

Empathetic embodiment in the compositional process: A 4E perspective on the relationship between composer and performer

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Background in the philosophy of mind. Attempting to understand the "boundaries of the mind" has been a resurgent theme in the philosophy of mind in recent years. The advent of computers led to the dominance of "cognitivism", or the idea that- the brain works as a computer with discrete input and output. Contemporary theories which contest this view are many, and the most dominant are grouped under the "4E" umbrella: extended, embedded, embodied and/or enacted cognitive theories. Some of these, or versions of these, preclude, imply or exclude each other, but the central point of contention remains: The mind extends beyond the brain. Creative cognition in particular has been fruitfully explored through these lenses, with insightful studies on fields as diverse as theatre, literature and painting. The idea of embodied cognition is often explored in terms of developmental or performative engagement with the arts. The embodied nature of more complex creative processes, such as musical composition, is still to be fully explored.

Background in musicology. With one or two exceptions, musicological exploration of 4E cognition has been limited to studies of improvisation, performance, musical development and musical emotion. There are studies exploring the relationship between composer and performer, most notably Elizabeth Le Guin's *Boccherini's Body* (2005), which explores the bodily connection a performer feels with a long dead composer. A study of composition from a 4E perspective should lead to new insight into and ways of understanding the compositional process and the relationship between composer and performer.

Aims. To argue that understanding the "empathetic embodiment" between composer and imagined or future performer is a crucial part of a specifically 4E understanding of the compositional process, and that this understanding leads to insight into 4E theories of cognition.

Main contribution. Through contrasting the act of working closely with a performer with that of writing for a future or imagined performer, the depth of bodily empathy in the latter case is revealed. The composer acts out the physical gestures necessary to produce the desired music, attempts to communicate with the eventual performer through notation, performance norms and written instructions, and forms an empathetic link with the imagined performer of the work. The act of "offloading", so crucial to a 4E (extended, embedded, embodied, enacted) understanding of cognition, is limited by the absence of a real performer. Instant access to observed gestures and the instant access to the emotional state of the room and the performer are similarly limited. As such, composing for an imagined or future performer necessitates a deeper level of empathetic embodiment than that necessitated by working closely with a performer.

Implications. This paper shows how a study into the extended nature of compositional cognition will impact not only the ways in which the act of composition is perceived, but also, due to the perhaps unique nature of composition as a creative process, assist in developing a 4E understanding of creative cognition more generally.

Keywords: Composition, Cognition, Embodiment, Empathy, Performance, Relationship

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This paper seeks to describe a process termed "empathetic embodiment". Empathetic embodiment primarily concerns the acting out of the physical gestures and interactions of performance as part of the complex network of cognitive processes which make up the act of composition. Observations from the writing process and the workshop/performance process of a piano piece written in parallel to this paper (*thinking through symmetry*, see Appendix) are used as emphasis, explanation and evidence for the idea of empathetic embodiment and related arguments.¹

The empathetic embodiment between a composer and eventual performer seems to necessitate an embodied interaction with the compositional environment and the work itself. An embodied theory of cognition argues that cognitive processes are not limited to the brain, but that physical gestures and physical responses should be considered as part of these processes (e.g., Varela, Thompson & Rosch, 1993, Berthoz, 1997, Lakoff & Johnson, 1999, Lakoff & Núñez, 2000, Clark, 2010, Galetzka, 2017) As well as the physical gestures and empathies which will be discussed in this paper, there are other ways in which the cognitive processes extend into the body. These include physical translation of musical gestures; physical interaction with larger sections of the piece and integration of tools such as pen, paper, and piano. This understanding of composition as an embodied process is assumed when building the argument for empathetic embodiment. So, composition is an embodied process, and empathetic embodiment argues that it engages with the embodied nature of performance.

Empathetic embodiment as proposed in this paper crosses the boundary of embodiment and into engagement with intentional objects² and with the wider environment of the composer (see Clark, 2008). It is the view of the author that an extended view of composition necessitates an embodied view of composition. These extended views, part of the 4E (embedded, enacted, embodied, extended) framework, argue for the cognitive role of environments and environmental objects in certain cognitive processes (see Clark & Chalmers, 1998, Clark, 2003, Hutchins, 2006, Menary, 2009, Aizawa, 2017, Overmann, 2017). A body is necessary to interact with a thinker's environment, so to negate the cognitive role of bodily feelings and processes would be to create a strange gap in the mind-body-environment system proposed by these theories of cognition. The importance of tools, and the haptic feedback from and the "making transparent of"³ (Clarke, 2003, p. 28) those tools is also crucial; and also requires a cognitive body with which to integrate. Both imagined and present performers and their actions can be seen to be "tools" in this

¹ *Thinking through symmetry* is a piano piece composed for the 2020 BFE/RMA Research Conference Composition workshop. It represents a musical attempt to deal with symmetry, engaging most closely with structural symmetry. In the same way that Wassily Kandinsky balanced small, dense, structured shapes with larger, paler forms, the piece attempts to balance structural sections so they have equal "weight", rather than equal lengths.

² Objects which are impermanent, that is, they exist only while thought about. See Graham Harman (2009) on intentional objects in the context of Actor Network Theory (the language of which can be helpful when considering the interactive nature of cognition and the make-up of the environments into which the cognition of a composer might extend.)

³ Technology that has been so integrated into the cognitive system that it is "seen-through" directly to its effect – for example we do not touch the pen which is touching the paper, we directly write on the paper via the seen-through pen – is defined as "transparent" technology.

sense, and the different potentials afforded by these performers will be explored as part of the wider argument. This paper forms part of a larger study on composition as a cognitively extended process but is itself focused on the idea of empathetic embodiment, the arguments for it, and its importance.

Score as physical instruction

As much as a score is a "text", which interacts with and takes influence from the texts which surround it, it is also a set of physical instructions. Most composition takes place in a space or area physically absent from the performers who will eventually perform the work. The connection through a score felt by a performer for an absent composer is explored by Elizabeth Le Guin's (2005) *Boccherini's Body, an Essay in Carnal Musicology*; and it is interesting to examine this connection in reverse.

Given a certain shared set of competencies and performance norms, the score acts as a series of instructions to performers which will result in a performance of the work. This fact has a huge influence on composition and is perhaps one of the largest factors which differentiates composition from other creative acts which have been studied through a 4E lens.⁴ While much manipulation of compositional material may not be done with performers in mind, and even other creative acts may not be done with a conscious knowledge of the embodied and physical process of performance, the eventual performer is always a necessary concern.

Much pedagogical literature on composition uses "performer" and "instrument" interchangeably. The integration of a performer and their instrument is a fascinating example of transparent technology, pointing to a limitation in the *accuracy* of any empathetic embodiment taking place between a composer and a performer whose instrument the composer does not have the level of competency to "see through". Regardless, when a composer is writing for a performer or instrument (or performer-instrument assemblage⁵) the score acts as a physical instruction, and as such, as part of the process of creating the score, the composer engages with the physical gestures required to play what is written.

Composers may be taught to write an instrumental part by including appropriate string markings, pedal indications, fingerings and so on - especially where these may differ from performers' conventional expectations or where they clarify a note which would otherwise be ambiguous. The performer's physicality is thus integrated into the compositional process in the way that composition is taught. Additionally, an amateur might well consciously or subconsciously imagine a violin and violinist while writing a violin line, even if the part is technically impossible to render and the motions they are imagining are not the way a violin is played.⁶ While a computer might input theoretically optimal string choices and fingerings without empathetic consideration

⁴ For example, Tribble (2005); van Hulle (2013); Robinson & Pallasmaa (2015).

⁵ As per Latour's (2005) Actor Network Theory.

⁶ Technological mediation (see e.g. Leman, 2008) of the compositional process (production of sound by score editing software, for example) complicates this idea somewhat. It might be that amateur composers are writing parts which sound acceptable played back on the software, with no regard for the physicality of performance.

of a violinist's fingers, a composer "acts out" the physical gestures necessary to perform the part while making these decisions – a physical link to the eventual -- performer.

Experienced composers will have worked with many performers. Therefore, their process is full of varied intentional objects; imagined and remembered feedbacks; imagined and remembered sounds and their means of production. This seems to point to empathetic embodiment being not only a core aspect of an extended view of compositional cognition, but also an aspect which is trained and developed as a composer gains more experience.⁷

Acting out physical gestures

This is the core argument of "empathetic embodiment": That composers imaginatively act out the physical gestures of performance when composing, that this is crucial to understanding the compositional process, and that it has importance in terms of understanding composition as an embodied, extended process, and indeed in understanding how embodied and extended cognitive processes work during creative acts more generally.

A series of notes on a staff intended for, say, a violin, is not just a bunch of dots and lines, but implies a set of physical actions and interactions with the instrument which will produce the required sounds. Even in reading a score for the first time without playing, individual musicians might experience a sub-physical, ideomotor simulation response as if actually playing through the part⁸. When composing, then, the composer is constantly engaging with the physicality of performance.

This "acting out" of physical gestures is not just a practical way of understanding the physical gestures and interactions required to produce a desired sound. It can also be considered as part of the creative force brought to bear on the creation of the work. That is, the acting out of a gesture which results (or is believed to result) in a certain sound is part of the cognitive system which results in the creation of a musical line. The imagined performer in this case is not an instrumentalist understood as a barrier to be overcome, or a person to be communicated with, but rather a repository of auditory and physical possibilities. The act of physically or sub-physically acting out a motion with auditory results is a part of the embodied process of composition; but is also inextricably linked with the imagined performer and their physical potentialities in integration with their instrument.

An example of a conscious form of empathetic embodiment appeared in the writing process of *thinking through symmetry*. At bar 15, the musical composition demands a held note in addition to the staccato arabesques and the resonances from the sostenuto pedal. Without access to a piano, the compositional process involved judgements regarding the time to move the hand, the appropriate note to hold, and how this would

⁷ For further thought on the integration of tool and environment based compositional competencies in a 4E context, see the author's forthcoming paper preliminarily entitled "Integrated Tool Competency in Musical Composition: 4E perspectives on internality, imagination, learning and memory".

⁸ This refers to the imagined performance of a motion without actually moving, as when athletes "visualise" a sequence of moves. See e.g. Berthos (1997) and Reybrouck (2001)

affect the next part. In the act of composition, then, it is not just the text-produced-so-far that affects the text-yet-to-come (van Hulle, 2014) - the physical actions necessary to perform it are also implicated.

Where this point differs from a more general understanding of embodiment in composition is that it implies that knowledge of the physicality of performance, of the physical gestures and interactions with instruments that make up the act of performance, is an essential part of the cognitive processes of composition. Furthermore, it argues that this understanding manifests itself physically, or at the very least in imagined physicality, as the composer acts out the physical gestures of performance in the act of composition. This further explains the compositional process as an embodied one, providing evidence for the importance of embodiment for an extended view of compositional cognition and pointing to the physical link between composer and imagined or future performer.

Access to emotions and physicality of performers

Sometimes performance norms and notation are not enough to communicate an appropriate effect. An example in *thinking through symmetry* is the notated performance instruction, "arpeggiated tremolando". Following countless attempts to find unambiguous notation for the intended effect, it was decided to simply explain it to the performer for their own interpretation:

The notation 'arpeggiated tremolando' means to play a tremolando but, where there are more than 2 notes, to *separate* them and play as fast as possible in any order (this gives the same effect as a 2 note tremolando, whereas a rapid oscillation between 2 dyads or a single note and a dyad is its own effect).

thinking through symmetry (2020). See Appendix.

By understanding a score or instrumental part as a communication *with* - as well as a set of instructions *for* - a performer, the work can be realised more accurately and more easily. While the concept of empathetic embodiment focuses on a bodily empathy, the core of which is the "acting out" of parts, it also implies a deeper empathy, an intellectual connection, with an imagined or future performer.

Three theories of empathy can be brought to bear on these ideas, in order to consider the (musical) feelings and intellectual engagement with the compositional work and parts. Simulation Theory (see Gallese, 2003) argues that empathy arises from basic neural mechanisms to do with processing witnessed bodily action. Interaction Theory (e.g. Gallagher, 2008) further sees empathy as embedded in the dynamic interaction between body, mind and world, and more fully states that emotions of others are *accessible in the environment*, as they are embodied in voice, gesture, facial expression and other tangible aspects of emotion. Both Simulation and Interaction Theory are opposed to Theory-Theory, which suggests that a top-down, conscious understanding of what it means to "be" another person is a prerequisite for empathy (Coplan, 2011).

In working closely with a performer in terms of trying out material and making suggestions, a composer might have instant access to an empathetic understanding with the performer. In working closely with a performer, unknown techniques, sounds or ways of realising material may come to light. Similarly, while a performer could potentially render one particular realisation of musical material or a certain musical gesture, they might suggest another, perhaps easier, way of doing a similar thing. This "creative offloading"⁹ is a potent form of cognitive offloading¹⁰ which crosses the boundaries into collaboration and shared creativity.¹¹

In writing for a future or imagined performer, however, compositional work might involve the consideration of the performer in terms not just of physical actions, but of emotional empathy and intellectual engagement, suggesting that the composer should require a fuller (e.g. Theory-Theory) empathetic link with said performer.

In technical performance terms, the most difficult part of *thinking through symmetry*, according to the pianist, was the *pppp* chord in the very last bar. This was a very simple compositional decision (a gradual decrease in dynamic towards the end of the piece), yet it posed a challenge to the player and the instrument. That this compositional decision did not fully take into account the eventual performer and the limitations of the instrument – issues made immediately apparent in the workshop – demonstrates a practical distinction between writing for a future or imagined performer, and working closely with a particular individual. This is a particularly striking example because the material is so simple compared to other more complex parts of the piece which proceeded without difficulty.

So, working closely with a performer can serve a variety of cognitive purposes:

Firstly, it allows the composer to offload certain cognitive processes, such as knowledge of instrumental capabilities or the "acting out" of gestures, to the performer.

Secondly, performers reveal potentialities of the instrument or their capabilities which the composer would not otherwise have access to.

Thirdly, performers may make suggestions which may influence the creation of the work, thus becoming part of the extended cognitive network responsible for the work coming-into-being.

When writing for an imagined or future performer, such forms of empathy and off-loading are clearly restricted; and must at best be mediated through performer as

⁹ This "creative offloading" is well explored, though not in those terms, in Elliot Gyger's (2014) and Karlin Love and Margaret S. Barret's (2014) work on collaboration between performers and composers. See also Høffding (2019) for a study purely on performance.

¹⁰ A crucial aspect of an extended understanding of cognition is that of offloading – the idea that parts of the environment can act as part of the mind, during certain cognitive processes. Clark and Chalmers' seminal 1998 paper rests on the idea of a man using a notebook to offload his memory of the address of MOMA in New York. They argue that there is no difference between someone accessing their own memories to find the address of MOMA, and someone accessing a notebook in which they have written the address down. In this example the notebook is part of the cognitive process of finding the address of MOMA.

¹¹ See also Preston (2010) on epistemic credit.

intentional object¹², as memory or imagination. This may be less efficient than engaging in a conscious, empathic imagination of the performer. So, when writing for an imagined or future performer, the composer must understand the physical gestures necessary to perform a part and the ways in which the performer will interpret the part and any written instructions. This understanding will influence the creation of the work, as the embodied, extended cognitive processes of composition interact with the embodied process of future performance. Creative decisions in the composition of *thinking through symmetry* were based on knowledge of what is possible in performance by a highly skillful, experienced pianist. As can be seen in the fast run at bar 20, the detail in the harmonic part in bar 25, and the interweaving parts in bar 50, the skill of the imagined performer had a degree of influence on the compositional process by making the expression of such ideas possible.

When writing for or working with an ensemble these issues are magnified, as the composer places themselves in an environment with multiple performers, multiple physicalities and ways of producing sound, and so on. In a situation where the composer is working with multiple performers, Interaction Theory – which argues that emotions are accessible in the environment in the form of facial expressions or gestures (Gallagher, 2008) – might imply that the composer working alongside an ensemble should have pre-conscious access to the emotions of the ensemble as a whole.

When writing for an imagined future *ensemble*, then, the cognitive load might be greater and require a degree of "black-boxing"¹³ of individual performers. The conductor of an ensemble is a performer themselves, and one can imagine composers placing themselves into the role of eventual conductor so as to better understand the ensemble as a whole. The prevalence of conductor/composers seems to evidence this point, and perhaps also validate the whole argument for the importance of embodying the physicality of performance in the compositional process.

Discussion

The idea of empathetic embodiment helps to build an embodied, extended understanding of the compositional process. It is not necessarily limited to composition, though the way it manifests itself would be different for each art form. Researchers looking at 4E perspectives on the creative processes of other arts may be able to draw productively on the idea. The idea of imagined audiences has not been covered in this paper, but could be fruitfully explored in the same way, with regard to composition as well as other creative processes. The ideas around empathetic embodiment as discussed in this paper might also contribute to an argument for the relevance of imagined objects, environments and collaborators in a broader 4E understanding of creative cognition which includes imagination, memory and

¹² Objects which are impermanent, that is, they exist only while thought about. See Graham Harman (2009) on intentional objects in the context of Actor Network Theory (the language of which can be helpful when considering the interactive nature of cognition and the make-up of the environments into which the cognition of a composer might extend.)

¹³ An understanding of an object or system in the world purely with regard to what it "outputs" from whatever "input" it receives, without having an understanding of the processes by which this happens.

integration of competencies – rather than the purely material aspects of body, tool and environment which provide the easiest argument for the validity of 4E perspectives on cognition.

Empathetic embodiment is the act of embodying, empathising with and acting out the physical gestures and interactions of performance as part of the complex network of cognitive processes which make up the act of composition. In contrast to compositional writing for a future or imagined performer, the empathy with a co-present performer can be argued to primarily take place at a pre-conscious level, with cognitive processes of composition extending into the workshop or rehearsal space. Physical gestures can be instantly accessed, and responded to by the composer; cognitive load is distributed through the scores, instrumental parts, instruments and performers in the workshop or rehearsal space; and performers may contribute to the point of being collaborators on the final work.

When writing for a future or imagined performer, the composer engages in empathetic embodiment in the creation of the work. The composer embodies the physical gestures of performance as part of the process of creating parts; must make use of internal representations of performers and instruments to take advantage of any of the "offloading" which is so easily accessible in a rehearsal or workshop space; and must engage in a top-down empathetic engagement with performer in attempting to communicate to them the intentions of the musical work. The entwined processes of creating the musical work and communicating it to performers necessitate a constant interaction with the embodied process of performance, and this interaction is a crucial part of the extended cognitive process of composition.

Bibliography

- Aizawa, K. (2017) Embedded, Embodied, Extended, and Enactive Cognition: A Copernican Revolution in Psychology? In B. P. McLaughlin (Ed.), *Philosophy: Mind* (pp. 395-416). New York, NY: Macmillan.
- Berthoz, A. (1997). *Le sens du mouvement*. Paris: Odile Jacob.
- Clark, A. & Chalmers, D. J. (1998/2010) The Extended Mind. In: Menary, R. (Ed.). *The Extended Mind* (pp. 27-42). Cambridge, MA: The MIT Press.
- Clark, A. (2003) *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence*. Oxford: Oxford University Press.
- Clark, A. (2008) *Supersizing the Mind: Embodiment, Action, and Cognitive Extension*. Oxford: Oxford University Press.
- Coplan, A. (2011) Understanding Empathy: Its Features and Effects. In: Coplan, A. (Ed.). *Empathy: Philosophical and Psychological Perspectives*, (pp. 3-18). Oxford: Oxford University Press.
- Gallagher, S. (2008) Understanding others: Embodied Social Cognition. In Calva, P. & Gomila, T. (Eds.). *Handbook of Cognitive Science: An Embodied Approach* (pp 439-452). San Diego: Elsevier.
- Gallese, V. (2003) The Roots of Empathy: The Shared Manifold Hypothesis and the Neural Basis of Intersubjectivity. *Psychopathology* 36(4), 171-180.

- Gyger, E. (2014) No Stone Unturned: Mapping Composer-Performer Collaboration. In: Barret, M. S. (Ed.). *Collaborative Creative Thought and Practice in Music* (pp. 33-48). Surrey: Ashgate Publishing Limited.
- Harman, G. (2009) *Prince of Networks: Bruno Latour and Metaphysics*. Prahran, Vic.: Re.press.
- Høffding, S. (2019) Performative Passivity: Lessons on Phenomenology and the Extended Musical Mind with the Danish String Quartet. In: Herbert, R., Clarke, D., & Clarke, E. (Eds.). *Music and Consciousness 2: Words, Practices, Modalities* (pp. 127-142). Oxford: Oxford University Press.
- van Hulle, D. (2013). The Stuff of Fiction: Digital Editing, Multiple Drafts and the Extended Mind. *Textual Cultures*, 8(1), 23-37. doi:10.2979/textcult.8.1.23.
- van Hulle, D. (2014) *Modern Manuscripts: The Extended Mind and Creative Undoing from Darwin to Beckett and Beyond*. London, UK: Bloomsbury.
- Hutchins, E. (2006) The Distributed Cognition Perspective on Human Interaction. In Enfield, N. J. & Levinson, S. (Eds.) *Roots of Human Sociality: Culture, Cognition and Interaction* (pp. 375-398). Oxford: Berg.
- Kandinsky, W. (1926) *Point and Line to Plane*. New York: Dover Publications.
- Lakoff, G., & Núñez, R. (2000) *Where Mathematics Comes From: How the Embodied Mind Brings Mathematics into Being*. New York: Basic Books.
- Lakoff, G., & Johnson, M. (1999) *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*. New York: Basic Books.
- Latour, B. (2005) *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press.
- Le Guin, E. (2005) *Boccherini's Body, an Essay in Carnal Musicology*. Berkley; London: University of California Press.
- Leman, M. (2008) *Embodied Music Cognition and Mediation Technology*. Cambridge, MA: The MIT Press.
- Love, K. & Barrett, M. S. (2014) Learning to Collaborate in Code: Negotiating the Score in a Symphony Orchestra Composers' School. In: Barret, M. S. (Ed.). *Collaborative Creative Thought and Practice in Music* (pp. 49-64). Surrey: Ashgate Publishing Limited.
- Menary, R. A. (2009) *Cognitive Systems and the Extended Mind*. Oxford: Oxford University Press.
- Overmann, K. A. (2017) Thinking Materially: Cognition as Extended and Enacted. *Journal of Cognition and Culture*, 17(3-4), 354-373. doi: <https://doi.org/10.1163/15685373-12340012>
- Preston, J. (2010) The Extended Mind, the Concept of Belief, and Epistemic Credit. In: Menary, R. (Ed.). *The Extended Mind*. (pp. 355-370). Cambridge, MA: The MIT Press.
- Reybrouck, M. (2001). Musical Imagery between Sensory Processing and Ideomotor Simulation. In: R. I. Godøy & H. Jørgensen (Eds.), *Musical Imagery* (pp.117-136). Lisse: Swets & Zeitlinger.
- Robinson, S., & Pallasmaa, J. (2015) *Mind in Architecture: Neuroscience, Embodiment, and the Future of Design*. Cambridge, MA: MIT Press.
- Tribble, E. B. (2005) Distributing Cognition in the Globe. *Shakespeare Quarterly*, 56(2),135-155.
- Varela, F., Thompson, E., & Rosch, E. (1993) *The Embodied Mind: Cognitive Science and Human Experience*. Cambridge, Mass; London: MIT Press.

Biography

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Appendix: Thinking through symmetry, for solo piano¹⁴

thinking through symmetry for solo piano

NB. all grace notes as fast as possible

NB. accidentals last for the whole bar

NB. the notation 'arpeggiated tremolando' means to play a tremolando but, where there are more than 2 notes, to *separate* them and play them as fast as possible in any order (this gives the same effect as a 2 note tremolando, whereas a rapid oscillation between 2 diads or a single note and a diad is its own effect).

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The musical score is written for solo piano in 4/4 time. It consists of three systems of staves. The first system (measures 1-7) features a tempo of quarter note = 56. The right hand begins with a sixteenth-note arpeggiated tremolando (marked *ppp*), followed by a sixteenth-note scale (marked *mf*). The left hand plays a bass line with a sixteenth-note arpeggiated tremolando (marked *ppp*) and a sixteenth-note scale (marked *p*). The second system (measures 8-12) continues the arpeggiated tremolando in the right hand (marked *ppp*) and the sixteenth-note scale in the left hand (marked *p*). The third system (measures 13) shows the right hand playing a sixteenth-note scale (marked *f*) and the left hand playing a sixteenth-note arpeggiated tremolando (marked *pp*). The score includes various dynamics (*ppp*, *mf*, *p*, *f*, *pp*), articulation (*depress silently*, *sostenuto*), and performance instructions (*con una corda*, *release sostenuto*). The piece concludes with a *pp* dynamic in the left hand.

¹⁴ Please contact the author [michael.e.boyle@cantab.net] for an audio recording.

17

ppp *mp* *f*

(arpeggiated) (arpeggiated)

pp *ppp* *f*

senza una corda

23

$\text{♩} = 84$

mp *pp* *ppp* *pp*

gradually release

silently depress

sostenuto.

29

ppp *ff* *ppp* *ff*

gradually release

4

Musical score for measures 36-40. The piece is in a minor key. Measure 36 starts with a treble clef, a *mp* dynamic, and a triplet of eighth notes. The bass line begins with a *pp* dynamic and a triplet of eighth notes. Measures 37-39 continue with melodic lines in the treble and accompaniment in the bass, including a *ppp* dynamic and a *ped.* marking. Measure 40 ends with a *pp* dynamic and a triplet of eighth notes. A performance instruction "until Gb stops sounding" is written above the final measure.

Musical score for measures 41-44. Measure 41 begins with an *accel.* marking and a *ppp* dynamic. The tempo is marked as $\text{♩} = 84$. The bass line has a *stay at ♩=84* instruction. Measures 42-44 show a gradual acceleration, with the tempo reaching $\text{♩} = 112$ by measure 44. The piece concludes with a triplet of eighth notes in both hands.

con una corda

Musical score for measures 45-48. Measure 45 starts with a *ppp* dynamic. The bass line has a *p possibile* marking. Measure 46 features a triplet of eighth notes in the treble and a *pp* dynamic. Measure 47 continues with a triplet of eighth notes in the bass and a *pp* dynamic. Measure 48 ends with a triplet of eighth notes in the bass and a *pp* dynamic.

49 5

Musical score for measures 49-51. The piece is in 4/4 time with a key signature of two flats. Measure 49 features a bass line with triplets and a treble line with a triplet. Measure 50 has a treble line with a quintuplet and a bass line with a triplet. Measure 51 has a treble line with a triplet and a bass line with a triplet.

52 $\text{♩} = 56$

Musical score for measures 52-55. The piece is in 4/4 time with a key signature of two flats. Measure 52 has a treble line with a sixteenth-note run and a bass line with a half note. Measure 53 has a treble line with a half note and a bass line with a half note. Measure 54 has a treble line with a half note and a bass line with a half note. Measure 55 has a treble line with a half note and a bass line with a half note.

ppp *mf* *ppp* *pppp*
ppp *p* *ppp* *pppp*