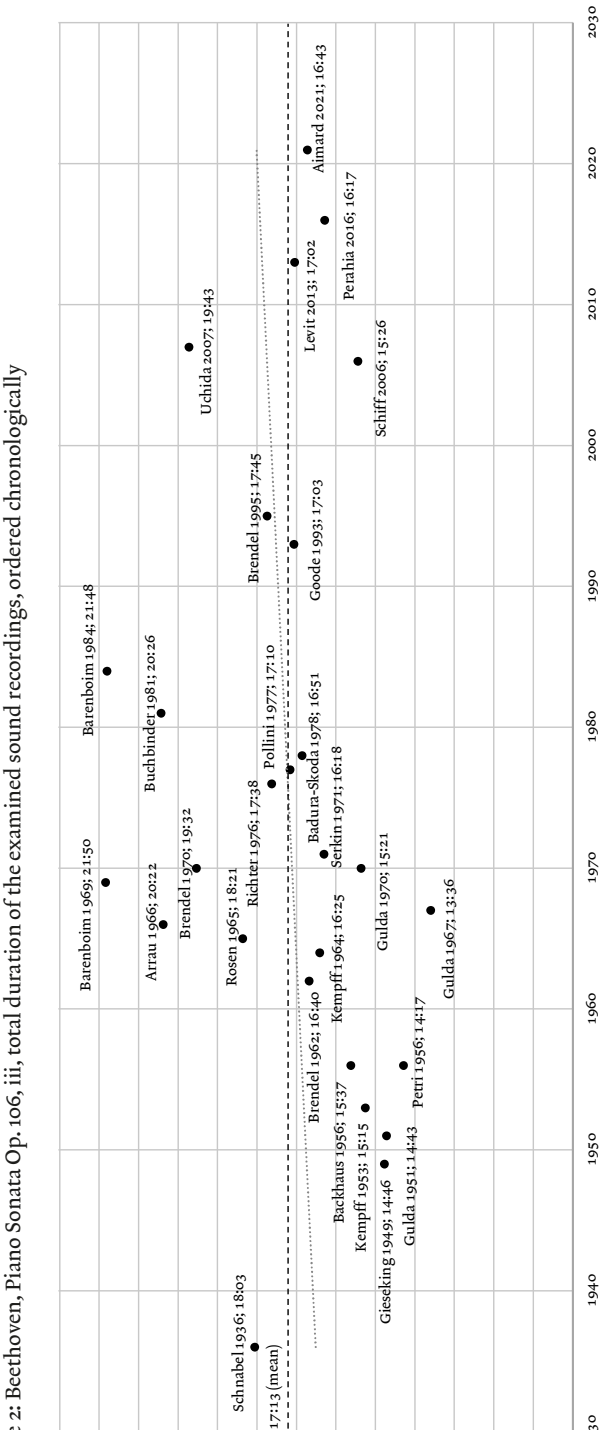
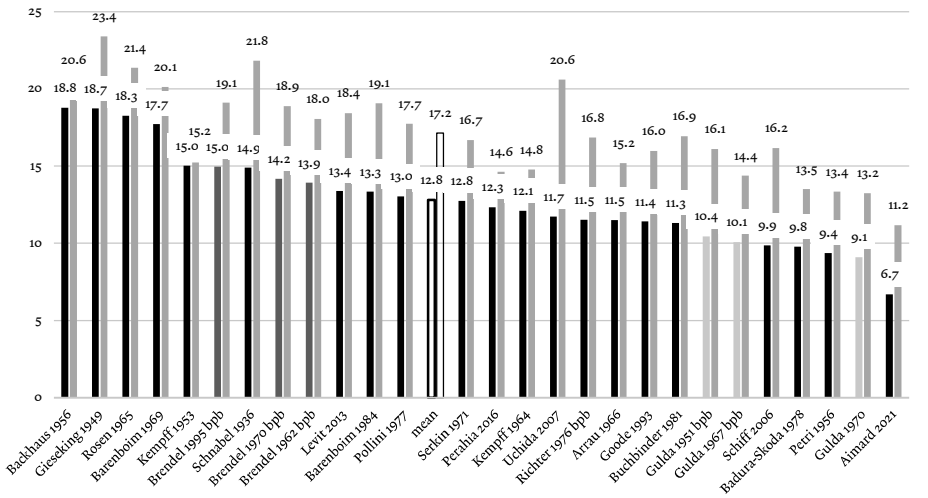


Figure 2: Beethoven, Piano Sonata Op. 106, iii, total duration of the examined sound recordings, ordered chronologically

Figure 3: Beethoven, Piano Sonata Op. 106, iii, 27 recordings, relative standard deviation of the average tempi in 16 formal sections (left column) and 120 segments (right column); the relative standard deviation is an indicator of the degree of tempo variation of a recording on a global level (sections) or local level (segments)



rameters relevant to performance (especially taking into account all types of tempo modification). The 120 segments further differentiate the 16 formal sections resulting from Ratz's analysis (see Table 3 below).[47] Main tempo values for the 16 larger sections were calculated based on the mean tempi of the 120 smaller segments. For the recordings of Gulda, Brendel, and Sviatoslav Richter, tempo values were also recorded on a bar-per-bar (bpb) basis.[48] This dual procedure makes it possible not only to obtain global overviews of general performance concepts, but also to observe internal differentiations of formal details.

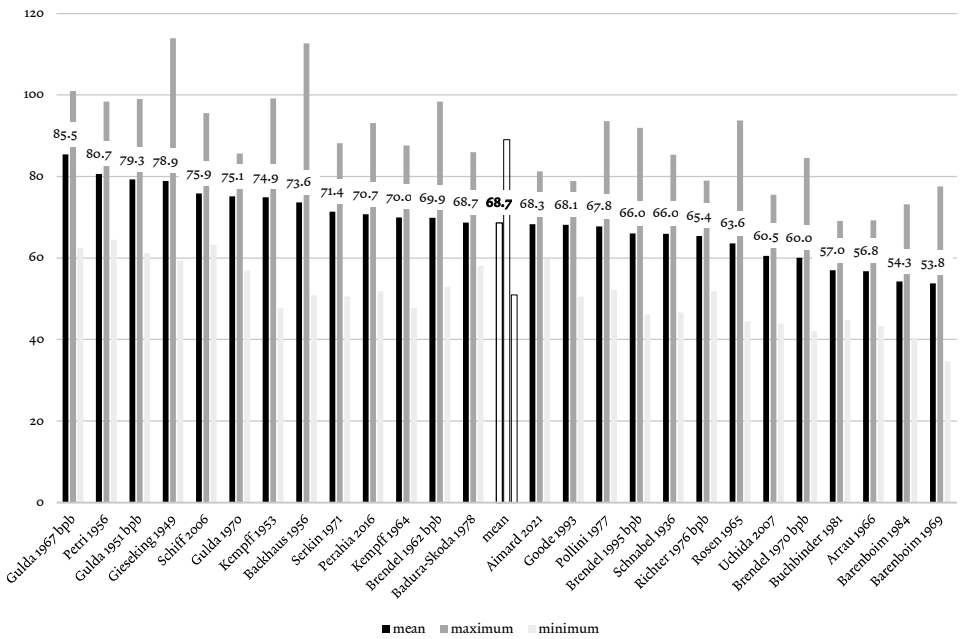
In calculating the tempi of the sixteen larger sections from the 120 smaller segments, tempo values of segments were excluded from the calculation where a strong tempo modification is indicated in the score.[49] From the resulting tempi of the 16 sections, a weighted average was collected for each recording, which (for purposes of comparison) is referred to as the "main tempo," even though clear differences in the choice of tempo in the various sections can be observed in almost all recordings. That is, one cannot speak of a "ref-

47 The annotated score with exact positioning of all markers is available at https://phaidra.kug.ac.at/o:127813.

48 Tempo measurements were performed by Laurence Sinclair Willis using Sonic Visualiser and reviewed by the author. The average tempi of the segments were converted into values per measure for graphical display, resulting in stationary values over several measures in the diagrams based on segment measurements.

49 On this basis, mm. 1, 13–14, 21–26, 35, 44, 59–60, 99–100, 107–12, 129, 144–45, 169–73, and 178–80 were excluded from the calculation of average sectional tempi.

Figure 4: Beethoven, Piano Sonata Op. 106, iii, 27 recordings, "main tempo" (♪) in 16 formal sections, mean, maximum, and minimum values (Beethoven's metronome indication: ♪ = 92)



erence tempo" in the narrow sense.[50] Although none of the resulting "main tempi" match Beethoven's metronome indication of ♪ = 92, this is reached or exceeded in individual recordings in some formal sections. For instance, in Gulda's fastest recording from 1967, five formal sections exceed 92 beats per second (in the three appearances of the second secondary theme in the exposition, recapitulation, and coda, as well as in the development). Beethoven's tempo indication is also surpassed in the development in early recordings by Walter Gieseking in 1949 (the second secondary theme is also greatly accelerated here), Wilhelm Kempff in 1953, and Wilhelm Backhaus in 1956.

Regarding fluctuations in the main tempo, Gulda's three recordings exhibit a particularly rigorous consistency in tempo, which can only be found elsewhere in Pierre-Laurent Aimard 2021 (no doubt influenced by the generally strict tempo precision of new music, which is part of the core repertoire of this pianist), the Busoni student Egon Petri 1956, Paul Badura-Skoda 1978, and András Schiff 2006 (Figs. 3 and 4). The three Gulda

50 On problems surrounding the concept of a "main tempo" see, among others, Alf Gabrielsson, "The Performance of Music," in Diana Deutsch (ed.), *The Psychology of Music* (San Diego: Academic Press, 1999), 501–602, here 540–42; Bruno Repp, "On Determining the Basic Tempo of an Expressive Music Performance," *Psychology of Music* 22/2 (1994), 157–67, https://doi.org/10.1177/0305735694222005; and Cook, *Beyond the Score*, 83–84.

recordings attain a strikingly high correlation with Petri's recordings,[51] which of course may speak more to the common tendency toward a text-oriented performance paradigm widespread during the 1950s than to a conscious reference (Table 2). The conspicuous tempo fluctuations in Brendel's three recordings, on the contrary, show a clear orientation toward the free tempo design of earlier recordings (Artur Schnabel 1936, Gieseking 1949, Kempff 1953, Backhaus 1956) that also characterizes Barenboim's extremely slow interpretations (1969, 1984; slowest main tempo with 53.8/68.6 in 1969 and 54.3/68.6 in 1984).

An initial demonstration of the different dramaturgies of Brendel and Gulda in this movement can be realized with the help of two diagrams that illustrate different facets of the timing. Figure 5 shows the (logarithmically scaled) deviations in the section tempi in the Gulda and Brendel recordings from the respective mean of the 27 recordings. The closer a tempo approaches the value 0, the more strongly it converges with the global tendency of the performance history documented in the corpus. The contradiction between the recordings of Gulda 1967 and Brendel 1970 is clearly visible here, as they define a kind of outer frame in this diagram. In these two interpretations—both of which were part of complete Beethoven sonata recordings on the occasion of the Beethoven bicentennial in 1970—a certain effort to distinguish one's own reading from general trends and to individualize one's performance can be recognized. Figure 6, in contrast, indicates how the sectional tempi in each of these six recordings relate to the recording's "main tempo"; this diagram only shows a *relative* tempo structure. Compared to the average of all 27 recordings, it is very clear that Brendel exceeds the general tendency to accelerate the development in all three of his recordings, whereas Gulda always stays much closer to his own main tempo. In addition, the contradiction in the tempo conception in the three thematic areas in exposition and recapitulation is clearly visible in this diagram. Whereas Gulda always designs the second secondary theme in an extremely fluent manner and thus creates a continuum of rising tempo between the three thematic groups, especially in the recapitulation, Brendel—in contrast to the global tendency—does exactly the opposite. His dramaturgy of an increasing deceleration of the three thematic areas, however, is modified in the recapitulation, where he starts from a much slower main theme (particularly clearly in the early recording from 1962), necessitating a relatively clear shift to a faster tempo in the first secondary theme.

Among Brendel's three recordings, the one from 1970 deviates most noticeably from the section averages within the corpus (Fig. 5). The simple tempo curve (Figs. 1 and 7) illus-

51 Gulda 1951: Petri 1954 0.445 (third highest value); Gulda 1967: Petri 1954 0.305 (fourth highest value); Gulda 1970: Petri 1954 0.566 (second highest value). The correlation calculations were determined by logarithmically scaled deviations of the 16 section tempi from the respective mean.

Figure 5: Beethoven, Piano Sonata Op. 106, iii, 27 recordings, deviations from the mean tempo value of the 16 formal sections (logarithmically scaled) of the recordings Gulda 1951, Brendel 1962, Gulda 1967, Gulda 1970, Brendel 1970, and Brendel 1995

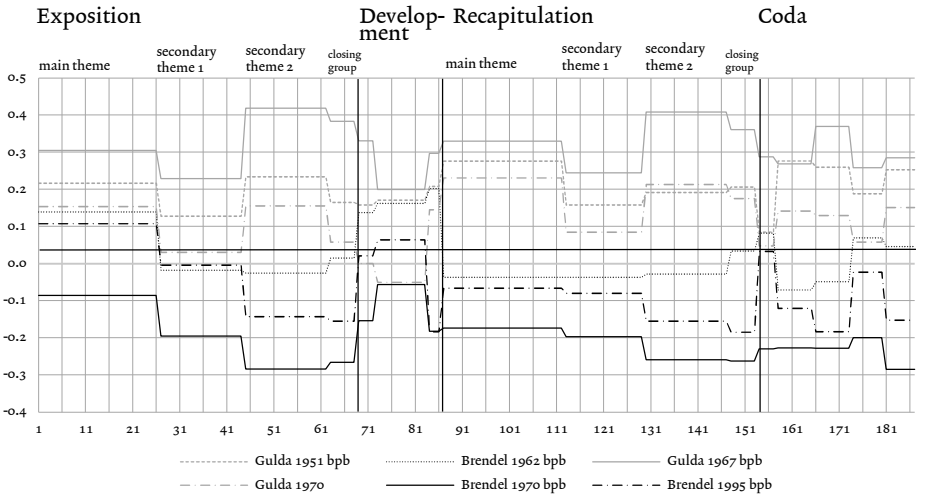


Figure 6: Beethoven, Piano Sonata Op. 106, iii, 27 recordings, deviations from the main tempo of a recording in the 16 formal sections in the recordings Gulda 1951, Brendel 1962, Gulda 1967, Gulda 1970, Brendel 1970, and Brendel 1995 with the mean value from 27 recordings

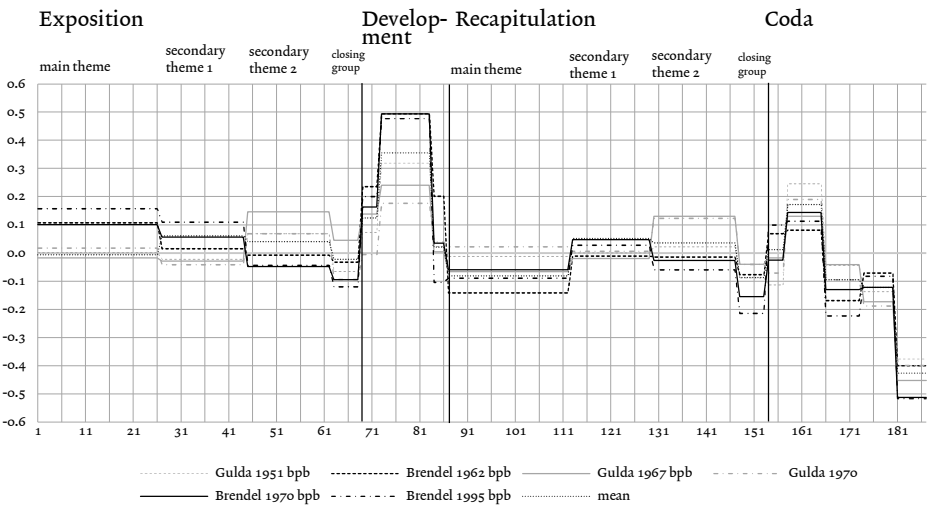


Table 2: Beethoven, Piano Sonata Op. 106, iii, 27 recordings, correlation table based on logarithmically scaled deviations of the 16 section tempi from the respective mean (Pearson correlation) (https://phaidra.kug.ac.at/o:128480)

trates how Brendel, starting from a broad initial tempo (64.4/68.6), increasingly stretches first (62.4/71.3) and second secondary themes (58.1/70.9), only to increase the tempo excessively in the core of the development (84.6/88.0). In the recapitulation, a dramaturgy similar to that in the exposition is realized with less conspicuous gradations, whereby the tempo for the main theme, as shown, differs noticeably from that of the exposition (**57.6**–62.0–58.9/64.9–70.7–70.8; exposition: **64.4**–62.4–58.1).

Gulda's recording from 1967 provides a stark contrast to Brendel's interpretations. Only Pollini 1977 (–0.557) approaches the negative correlations of Gulda 1967 to Brendel 1970 (–0.573) and Brendel 1995 (–0.556; see Table 2 above). In the first secondary theme (83.8/71.3), Gulda largely maintains the middle tempo of the main theme (84.4/68.6), but clearly separates the sections from one another with a phrasing rubato at the end (Fig. 7). He then sustainably increases the tempo of the second secondary theme (94.6/70.9), slightly stretching the differences between the sections from his earlier recording (Gulda 1951: 79.4–78.1–83.2). After a brief reduction in tempo in the final group and at the beginning of the development, the increase in tempo continues in the developmental core (101.0/88.0). The recapitulation exhibits tempi that deviate only very slightly from the exposition, starting from a negligibly lowered initial tempo (**81.6**–84.3–93.6; exposition: **84.4**–83.8–94.6). Overall, it is clearly audible on this recording how Gulda deploys tempo design in service of macroformal processuality, thus "bringing to life the transformations of the thematic substance through appropriate presentation" in the sense of Ratz (Audio Example 2).

4. REDEFINING FORMAL FUNCTIONS THROUGH PERFORMANCE: ARCHITECTONIC FORM AND PROCESS FORM

Let us now try to interpret these contrasting macroformal dramaturgies by Brendel and Gulda in terms of formal-temporal functions. To this end, Ratz's analysis must first be expanded and updated. It is striking that Ratz does not mention the clear references of the third movement of Op. 106 to the piano variation genre, thus ignoring what is probably the movement's most important formal ambiguity. In view of the large variation movements of the piano sonatas Opp. 109, 111, and the "Diabelli Variations" Op. 120, this gap in the analysis is astounding, with the first movement of the A♭-major Sonata Op. 110 in particular representing a comparable hybrid of sonata and variation form. The hybridization of forms and genres can generally be seen as a characteristic of Beethoven's late work prefigured in earlier phases. Notably, the processual form worked out by Ratz in his analysis of the first movement of the "Tempest" Sonata Op. 31 No. 2 can be consid-

ered a preliminary stage of such hybridization.[52] Condensed by Carl Dahlhaus and Janet Schmalfeldt, among others,[53] the essential principle of this process form is a constant forward- or backward-looking temporality, which is caused by the ambiguity of formal functions, placing the listener "in the middle of the action," so to speak: the beginning is "still" an introduction, but "already" the main theme, while the following section is "still" the main theme, but "already" a transition, etc.

In the first movement of the "Tempest," the hybridization of slow introduction and main theme is particularly important, as it is significant more generally for many of Beethoven's late works. This phenomenon is also evident in the slow movement of Op. 106, creating ambiguity over whether the first measure, added by Beethoven at a very late stage in the compositional process,[54] is an introduction to or already part of the main idea. What is more significant—not least in view of the late variation works written close to Op. 106—is that not only can the supposed "transition" from m. 27 (here referred to as the first secondary theme) be understood as a (free) variation of the main theme, but above all the main theme and the first secondary theme appear in the recapitulation in free figurative variations that somewhat anticipate Chopin's *Nocturne* style. Finally, the suggestion that a "Maggiore variation" of the "theme" is evident in the second secondary theme is by no means pure speculation, since both the prominent falling-fourth motive (m. 5) and the upbeat gesture constituting this idea are prefigured in the main theme. The recapitulation being hardly recognizable as such, but instead emerging imperceptibly from the flow of the development, is also a *topos* that Beethoven resumed from earlier periods—for example, from the first movement of the "Appassionata" Op. 57—as a model for the formal designs of his late style (thus updating the two-part principle of many eighteenth-century sonata movements), with variation form becoming particularly important as a hybrid counter-model to sonata form through its striking figurative transformations of the thematic substance. The movement may thus also serve as a prominent example demonstrat-

52 See Ratz, *Einführung in die musikalische Formenlehre*, 154–55.

53 See Carl Dahlhaus, "Zur Formidee in Beethovens d-moll-Sonate Opus 31,2," *Die Musikforschung* 33/3 (1980), 310–12 (for an English translation, see Nathan J. Martin's contribution to this MTA issue); Carl Dahlhaus, *Ludwig van Beethoven und seine Zeit* (Laaber: Laaber, 1987), 207–12; Janet Schmalfeldt, *In the Process of Becoming: Analytic and Philosophical Perspectives on Form in Early Nineteenth-Century Music* (New York: Oxford University Press, 2011), 37–51; as well as Pieter Bergé (ed.), *Beethoven's Tempest Sonata: Perspectives of Analysis and Performance* (Leuven: Peeters, 2009) and Pieter Bergé (ed.), *Beethoven's Tempest Sonata (First movement): Five Annotated Analyses for Performers and Scholars* (Leuven: Peeters, 2012). Caplin repeatedly takes up Schmalfeldt's focus on the transformation of musical functions in his contribution to Bergé's 2009 collection: William E. Caplin, "Beethoven's Tempest Exposition: A Springboard for Form-Functional Considerations," in Pieter Bergé (ed.), *Beethoven's Tempest Sonata*, 87–125.

54 See Beethoven's letter to Ferdinand Ries, 16 June 1819, Ludwig van Beethoven, *Briefwechsel: Gesamtausgabe*, *vol. 4: 1817–1822*, ed. Sieghard Brandenburg (Munich: Henle, 1996), no. 1309, and Norbert Gertsch, "Beethovens 'Hammerklaviersonate': Der steinige Weg zu einem verlässlichen Notentext," G. Henle Verlag (blog post), 1 June 2020, https://www.henle.de/blog/de/2020/06/01/beethovens-hammerklaviersonate-der-steinige-weg-zu-einem-verlaesslichen-notentext.

ing the threefold integration of sonata form, variation form, and Schoenberg's grounding concept of developing variation, repeatedly taken up by Ratz and Caplin.

The movement exhibits both ambivalence with regard to formal models and clarity in its architectonic structure. As Ratz emphasizes,[55] there is a striking regularity of 18-measure phrases in this movement, into which the 18-measure development fits, and to which the 26-measure main theme is also traced back by Ratz, albeit with some music-analytical acrobatics—understood as an extended 18-measure model (1-8-4-4-1) with second and third parts of the theme repeated.[56] In an interpretation as variation form, this 26-measure theme is followed by a total of six variations: first and second secondary themes (the latter extended by a closing group of six measures), development, recapitulation (main theme, first and second secondary themes, with the first secondary theme reduced to 17 measures), concluded by a 34-measure "seventh variation" or coda (five phrases of 4-8-8-7-7 measures) that recalls all three theme groups. From this perspective, the form of the movement as a 26-measure theme with a total of six variations and coda (Table 3), creates a specific ambivalent tension between reference to the theme and an independent generative dynamic for each form section. This organization differs from the dramaturgy of a "conventional" sonata form, especially in that the caesura between the development and recapitulation becomes less important—or, to put it another way, a stronger continuity from "Variation 3" to "Variation 4" becomes plausible.

The tendency of the movement toward a variation or process form may be advanced in opposition to Ratz's emphasis on two- and three-part organization and Brendel's nuanced realization of this interpretation. In this regard, we can distinguish between two basic conceptions of the performative form of this movement. In one conception, the caesuras may be strengthened and the individual characteristics of the eight large formal sections emphasized, reflected in a correspondingly contrasting tempo design shaped by phrasing rubato. In the other perspective, these larger sections may be integrated into superordinate tempo processes, strengthening the process character of the form.

With this distinction in mind, the processual characteristic seems much clearer in Gulda's recordings than in Brendel's. Gulda's fast tempi generally facilitate an audible connection of the thematic groups into an overarching line (Fig. 7). In addition, there is the successive acceleration of tempo levels from main theme and first secondary theme via second secondary theme to the maximum tempo in the development. After a second arc of acceleration in tempo, the tempo area of the second secondary theme is reached again in phrase two of the coda (the part that takes up material from the second secondary theme),

55 See Ratz, *Einführung in die musikalische Formenlehre*, 218–19.
56 See ibid., 219.

after which the tempo gradually decreases toward the end. Figures 5, 6, and 7 show that Gulda largely retains this tempo principle in his three recordings. Especially in the particularly rapid recording from 1967, however, the formal sections are clearly delimited by means of phrasing rubato, such that one can see (and hear) process principle and architectural principle overlapping: the *ritardandi* between the main theme and first secondary theme in Gulda 1967 achieve pronounced values in both exposition (m. 26: –0.71 [maximum deceleration]/–0.48, –0.93/–0.71) and recapitulation (m. 112: –0.71/0.53, –0.89/–0.81).

When compared to Gulda, the process principle seems to be even more pronounced in Sviatoslav Richter's recording of 1976 (Fig. 7). Richter begins on a noticeably low tempo plateau (55.2/68.6) and then increases the tempo very clearly, with minimal ritardando in measure 26 (–0.25/–0.48, –0.45/–0.71), in the first secondary theme (68.4/71.3), and then further in the second secondary theme (69.2/70.9) and in the development (78.2/88.0) (Audio Example 3). The decisive difference to many other interpretations, including that of Gulda, is the arrival of the main theme in the recapitulation (m. 87) at a higher tempo level (63.8/64.9, with +0.21/–0.08 maximum deviation of the tempi of the main theme in exposition and recapitulation among all recordings examined; see Table 4). The overall faster tempo in Richter's recapitulation leads conclusively to the maximum tempo in the second part of the coda, where Richter—like Gulda—again reaches the tempo of the development.

Brendel's tempo design, which runs counter to Gulda's, also shows a significant distinction from that of Richter. As described above, Brendel's 1970 resumption of the main theme in figured form after the development is clearly slower than at the beginning (57.6 compared to 64.4, –0.16/–0.08; see Table 4). This changes the sequence of the sectional tempi, which constantly decelerate in the exposition in all three of Brendel's recordings (1970: 64.4–62.4–58.1): in the recapitulation, both secondary themes are taken a little faster than the main theme (1970: 57.6-62.0-58.9). This corresponds to Brendel's *ritardando* values at sectional boundaries, which have already been emphasized above (see section 2 of this article). Rudolf Buchbinder's recording from 1981 (Fig. 7) appears to exaggerate Brendel's strategy (Audio Example 4). He takes the recapitulation of the main theme at an—in itself quite fascinating—almost static tempo of 47.1 (compared to the main theme in the exposition at 65.1, a slowdown of –0.47/–0.08; see Table 4). The curve shows impressively how the tempo is gradually and thoroughly slowed down over the entire section until it almost comes to a standstill in m. 112 (24.8).

Of course, these are also superordinate tempo *processes* that do not fundamentally contradict the idea of process form. However, it is much more difficult to understand their inner logic and consistency than in the case of Gulda's and Richter's continuous acceleration dramaturgies. They can therefore be related only with some difficulty to the process model oriented on the "Tempest" Sonata, a model essentially based on the transforma-

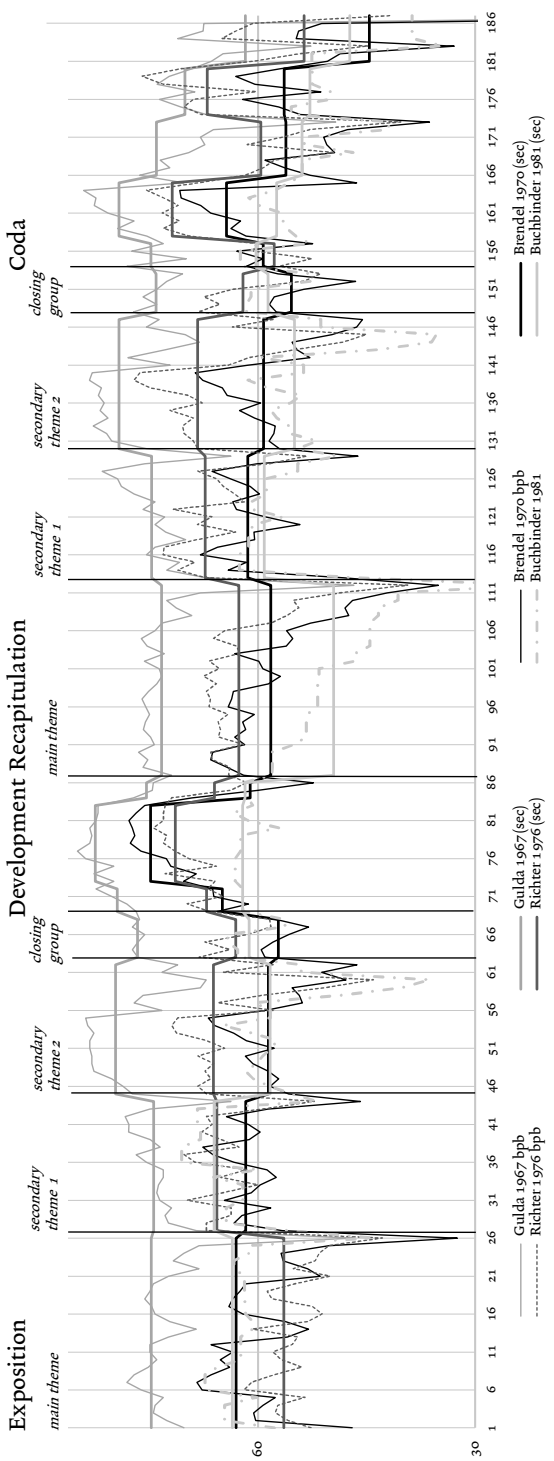


Figure 7: Beethoven, Piano Sonata Op. 106, iii, tempo curves of the recordings Gulda 1967, Brendel 1970, Richter 1976, and Buchbinder 1981 with main tempo values for each formal section

Audio Example 2: Beethoven, Piano Sonata Op. 106, iii, mm. 83–153 (development: ending; recapitulation: main theme, secondary theme 1, secondary theme 2, closing group), recording Gulda 1967 (https://phaidra.kug.ac.at/o:127816)

Audio Example 3: Beethoven, Piano Sonata Op. 106, iii, mm. 83–153 (development: ending, recapitulation: main theme, secondary theme 1, secondary theme 2, closing group), recording Richter 1976 (https://phaidra.kug.ac.at/o:127817)

Audio Example 4: Beethoven, Piano Sonata Op. 106, iii, mm. 69–122 (development; recapitulation: main theme, secondary theme 1/beginning), recording Buchbinder 1981 (https://phaidra.kug.ac.at/o:127818)

tion of formal functions at the moment of their sounding. The recurring sustained tempi in Brendel's and Buchbinder's performances seem to drift apart into self-contained and ponderous individual sections, such that the variation principle that strengthens the process character and the formal flow can hardly be recognized.

The fact that Gulda's rapid tempo tends toward the process model whereas Brendel's more solemn tempo leans toward the architectural model appears to confirm certain stereotypes about the "dynamic" character of the process form, which ultimately and very plausibly might be considered ill-fitting with the character of an *Adagio sostenuto*. It is evident, however, that Gulda's "polemical understanding of the work," which is intended to counter the "Beethoven myth" with an alternative, non-orthodox understanding of the music, especially around the bicentennial of 1970, undoubtedly provides the opportunity for a specific *close listening* of this wonderful movement—one that is particularly productive for music theory, highlighting the hybridity of formal functions. Richter's fascinating reading, which is conceptually comparable to Gulda's (though located in a much slower tempo area) perhaps grows even beyond Gulda's clearly communicated tempo strategy, especially with regard to a new way of listening to formal functions, as Gulda's playing displays a kind of technical perfection and effortlessness that sometimes seems to bypass formal ambiguities all too easily. The observation that two different styles of interpretation—a narrowly conceived fidelity to the text from the 1950s, and an individual freedom of design commonly associated with the "Russian" schools of piano performance—not only oppose each other but also exhibit many parallels should be particularly emphasized.

Table 3: Beethoven, Piano Sonata Op. 106, iii, formal sections/functions of the sonata form (according to Erwin Ratz) and hybrid structure with variation form (formal sections referring to variation form are placed in curly brackets)

exposition (68) measures [segments]	sonata form {*variation form*}	grouping	harmony	**recapitulation (67)**	sonata form {*variation form*}	grouping	harmony
1–26 [1]	main theme {*Theme*}	9 [1+8] + (4+4) + (4+4) + 1 **(26)**	f♯ / **G** (14–15; 22–23)	87–112 [55]	main theme (figurations) {*Variation 4*}	9 [1+8] + (4+4) + (4+4) + 1 **(26)**	f♯ / **G** (100–101; 108–109)
27–44 [18]	secondary theme 1 (transition) {*Variation 1*}	1 + (2x3) + (2x1) + 3 + 6 **(18)**	f♯ → D (A^7)	113–129 [70]	secondary theme 1 (transition) {*Variation 5*}	1 + (2x3) + (2x1) + **2**+3+2 +1 **(17)**	**D → b** → $C♯^{(7)}$
45–62 [28]	secondary theme 2 (secondary theme) {*Variation 2*}	8 [4x2] + 4 + 6 [4x1 + 2] **(18)**	D	130–147 [80]	secondary theme 2 (secondary theme) {*Variation 6*}	8 [4x2] + 4 + 6 [4x1 + 2] **(18)**	**F♯**
63–68 [44]	closing group	(2+2) + 2 **(6)**	D	148–153 [96]	closing group	(2+2) + 2 **(6)**	F♯ → **D**
development (18)	{*Variation 3*}	4 + 4 + 3 + (3x1.5) + 2.5 **(18)**		**coda (34)**	{*Variation 7*}	4 + 8 + 8 + 7 +7 **(34)**	
69–72 [47]	introduction	4 **(4)**	f♯/D	154–157 [99]	1a (main theme)	4	**D** → G
73–84.2 [48]	core	4 + 3 + (3x1.5) **(11.5)**	C♯ – E♭ – g♯/G♯	158–165 [102]	1b (sec. th. 2)	8 [4x2]	**G** → $G♯^{(7)}$
84.3–86 [53]	retransition	2.5 **(2.5)**	$C♯^7$	166–173 [107]	2a (main theme)	8	f♯ / **G** (170–171)
				174–180 [113]	2b (sec. th. 1)	7	$F♯^{(7)}$
				181–187 [117]	closing cadence	7	F♯

Table 4: Beethoven, Piano Sonata Op. 106, iii, 27 recordings, tempo differences of main theme, secondary theme 1, secondary theme 2, and closing group in exposition and recapitulation (logarithmic scaling) with absolute mean values

	P	S1	S2	C	mean abs
Schnabel 1936	0.08	0.09	-0.03	0.05	0.06
Gieseking 1949	-0.19	0.14	0.04	-0.09	0.11
Gulda 1951 bpb	-0.01	0.02	-0.05	-0.02	0.03
Kempff 1953	-0.04	-0.20	-0.11	-0.17	0.13
Backhaus 1956	0.07	0.04	0.03	-0.09	0.06
Petri 1956	0.01	0.03	-0.01	-0.09	0.03
Brendel 1962 bpb	-0.25	-0.03	-0.01	-0.04	0.08
Kempff 1964	-0.04	-0.05	-0.05	-0.10	0.06
Rosen 1965	0.03	-0.03	0.07	-0.06	0.05
Arrau 1966	-0.30	-0.06	-0.04	-0.12	0.13
Gulda 1967 bpb	-0.05	0.01	-0.02	-0.09	0.04
Barenboim 1969	-0.14	0.04	0.02	-0.10	0.07
Gulda 1970	0.00	0.05	0.05	0.05	0.04
Brendel 1970 bpb	-0.16	-0.01	0.02	-0.06	0.06
Serkin 1971	-0.05	-0.07	-0.05	-0.09	0.07
Richter 1976 bpb	0.21	0.05	0.07	-0.03	0.09
Pollini 1977	-0.03	0.00	0.01	-0.10	0.03
Badura-Skoda 1978	-0.16	0.05	0.03	-0.03	0.07
Buchbinder 1981	-0.47	-0.23	-0.11	-0.09	0.22
Barenboim 1984	0.04	0.00	0.02	-0.12	0.05
Goode 1993	-0.04	0.02	0.00	-0.10	0.04
Brendel 1995 bpb	-0.25	-0.08	-0.02	-0.09	0.11
Schiff 2006	-0.27	-0.11	-0.05	0.12	0.14
Uchida 2007	0.05	0.02	-0.01	-0.02	0.02
Levit 2013	0.04	-0.04	0.01	-0.08	0.04
Perahia 2016	-0.16	0.06	0.04	-0.07	0.09
Aimard 2021	0.05	0.01	-0.03	-0.07	0.04
mean	-0.08	-0.01	0.00	-0.07	0.07
max	0.21	0.14	0.07	0.12	0.22
min	-0.47	-0.23	-0.11	-0.17	0.02

5. THE DEVELOPMENT AS A TEMPORARY SITUATION

In conclusion, let us now try to illustrate the thesis of the independence of sounded formal-temporal functions from standardized music-theoretical ones a little more concretely with regard to a particular section, through examination of a "medial" formal function. In the "middle" of the form of this movement is the development, which in sonata terms can generally be localized as the symmetrical axis of the form.[57] On the basis of the model of processual form, which presumes a continuous transition of formal states, an "extended middle" can be assumed, extending from the beginning of the second secondary theme in the exposition to the end of the closing group in the recapitulation. In the exposition, the three thematic groups are initially set apart from one another by distinct caesuras, although these consistently give the impression of being provisional: after an ending chord without a third (m. 25.1), the main theme leads into a half cadence, which is followed by a general pause. The first secondary theme, due to its 3/8 meter shifted by an eighth note in constant tension with the 6/8 basic meter, ends after a longer developmental part on the dominant of the newly reached key of D major (m. 44). This new key is destabilized in the subsequent second secondary theme by the prominence of the secondary tone B in the figured middle voice and the A2 ostinato in the bass. The closing group, which follows as an extended cadence, evades tonal closure in D major several times, not least by switching to the raised degree VI (B major, mm. 61–62). After an authentic cadence in mm. 66–67, an incomplete final chord F♯2–F♯3–A5–A6 follows in m. 69, which may be heard as an unstable sixth chord in D major or as a deceptive cadence to F♯ minor, the home key, an association supported by the return of the main-theme motive. These factors contribute to a blurring of the beginning of the development, in contrast to the clear signals one might expect in a conventional sonata.

The development takes up the falling third F♯–D from the exposition's macroharmonic structure and develops it further, thus taking up a harmonic principle that Charles Rosen focused on in his analysis of the sonata, especially for the first and fourth movements (Example 2).[58] The melodic thirds in contrary motion combine to form ever new variants of the falling fifths D♯-G♯-C♯, with constant major-minor changes lending the progressions a shifting character, reminiscent of the cyclic models in Neo-Riemannian theory (after Richard Cohn, it might be labelled N-P-N-P[-N],[59] a type of sequence in which a falling fifth

57 "In light of its formal placement and function, a development is a higher-level analogue to the contrasting middle of the small ternary form. Like a contrasting middle, a development features a looser organization than its preceding section, an emphasis on sequential progressions, an avoidance of authentic cadential closure in the home key, and an ending on dominant harmony (normally of the home key)" (Caplin, *Classical Form*, 139).

58 See Charles Rosen, *The Classical Style: Haydn—Mozart—Beethoven*, expanded edition (New York: Norton, 1997), 404–34.

59 See Richard Cohn, *Audacious Euphony: Chromaticism and the Triad's Second Nature* (New York: Oxford University Press, 2012), 93–94.

Example 2: Beethoven, Piano Sonata Op. 106, iii, mm. 69–87, harmonic reduction

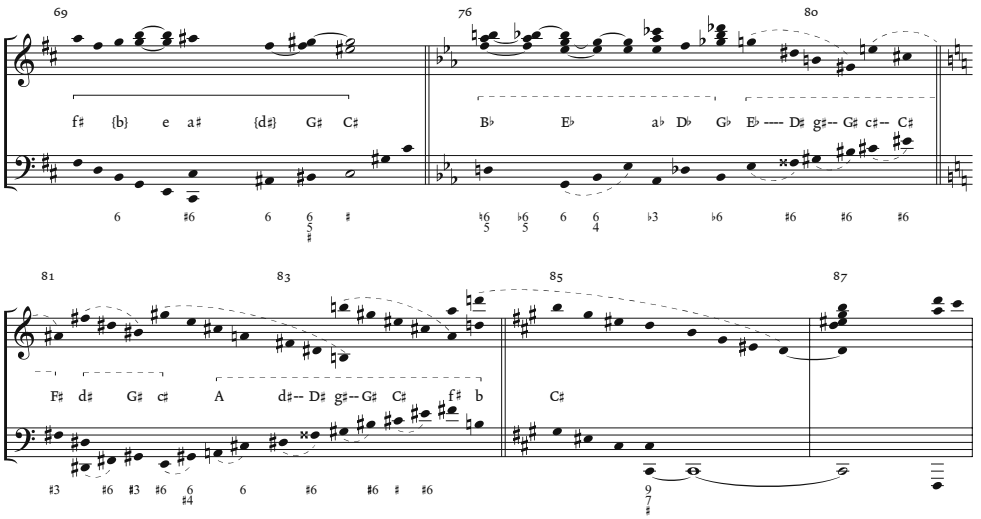
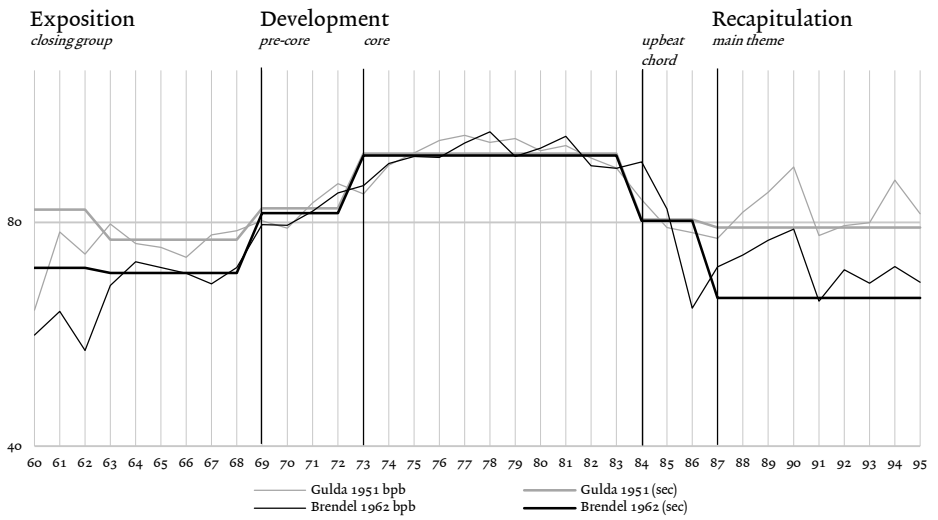


Figure 8: Beethoven, Piano Sonata Op. 106, iii, mm. 60–90, tempo curves of the recordings Gulda 1951 and Brendel 1962 with main tempo values for each formal section



Video Example 1: Beethoven, Piano Sonata Op. 106, iii, mm. 69–86 (development), recording Brendel 1962 with animated *Tonnetz* graphic of the harmonic progression (https://youtu.be/MdiW_WGPsWw)

results in a minor triad with its third then chromatically raised before the next falling fifth follows). This type of sequential harmonies is one of the constitutive parts of Caplin's definition of a medial formal function.[60] Due to the tightly packed progressions, the development of this movement obtains a kaleidoscopic character, which is strengthened in almost all recordings examined by an increased tempo (for the core of the development, the mean value for the 27 recordings is 88.0, strikingly close to Beethoven's metronome indication of 92). Despite the extension of the "upbeat chord" (Schoenberg's *Auftaktakkord*; mm. 84/85–86) over two or three measures and due to the continuation of the figurative flow and the imperceptible and immediately abandoned tonic of F♯ minor in the bass (mm. 87.6/90.1), ultimately there is no clearly marked caesura between development and recapitulation.

What is surprising, given the basic divergences in Gulda's and Brendel's interpretations, is the parallelism of the tempo structure in the development in the two earliest recordings by Gulda (1951, 87.5–**99.2**–88.8) and Brendel (1962, 82.2–**98.4**–80.3) (Fig. 8). Considering the otherwise significantly higher tempo level in Gulda's interpretation, the approximate coincidence of the tempi in the core of the development means for Brendel a thorough macroformal turning point in the sense of the architectural model, which is also emphasized by the *smorzando* in the transition to the recapitulation (m. 86), staged here in a particularly sustained manner (maximum rate among all recordings in the corpus, –0.65, –0.39; see section 2 above). Brendel further clarifies the medial temporal position of the development within the macroform insofar as he conveys the spectacular and unpredictable harmonic turns as a turbulent and temporary situation within the form and thus makes it immediately plausible that we are in the "midst" of the form, in one of its most critical and instable areas. The video animation of the harmonic progression visualized through a *Tonnetz* (Video Example 1) makes it clear that the kaleidoscopic character requires a brisk tempo, without which the listener is denied the "amazing" effect evident in Brendel and Gulda, as heard in the static and unyielding development of Rudolf Buchbinder's 1981 recording (development core: 63.0/88.0, Audio Example 4).

6. CONCLUSION

Returning to the analogy to physics mentioned in the introduction, one could say that, in order to make performance strategies and dimensions productive with greater consistency for formal-temporal functions, or for analysis in general, we need a kind of music-theoretical "quantum theory" that acknowledges the ambivalence and ephemerality of musical sound while accepting a basic spatial framing of sound events during listening. An argu-

60 See Caplin, *Classical Form*, 29–31, 139–47.

ment can be made for the interaction of processual and architectonic, temporal and spatial dimensions in the listening experience: although sound is ephemeral and many parts even of the efficient thematic structuring in pieces of the Classical style will "fade away" during real-time listening, the quasi-spatial way in which salient past sound events are structured in memory is widely acknowledged, building a bridge to the established *Formenlehre* paradigms.[61] Both interacting experiences, passing time and memorized architecture, can be provoked, attenuated, or mediated by musical performance. Generally speaking, ambiguity between such levels of performance and listening would have to be much more explicitly addressed in our music-theoretical discourse if we truly desire to take sounded interpretations seriously with regard to their consequences for music-theoretical analysis.

Musicians seldom apply an explicit analytical framework to their performance, and when they do, rarely one in which formal functions are clearly identified with respect to their role in time. John Rink describes two essential concepts of a "performer's analysis"—that is, the way in which performers approach a piece of music—as "process" and "shape."[62] These two concepts show the tension between process and architecture that every analytical or sounded interpretation must face. All music-making is obviously processual—once it has been sounded into the world, the listener must deal with it in a creative way. However, every interpretation requires a kind of navigator, and the consciousness can basically only imagine such processes taking place over time spatially, as shape or architecture—a contextualizing "action space" in the language of Hepokoski and Darcy's *Sonata Theory*.

The *Adagio sostenuto* from Beethoven's Sonata Op. 106 allows for many more analytical perspectives than those outlined here. One could debate about the design of the first measure alone, following Joachim Kaiser, for example, pondering whether this measure "belongs" to the theme or not.[63] Likewise, the G-major insertions in both formulations of the main theme (mm. 14–15, 22–23; 100–101, 108–109) and in the coda (mm. 170–71) may be linked to the question of whether these are understood in performances as exterritorial fields or as integrated thematic components. Such questions, which cannot truly be answered unequivocally, perhaps indicate that we are still at the very beginning of research into the relationship between the analytical investigation and sounded interpretation of formal functions.

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61 See Albert S. Bregman, *Auditory Scene Analysis: The Perceptual Organization of Sound* (Cambridge, Mass.: MIT Press, 1990), 73–79, https://doi.org/10.7551/mitpress/1486.001.0001; Bob Snyder, *Music and Memory: An Introduction* (Cambridge, Mass.: MIT Press, 2000), 215–24, Christian Utz, "Räumliche Vorstellungen als 'Grundfunktionen des Hörens'. Historische Dimensionen und formanalytische Potenziale musikbezogener Architektur- und Raummetaphern – eine Diskussion anhand von Werken Guillaume Dufays, Joseph Haydns und Edgard Varèses," *Acta Musicologica* 88/2 (2016), 193–222.

62 John Rink, "Analysis and/or Performance?," in John Rink (ed.), *Musical Performance: A Guide to Understanding* (Cambridge: Cambridge University Press, 2002), 35–58, https://doi.org/10.1017/CBO9780511811739.

63 See Joachim Kaiser, *Beethovens 32 Klaviersonaten und ihre Interpreten* (Frankfurt: Fischer, 1975), 532.

Abstract

Generalized theories of formal functions have yet to adequately capture the temporal experience of musical form. Recent research into musical performance suggests that sounded interpretation may generate temporal formal functions of its own. This thesis is elaborated through a discussion of Friedrich Gulda's and Alfred Brendel's contrary readings of Beethoven's *Adagio sostenuto*, the third movement of the "Hammerklavier" Sonata Op. 106, within a corpus of 27 analyzed recordings of this movement between 1936 and 2021. Both Brendel and Gulda were in contact with post-Schoenbergian methods of musical analysis in Vienna around 1950. A review of Erwin Ratz's analysis of Op. 106, iii and the recordings' differing temporal designs demonstrate the conflict between an architectural conception of the movement, in which caesuras are strengthened, and a process-like interpretation that sustains the impression of continuity and flow across the sections by means of superordinate tempo progressions. This tension between interpretations is superimposed onto the specific formal ambiguity of this movement, which oscillates between sonata and variation form. To incorporate such dimensions of sounded interpretation more consistently into form-analytical methods, a music-theoretical "quantum theory" is required that respects the basic ambivalence of formal function in performed time.

About the Author

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