

# Reconsidering the Role of Instrumental Technique in Creative Process: The ‘Canadian School of Double Bass’ Applied to Jazz Performance

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Discourse on the role of instrumental technique in improvisational process has produced several contrasting perspectives. A view exists amongst certain performers and pedagogues that suggests a duality between matters of physical technique and actions with ‘creative intent.’<sup>1</sup> Within this school of thought, technique is regarded as a tool for translating the creative intentions of the performer onto their instrument. Technique and creative practices are considered ‘two separate task categories,’ and physical techniques are not regarded as intrinsic to an improviser’s creative outputs.<sup>2</sup> In certain contexts, it is even argued that ‘mechanical memory can ... have many negative implications for the improvising musician,’ resulting in ‘uncreative, inexpressive performers’ who are unable to play ‘in the moment.’<sup>3</sup> It has been

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<sup>1</sup> James McLean, ‘A New Way of Moving: Developing a Solo Drumset Practice Informed by Embodied Music Cognition’ (PhD thesis, University of Sydney, 2018), 36; Eugene Ball, ‘The Fundamentals of a New Practice Method for Improvising Trumpet Players’ (MMus thesis, Victorian College of the Arts, 2004); John Sloboda, et al., ‘The Role of Practice in the Development of Performing Musicians,’ *British Journal of Psychology* 87.2 (1996): 287–309; Christopher Tarr, ‘Practising Jazz Performance: An Investigation into the Process that Underpins Optimal Instrumental Practice in the Jazz Idiom’ (MA thesis, Western Australian Academy of Performing Arts, 2016).

<sup>2</sup> Sloboda, et al., ‘The Role of Practice in the Development of Performing Musicians,’ 290, quoted in Tarr, ‘Practising Jazz Performance,’ 15.

<sup>3</sup> Tarr, ‘Practising Jazz Performance,’ 18–19; John Kratus, ‘A Developmental Approach to Teaching Music Improvisation,’ *International Journal of Music Education* 26 (1995): 34, quoted in Tarr, ‘Practising Jazz Performance,’ 16; Antonio Sanchez interviewed by Craig Macfadyen, ‘Good Practice,’ *Good Practice*, 3 Jan. 2013, <https://itsgoodpractice.wordpress.com/2013/01/03/antonio-sanchez/>, quoted in Tarr, ‘Practising Jazz Performance,’ 16.

noted that these views can significantly impact the ways in which performers consider, practice, and value the role of physical techniques in creative practice.<sup>4</sup>

However, a second strain of scholarly thought exists that challenges these notions by suggesting that our physical techniques contribute to a complex web of embodied knowledge. This school of thought regards the body and mind as one system and considers learned techniques as a deeply integrated, embodied ancillary to our creative intentions.<sup>5</sup> Specifically, this research implies that the adoption of *new* techniques may fundamentally impact the ways in which an improviser conceives and structures their creative musical thought.

This article will unpack a cross-section of literature in support of this latter view on the role of technique in creative practice. Furthermore, I will present key findings from a recent autoethnographic experiment, the results of which highlight changes in my technique that can be linked to my creative process in my own practice as a jazz double bassist. These observations were gleaned from the comparative study of performance footage, recorded before and after a twelve-month practice intervention, used in conjunction with phenomenological observations and autobiographical information.

### Theories of Embodiment: Linking Physical Techniques to Creative Practice

It is challenging to pinpoint the exact origins of contemporary theories of embodiment; however, one of the earliest thinkers to consider the role of the body in action and sensory perception was Maurice Merleau-Ponty in his seminal *Phenomenology of Perception* (1945).<sup>6</sup> Dermot Moran, in his *Introduction to Phenomenology*, writes that Merleau-Ponty, ‘undoubtedly produced the most detailed example of the manner in which phenomenology can interact with the sciences and the arts to provide a descriptive account of the nature of human bodily being-in-the-world.’<sup>7</sup>

Merleau-Ponty aligned himself with the phenomenologists, a philosophical movement attempting to return ‘back to the “things themselves”,’ and to rethinking the subject-object problem.<sup>8</sup> Merleau-Ponty, like a number of his contemporaries, argued that a subject could not be removed from their context of being-in-the-world. However, Merleau-Ponty considered being-in-the-world an essentially embodied experience and uniquely focussed much of his attention on the corporeal body.<sup>9</sup> Moran explains, ‘Merleau-Ponty was convinced that our experience of objective things in the world was deeply conditioned by the kind of perceptual

<sup>4</sup> Sloboda, et al., ‘The Role of Practice in the Development of Performing Musicians,’ 290, quoted in Tarr, ‘Practising Jazz Performance,’ 15; McLean, ‘New Way of Moving,’ 50; Ball, ‘The Fundamentals of a New Practice Method,’ 12.

<sup>5</sup> Jonathan De Souza, *Music at Hand: Instruments, Bodies, and Cognition* (Oxford: OUP, 2017); Vijay Iyer, ‘Improvisation, Action Understanding and Music Cognition With and Without Bodies,’ in *The Oxford Handbook of Critical Improvisation Studies*, vol. 1, ed. George E. Lewis and Benjamin Piecut (New York: OUP, 2016), 74–90; Vijay Iyer, ‘Improvisation, Temporality and Embodied Experience,’ *Journal of Consciousness Studies* 11.3–4 (2004): 159–73; McLean, ‘New Way of Moving’; Jeff Pressing, ‘Improvisation: Methods and Models,’ in *Generative Processes in Music: The Psychology of Performance, Improvisation, and Composition*, ed. John Sloboda (Oxford Scholarship Online, March 2012); Joti Rockwell, ‘Banjo Transformations and Bluegrass Rhythm,’ *Journal of Music Theory* 53.1 (2009): 137–62; David Sudnow, *Ways of the Hand: The Organization of Improvised Conduct* (Cambridge, MA: Harvard University Press, 1978).

<sup>6</sup> Dermot Moran, *Introduction to Phenomenology* (London: Routledge, 2000), 391.

<sup>7</sup> Moran, *Introduction to Phenomenology*, 433.

<sup>8</sup> Edmund Husserl, *Logical Investigations [1900/1901]* (London: Routledge, 2001), 168; Moran, *Introduction to Phenomenology*, 4–6.

<sup>9</sup> Maurice Merleau-Ponty, *Phenomenology of Perception* (New York: Routledge, 2012), 67.

apparatus we have.<sup>10</sup> In other words, for Merleau-Ponty, perception was essentially ‘a bodily activity,’ and he rejected all concepts of a mind-body dualism.<sup>11</sup> He argued that perception could not be separated from the structure or experience of physically being in a body, stating that it was impossible to ‘grasp the unity of the object without the mediation of bodily experience.’<sup>12</sup>

The implications of this view extend beyond our bodily interactions with physical objects and suggest that the overall structure of the mind is inextricably linked to our being embodied subjects in the world. As Merleau-Ponty argued, ‘consciousness is originally not an “I think that” but rather an “I can”,’ where ‘I can’ represents certain potentials available to a subject in relation to an object.<sup>13</sup> The scope of the subject’s ‘I can’ is constantly mediated through the physical structures and abilities of the body and ‘spread out [before the subject] like a field of possibilities.’<sup>14</sup> This perspective suggests that the scope of a subject’s conscious thought is not only entangled with the physical structure of their body, but also with the subject’s embodied technical motor skills, or ‘habits.’<sup>15</sup> Merleau-Ponty thus suggests that the physical body is the lens through which we perceive and interact with the world and fundamentally the apparatus that shapes the structure of our conscious thought. This view of perception as an essentially embodied experience suggests that the physical techniques embedded within a performer may fundamentally impact the ways in which ideas are conceived within the context of improvised musical performance.

David Sudnow’s *Ways of the Hand: The Organization of Improvised Conduct* (1978) teases out this idea as it charts out an autoethnographic account of learning to improvise on the piano in a jazz style. Sudnow’s work is one of the earliest texts to describe the influence of the physical body on musical thought and improvisational process from a first-person perspective. Changes in the structure of Sudnow’s musical thought abound as the study progresses. Early in his development, the author articulates ‘a lopsidedness between what my hands could do in principle and in fact do,’ suggesting a divide between both the physical and technical limitations of his hands and a discrepancy between his body and mind.<sup>16</sup> With time and experience Sudnow describes this discrepancy diminishing, offering innumerable examples of the ways

<sup>10</sup> Moran, *Introduction to Phenomenology*, 430.

<sup>11</sup> Dan Zahavi, *Phenomenology: The Basics* (New York: Routledge, 2019), 12; Moran, *Introduction to Phenomenology*, 391.

<sup>12</sup> Merleau-Ponty, *Phenomenology of Perception*, 209.

<sup>13</sup> Merleau-Ponty, *Phenomenology of Perception*, 139; Merleau-Ponty attributes these terms to Edmund Husserl in the text; however, Merleau-Ponty’s usage appears to be radically different to Husserl’s. Hubert Dreyfus suggests that, for Merleau-Ponty, “‘I can’” represents a passive, impersonal and embodied subject in contrast to Husserl’s concept of the subject and the “‘transcendental ego’.” See *Lecture 14 of 31 Hubert Dreyfus on Merleau-Ponty’s Phenomenology of Perception*, accessed 3 Aug. 2021, <https://www.youtube.com/watch?v=aKDgcsATWgG>.

<sup>14</sup> Maurice Merleau-Ponty, *Primacy of Perception*, ed. James Eadie (Evanston, IL: Northwestern University Press, 1964), 162, quoted in Moran, *Introduction to Phenomenology*, 428.

<sup>15</sup> Merleau-Ponty, *Phenomenology of Perception*, 143; Hubert Dreyfus writes, ‘although the French have a word for skill (*habilité*), Merleau-Ponty prefers to use the word “*habitude*” to stress the fact that we have our skills, that they are embodied (PP 203/174/202). The English edition correctly translates “*habitude*” as “habit,” but the Oxford English Dictionary says “habit” refers primarily to “a settled disposition or tendency to act in a certain way, especially one acquired by frequent repetition of the same act until it becomes almost or quite involuntary.” This rigid behavior is exactly what Merleau-Ponty is trying to distinguish from the flexible and situation-sensitive skills that make up *l’habitude* (see PP 166/142/164ff). So, wherever the translation says “habit,” I substitute “skill.”’ Hubert L. Dreyfus, ‘Merleau-Ponty and Recent Cognitive Science (2004),’ in *Skillful Coping*, ed. Mark A. Wrathall (Oxford: OUP, 2014), 232.

<sup>16</sup> Sudnow, *Ways of the Hand*, 2.

in which his physical developments were impacting his musical thoughts and the melodies he produced. For example, at a more advanced point in his development, he observes that ‘it is not the case ... that in doing jazz improvisation I project a sung sound independent of how the hand finds itself situated.’<sup>17</sup> This observation suggests that the improvised melodies audiated by Sudnow, or his projected *sung sounds*, were inextricably linked to the notes made accessible through the physical position of his hands. This is one of countless examples where Sudnow observes his mind’s ‘melodic intentionality’ being directly related to his hands’ ‘engagement with the terrain’ of the piano.<sup>18</sup>

In discussing these phenomena, Sudnow develops his own term—‘melodying’—which describes his process of creating melodies while improvising.<sup>19</sup> ‘Melodying’ is both an audiated process as well as what he terms a ‘handful practice,’ or a practice entangled in the hand’s embodied physical processes.<sup>20</sup> These observations suggest that, for Sudnow, the process of audiating or constructing improvised melodies could not be extricated from the physical positioning of his hand. Sudnow’s work exemplifies how the physical body can be understood as influential to the structure of musical ideas conceived while improvising. *Ways of the Hand* provides first-person perspectives exemplifying Merleau-Ponty’s view of conscious thought as ‘the mediation of bodily experience.’<sup>21</sup> Sudnow’s observations also suggest that there may be traceable manifestations of this embodied impact in the melodic outputs of an improvised performance.

Moving beyond the realm of music, Drew Leder’s *The Absent Body* (1990) expands on how newly embodied techniques may fundamentally alter what is accessible within a subject’s ‘field of possibilities’ by suggesting that physical changes in access may impact the conception and construction of conscious thought.<sup>22</sup> Leder’s work explores ‘all the ways in which the body is *absent*’ in our embodied experience of being-in-the-world, and unpacks how the acquisition of physical techniques fundamentally changes our perception of something as accessible.<sup>23</sup> As Leder explains, ‘the use-qualities and accessibility of surrounding objects always refer back to my own corporeal powers. To see something as reachable ... is to implicitly experience my body’s capacity to reach.’<sup>24</sup> The implications of this view suggest that our awareness of something as accessible can be linked to various experientially absent, embodied physical processes.

Leder claims that our ‘corporeal powers’ can be augmented through the acquisition of new physical techniques, and uses learning to swim as an example. As Leder explains, this

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<sup>17</sup> Sudnow, *Ways of the Hand*, 73.

<sup>18</sup> Sudnow, *Ways of the Hand*, 40, 36.

<sup>19</sup> Sudnow, *Ways of the Hand*, 42.

<sup>20</sup> Sudnow, *Ways of the Hand*, 146.

<sup>21</sup> Merleau-Ponty, *Phenomenology of Perception*, 209. The phenomenological approach used by Sudnow foreshadows a popular movement in musical literature whereby personal experiential insights are used to reveal how musicians learn and develop techniques. These include: Barry Green, *The Inner Game of Music* (Garden City, NY: Anchor Press/Doubleday, 1986); Kenny Werner, *Effortless Mastery: Liberating the Master Musician Within* (New Albany, IN: Jamey Aebersold Jazz, 1996); and Madeline Bruser, *The Art of Practicing: A Guide to Making Music from the Heart* (New York: Bell Tower, 1997). These works offer the inner workings of practicing musicians and discuss the various factors at play while learning new skills. These self-help books aim to improve a musician’s yields while practising their instrument or learning new physical techniques.

<sup>22</sup> Merleau-Ponty, *Primacy of Perception*, 162, quoted in Moran, *Introduction to Phenomenology*, 428.

<sup>23</sup> Drew Leder, *The Absent Body* (Chicago: University of Chicago Press, 1990), abstract.

<sup>24</sup> Leder, *Absent Body*, 22–23.

first involves the development of discrete physical processes, stating 'I am told to cup my hands, lift my arms from the water, and breathe to one side.' The next stage requires the subject to 'take the plunge,' and combine these discrete actions. Leder states that in this second stage 'I consciously monitor my own movements ... The problematic nature of these novel gestures tends to provoke explicit body awareness.' Leder goes on to describe the advanced stage of skill acquisition, stating 'the successful acquisition of a new ability coincides with a phenomenological effacement of all this. The thematization of rules, of examples, of my own embodiment, falls away once I truly know how to swim.'<sup>25</sup>

However, this 'successful acquisition' does more than trivially add a new action to the body's range of movements. Leder claims that the embodiment of new skills changes what the subject perceives as accessible and states that the new technique has fundamentally redefined the body's 'actional fields.' To reiterate Leder's earlier quote, 'to see something as reachable ... is to implicitly experience my body's capacity to reach,' and in the example of swimming, one's ability to swim across the lake grants access to whatever lies on the other shore.<sup>26</sup> Leder explains, 'the lake outside my window ... looks different than in my preswimming days, when it could not be crossed and offered no *access*.'<sup>27</sup> Leder's work illustrates that the acquisition of physical skills and techniques fundamentally impacts what a subject perceives as accessible. The implication of this within the context of melodic improvisation is that the acquisition of physical technique is a likely influencer on the range of melodic ideas *accessible* to a performer.

Returning to the field of music, much of the work of Vijay Iyer rethinks the various facets underlying our embodied experience in several important ways. His 2016 essay 'Improvisation, Action Understanding and Music Cognition With and Without Bodies' explores the various aspects of embodiment in improvisation and emphasises that 'the body, the brain, and the mind' should be considered a single, interconnected system.<sup>28</sup> Iyer supports the importance of the physical body within improvisational process, and his research has proved pivotal in bringing together the worlds of embodied cognition and musical performance.

Iyer situates his work within 'the paradigm of embodied cognition,' a movement within cognitive science responding to the mind-body dualism suggested by seventeenth-century philosopher René Descartes. Iyer explains:

The paradigm of embodied cognition emerged in the late 1980s as a corrective response to the Cartesian 'dualist' theories of mind that had prevailed in cognitive science since the field's inception in the mid-twentieth century. Dualism held that the mind exists in a realm separate from the brain—that is, that the mind could be understood as 'the software' and the brain and body as 'the hardware.' The dualist paradigm known as 'cognitivism' thereby presupposed that cognition was a kind of rule-based computation that could happen in any machine using the same rules, and that there was therefore nothing special about the bodies that housed our brains.<sup>29</sup>

Iyer further explains that the paradigm of embodied cognition, the origins of which can be traced to the work of Merleau-Ponty, radically reconsidered the role of the body in cognition:

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<sup>25</sup> Leder, *Absent Body*, 30–31.

<sup>26</sup> Leder, *Absent Body*, 23, 31.

<sup>27</sup> Leder, *Absent Body*, 32 (emphasis added).

<sup>28</sup> Iyer, 'Improvisation, Action Understanding and Music Cognition,' 76.

<sup>29</sup> Iyer, 'Improvisation, Action Understanding and Music Cognition,' 76.

'Theories of embodiment hold that the body, the brain, and the mind must be understood as one system, and that the brain is an organ optimized for producing motor (i.e., bodily) output in response to sensory stimuli.'<sup>30</sup>

Iyer's explanation of Cartesian Dualism and the 'corrective response' of embodied cognition links intimately to many of the ideas presented in the works of Merleau-Ponty, Sudnow, and Leder amongst others. These works all exemplify different ways in which the body, brain, and mind can be understood as a unified system, highlighting the various impacts of the physical body on musical thought.

Iyer's work describes the complex interplay of physical, social, and cultural factors behind the 'patterns of behavior' employed by musicians in the act of improvisation. Iyer does not delineate discrete origins or sources of improvised ideas, but rather suggests a *mélange* of embodied factors, including aspects of the physical body, motor skills, and culture. These views reveal that 'music cognition should be understood as intimately tied in with the body and its physical and sociocultural environment,' and highlight the need to move away from antiquated dualist views both of mind and body, as well as creativity and physical technique.<sup>31</sup>

Jonathan De Souza's *Music at Hand* (2017) continues to explore the role of embodiment in creative musical practice and further acknowledges the interplay of 'techniques and technologies' as an inextricable constituent of musical thought. *Music at Hand* is a collection of essays that bring together the various aspects of physical technique, creative thought, idea generation, and embodied situatedness at play in musical practice, including examples of the ways in which 'the acquisition of *instrumental technique* ... affects the ways that players perceive, understand, and *imagine* music.'<sup>32</sup> As a result of his research De Souza concludes that 'musical knowledge is not grounded in bodies alone, but in an interplay of techniques and technologies,' further claiming that a 'player's experience is not simply embodied but also technical.'<sup>33</sup>

De Souza explores examples of this 'interplay of techniques and technologies' in creative practice in his essay 'Beethoven's Prosthesis,' where he discusses Beethoven's practice of composing at the piano even in his deafness. The physical structure of the piano and Beethoven's technical relationship to it appeared to be intrinsically linked to his aural imagination. De Souza states that this continued use of instruments while composing 'connects Beethoven's bodily actions and his inner hearing ... [resonating] with arguments that present musical experience as essentially embodied.'<sup>34</sup> De Souza concludes:

Beethoven's mind was [therefore] integrated with his hands, his tools, and a broader musical world. This means that Beethoven's imagination, which might have been understood as an instance of purest interiority, instead shows how interiority and exteriority are irreducibly entangled.<sup>35</sup>

'Beethoven's Prosthesis' highlights the entangled flux of sources and embodied processes that were at play in Beethoven's creative musical thought. De Souza's work further illustrates

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<sup>30</sup> Iyer, 'Improvisation, Action Understanding and Music Cognition,' 76.

<sup>31</sup> Iyer, 'Improvisation, Action Understanding and Music Cognition,' 75–76.

<sup>32</sup> De Souza, *Music at Hand*, 2 (emphasis added).

<sup>33</sup> De Souza, *Music at Hand*, 2, 6.

<sup>34</sup> De Souza, *Music at Hand*, 7.

<sup>35</sup> De Souza, *Music at Hand*, 27.

the difficulty of separating a musician's internal creative processes from the ways in which physical techniques, bodies, and instruments interact.

Turning now more specifically to performance practices in jazz, there have been several research projects investigating this interaction of techniques, technologies, and musical thought in the outputs of established jazz improvisers. One such study from 2014, James Dean's 'Pat Metheny's Finger Routes: The Role of Muscle Memory in Guitar Improvisation', analyses jazz guitarist Pat Metheny's physical and technical approach while soloing in order to investigate 'the relationship between instrumental technique and improvisation.'<sup>36</sup> Dean presents fragments of Metheny's solos transcribed from live performance footage in an attempt to draw meaningful correlations between Metheny's 'physical movements' and his 'creative approach at particular stages of the improvisation.'<sup>37</sup>

Dean's analysis is based on transcriptions from filmed performances of Metheny's improvisation. Dean explains that the use of video footage was essential for analysis of this type: 'in transcribing the improvisations as they are both heard and seen, Metheny's technique is presented as fairly and as accurately as is possible from this type of footage, in order that some meaningful conclusions might be drawn.' A benefit of this methodology is that it most accurately portrays the technique of the performer, and Dean suggests that transcriptions without the aid of visuals are 'in danger of presenting the preferred technique of the transcriber, rather than the player.'<sup>38</sup>

Furthermore, Dean suggests that the necessity of video footage in studies such as this may also be linked to the idiosyncratic structure of stringed instruments. He explains, 'the same sequence of notes can be played in a variety of ways, using different strings and frets, leading to differing combinations of left hand fingerings [and] fret board positioning.' As such, Dean suggests that transcriptions derived from audio alone may result in 'speculative' and 'possibly misleading' fingerings.<sup>39</sup> One reason for this specific focus on fingerings and physical locations on the fingerboard is suggested by findings from previous studies, presented here by Dean, which reveal that 'it is evident that ideas which fall under the fingers play a discernible role in improvisation.'<sup>40</sup>

This concept of certain ideas 'falling under the fingers' and impacting the improvised outputs of a performance is further supported by Dean's results.<sup>41</sup> Dean categorises a number of Metheny's unique physical techniques such as the use of 'Transitional Phrases' and 'Pivot Notes' to 'play through positions,' and/or 'transition from one position on the neck to another,' impacting the 'links between musical ideas or phrases.'<sup>42</sup> These findings illustrate the ways in which Metheny's physical movements and techniques can be linked to his musical thought, as revealed in his melodic outputs while soloing. They also suggest that, in the context of stringed

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<sup>36</sup> James Dean, 'Pat Metheny Finger Routes: The Role of Muscle Memory in Guitar Improvisation,' *Jazz Perspectives* 8.1 (2014): 45.

<sup>37</sup> Dean, 'Pat Metheny Finger Routes,' 45.

<sup>38</sup> Dean, 'Pat Metheny Finger Routes,' 49.

<sup>39</sup> Dean, 'Pat Metheny Finger Routes,' 48.

<sup>40</sup> Rob Van Der Blik, 'Wes Montgomery: A Study of Coherence in Jazz Improvisation,' *Jazzforschung/Jazz Research* 23 (1991): 153, quoted in Dean, 'Pat Metheny Finger Routes,' 48.

<sup>41</sup> Van Der Blik, 'Wes Montgomery,' 153, quoted in Dean, 'Pat Metheny Finger Routes,' 48.

<sup>42</sup> Dean, 'Pat Metheny Finger Routes,' 58, 57.

instruments, specific finger routes resulting in different physical locations on the fingerboard may impact an improviser's imagination by affecting what ideas 'fall under the fingers.'<sup>43</sup>

Dean's study concludes that physical instrumental techniques appeared to be playing a crucial role in Metheny's 'creative approach at particular stages of the improvisation.'<sup>44</sup> This study further illustrates the growing interest in understanding the impact of embodied physical process on the imagination, supporting the view that 'musical knowledge is not grounded in bodies alone, but in an interplay of techniques and technologies.'<sup>45</sup>

Finally, James McLean's 2018 'A New Way of Moving: Developing a Solo Drumset Practice Informed by Embodied Music Cognition' explores how a reconfigured perspective on physical processes can be used to 'instigate creative development within the practice of an improvising drummer.'<sup>46</sup> Through the adoption of a specially devised practice-led methodology, McLean's work offers first-hand practitioner perspectives on the relationship between his established physical techniques and creative process. He writes:

This research examines the role of situated body motion within my own practice as an improvising drummer. I argue that body movements can be utilised to form both deliberate generative processes within solo drumset improvisation, and as a set of parameters through which to understand broader drumset practice.<sup>47</sup>

McLean reflects that, before embarking on this research project, he held an essentially dualist view of physical technique in relation to his creative process, and recalls how this impacted his practice:

Previously, I had considered the physical minutiae of drumset technique to be categorically distinct from the creative musical considerations. Exercises to develop aspects of physical technique were a regular part of my instrumental practice routine, but they were separate from exercises or work with creative intent.<sup>48</sup>

He further explains that this perceived dualism between the mind's creative imagination, or ideas born of the 'auditory mode,' and ideas derived from physically embodied techniques also impacted how he valued those ideas: 'I realised that I too had valued improvisational ideas born of the auditory mode as being inherently more musical than those born of the spatio-motor mode.'<sup>49</sup>

McLean discusses how his views on this matter transformed after his introduction to the work of Vijay Iyer and the field of embodied music cognition.<sup>50</sup> This field of research had a significant impact on McLean's process and was the catalyst for his shift in perspective. As a result, this interplay of physical embodied knowledge and creative output became the primary focus of his research.

In order to explore this relationship McLean developed his own practice-led methodology, 'The Practice/Research Cycle,' derived from Hazel Smith and Roger Dean's 'Iterative Cyclic

<sup>43</sup> Van Der Bliek, 'Wes Montgomery,' 153, quoted in Dean, 'Pat Metheny Finger Routes,' 48.

<sup>44</sup> Dean, 'Pat Metheny Finger Routes,' 45.

<sup>45</sup> De Souza, *Music at Hand*, 2.

<sup>46</sup> McLean, 'New Way of Moving,' iii.

<sup>47</sup> McLean, 'New Way of Moving,' 2.

<sup>48</sup> McLean, 'New Way of Moving,' 36.

<sup>49</sup> McLean, 'New Way of Moving,' 50.

<sup>50</sup> McLean, 'New Way of Moving,' 2.



Web.<sup>51</sup> McLean's Practice/Research Cycle involves four phases: 'theorisation, creative development, documentation, and analysis of outputs.'<sup>52</sup> Using this methodology, McLean identifies the impactful role embodied knowledge plays on his creative process and develops 'an original taxonomy for classifying types of individual and combined *movement cycles* as applied to the drumset.'<sup>53</sup> McLean uses these categorised physical movements as a creative catalyst, varying, combining, and layering them in a process he calls 'somatic parameter layering.'<sup>54</sup> This process is used as a generative tool for new creative work, which McLean retrospectively analyses.

While McLean's results are distinctively drum focussed, his findings support the view that 'musical knowledge is not grounded in bodies alone, but in an interplay of techniques and technologies,' and illustrates the importance of practitioner perspectives and the practice-led approach in understanding this interplay.<sup>55</sup> Finally, his development of the Practice/Research Cycle offers a useful methodological framework for future research projects in this area.

Here I have presented a cross-section of scholarship investigating the various embodied and technical factors that influence the construction of musical thought and creative process, supporting the view that 'musical knowledge is not grounded in bodies alone, but in an interplay of techniques and technologies.'<sup>56</sup> I will now present an overview of a recently conducted practice-led autoethnographic experiment exploring this phenomenon. This experiment is unique in that it offers a first-person account of an experienced improviser altering their technical approach, yielding important observations on the confluence of technique and creative process. I will start with an outline of the methodological underpinnings of the experiment, before presenting a summary of the key findings.

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<sup>51</sup> McLean, 'New Way of Moving,' 2; Hazel Smith and Roger Dean, 'Practice-led Research, Research-led Practice: Towards the Iterative Cyclic Web,' in *Practice-led Research, Research-led Practice in the Creative Arts*, ed. Roger Dean and Hazel Smith (Edinburgh: Edinburgh University Press, 2009), 1–38.

<sup>52</sup> McLean, 'New Way of Moving,' 2.

<sup>53</sup> McLean, 'New Way of Moving,' iii.

<sup>54</sup> McLean, 'New Way of Moving,' 72.

<sup>55</sup> De Souza, *Music at Hand*, 2. McLean's PhD is but one of many recent projects representing the appropriateness of the practice-led approach when considering the relationship between technique, technology, and the construction of creative musical thought. Other projects include: Ball, 'Fundamentals of a New Practice Method', which reconsiders several standard technical exercises for trumpet to better meet the needs of the improvising musician; Simon Barker, *Korea and the Western Drumset: Scattering Rhythms* (New York: Routledge, 2015), which discusses certain Korean cultural influences and musical practices on Barker's technical/creative relationship with the drumset; Monika Kwiatkowska, 'Technical Exercises for Double Bass: A Study of Selected Methods and Their Effect on the Development of Performance Technique' (MMus thesis, University of Gothenburg, 2016), which highlights the specific impact of different technical methods on the author's performance of several classical works; Steven Barry, 'Blueprints and Vignettes: Pitch-class Sets, Serialism and Intervallicism and the Integration of Systematic and Intuitive Music Making' (PhD thesis, University of Sydney, 2017), which explores the impacts of employing various twentieth-century compositional techniques on his creative practice; Thomas Botting, 'Developing a Personal Vocabulary for Solo Double Bass Through Assimilation of Extended Techniques and Preparations' (PhD thesis, University of Sydney, 2018), which investigates a number of extended techniques and their effect on his creative process; and Phillip Slater 'The Dark Pattern: Towards a Constraints-led Approach to Jazz Trumpet' (PhD thesis, University of Sydney, 2020), which unpacks the impact of environment on creative practice. These works, and many more, explore the interplay between technique and creative process while further highlighting the usefulness of the practice-based approach in this field.

<sup>56</sup> De Souza, *Music at Hand*, 2.

## Methodology

The overall structure of my experiment was derived from McLean's Practice / Research Cycle, altered slightly to best meet the specific needs of this project. This updated model has been broken into the following five stages: Theorisation, Practitioner-State-of-Play, Intervention, Documentation, and Comparison and Analysis of Outputs.<sup>57</sup>

Much like McLean's original model, the **Theorisation** stage of my experiment included 'the development of new theory, the testing of new theoretical models, or the gathering of theory from existing literature.'<sup>58</sup> During this phase I constructed my literature review, selected *The Canadian School of Double Bass* (CSDB) by Joel Quarrington as the method I would explore in my intervention, and made preliminary plans for how I would structure my practice time.<sup>59</sup> There were several factors motivating my choice of Quarrington's method. First, I was both impressed and inspired at the sound, lyricism, and virtuosity that Quarrington achieved using his unique approach. Furthermore, Quarrington was playing a bass tuned in fifths, which, to my understanding, would require a significantly altered approach to left-hand technique.<sup>60</sup> As I was looking for something radically different, I believed that a left-hand approach developed for fifths tuning might offer some fresh perspectives on the bass techniques I had learnt, many of which had been historically developed for fourths tuning.<sup>61</sup> Finally, I could find little to no research on CSDB, nor could I find any examples of this technique applied in a jazz context. This lack of formal research surrounding CSDB and, to my knowledge at the time, its unprecedented application to jazz music, further influenced my decision to select Quarrington's method for this project.

The **Practitioner-State-of-Play** (PSOP) was an additional stage included as my experiment involved before and after comparisons. The purpose of this phase was to ascertain the before-profile of my established physical and mental processes prior to my intervention and involved several stages. First, I collated a brief autobiographical account of my relationship to the double bass and the journey of developing my pre-established technical approach.<sup>62</sup> Next, I selected a repertoire of jazz standards, covering a thorough cross-section of my professional practice.<sup>63</sup> Over the course of several weeks, solo performances of this repertoire were filmed several

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<sup>57</sup> Due to the time constraints of this project, the five-stage process was conducted once, in a linear fashion, in contrast to McLean's original model, which played out twice in cyclical structure. The revised methodology presented in this article may also be conducted using McLean's original cyclical structure.

<sup>58</sup> McLean, 'New Way of Moving,' 4.

<sup>59</sup> This research was conducted using Joel Quarrington's, *The Canadian School of Double Bass: Fourths Tuning Edition*, version 1.11 ([s.l.], Travis Woods, 2015), and *The Canadian School of Double Bass: Fifths Tuning Edition*, version 1.11 ([s.l.], Travis Woods, 2015). New editions of both works were published in May 2021 with additional explanations and exercises.

<sup>60</sup> Quarrington, *The Canadian School of Double Bass: Fourths Tuning Edition*, 2.

<sup>61</sup> Paul Brun, *A New History of the Double Bass* (Villeneuve d'Ascq: Paul Brun Productions, 2000), 16.

<sup>62</sup> Autobiographical information, including the background and history of an artist and their practice, is a common feature of many practice-based projects and is usually provided as background information on the researcher. Here, this information was also used as data, in balance with the rest of the stages of the PSOP, to aid in mapping a before-profile of the established technical processes I planned to affect.

<sup>63</sup> The range of pieces used in this experiment were selected because they covered a broad spectrum of tempos, keys and included both traditional and contemporary harmonic approaches. One original composition was included in this repertoire which was the only piece exploring so-called 'free' playing, or improvisation not based on a harmonic structure.

times, broadening the sample size.<sup>64</sup> Immediately following the performance of each individual piece I delivered a retrospective, verbal self-report in order to gauge initial impressions of the performance.<sup>65</sup> After delivering these retrospective verbal self-reports, I then conducted a commentated review of the footage intended to verify, contradict, exemplify, or contribute to the observations from the verbal self-report.<sup>66</sup> Following the completion of this recording period, the verbal self-reports, commentated reviews, and footage were transcribed and analysed for thematic content using a general inductive approach.<sup>67</sup> Finally, these findings were collated into a brief but rigorous profile of pre-established physical techniques and improvisational processes. This autobiographical information, documented examples of creative outputs, and coded experiential observations were combined to form a before-profile, or the PSOP. This profile was later used as a point of comparison in the final Comparison and Analysis of Outputs.

Closely tied to McLean's original Creative Development, the **Intervention** phase incorporated 'any of the multitude of processes practitioner-researchers use in the development or creation of their works.' My reason for retitling this phase was to further include seemingly *un*-creative interventions that may be used for assessing the relationship between a certain phenomenon or activity and a practitioner's craft. For example, a performer may wish to explore the impacts of a change in practice environment, engage with seemingly unrelated physical activities, or make adjustments to techniques or technologies influencing their engagement with their practice. For this reason, I retitled this stage as it more flexibly incorporated activities that may not *directly* relate to 'the development or creation of their works.'<sup>68</sup>

This phase of the experiment was an approximately year-long practice intervention spent studying and practicing the techniques described in Quarrington's *Canadian School of Double Bass*, culminating in a period of private tuition with Quarrington in Ottawa.<sup>69</sup> During this time we discussed the factors motivating Quarrington to develop his unique approach, and I learnt of the many ways that CSDB departs from traditional schools of double bass technique. These include a special focus on relaxed and flexible wrists as well as left-hand rotations and pivots for 'seamless, accurate and effortless shifting'; revised sitting posture impacting the weight and balance of both hands on the instrument; reconfigured angles of the left hand; an expanded

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<sup>64</sup> The use of video footage in studies such as this is common practice, see Dean, 'Pat Metheny Finger Routes,' McLean 'A New Way of Moving,' and Ryan Daniel, 'Self-assessment in Performance,' *British Journal of Music Education* 18.3 (2001): 215–26.

<sup>65</sup> This methodological approach was modelled on 'Think Aloud Protocols' as described in Jeffrey Greene, Victor Deekens, Dana Copeland and Seung Yu, 'Capturing and Modeling Self-Regulated Learning Using Think-Aloud Protocols,' *Handbook of Self-Regulation of Learning and Performance*, ed. Patricia Alexander, Dale Schunk and Jeffrey Greene (Abingdon: Routledge, 2017). Unfortunately, think-aloud protocols proved inappropriate for the task at hand and this alternative means of verbal self-reporting was developed. In preliminary experiments into the structure of this experiment it was found that the act of speaking while improvising was too disruptive to my attention while performing, negatively impacting the results. However, it proved necessary that these verbal self-reports were conducted as close to the act of performance as possible to reduce the impacts of memory bias.

<sup>66</sup> This process of reviewing footage is widely supported in music pedagogy research. Daniel cites several examples of this as an effective model in self-assessed performance analysis. See Daniel, 'Self-assessment in performance,' 215–18.

<sup>67</sup> David Thomas, 'A General Inductive Approach for Analyzing Qualitative Evaluation Data,' *American Journal of Evaluation* 27.2 (2006): 237–46.

<sup>68</sup> McLean 'New Way of Moving,' 5.

<sup>69</sup> This research trip complied with the Australian National Statement on Ethical Conduct in Human Research and was approved by the University of Sydney Human Research Ethics Committee (Ethics project number: [2019/073]).

and flexible notion of hand frame (that is, the notes that fall under the hand without needing to shift the arm); employing all left-hand fingers in all registers of the instrument; a departure from the traditional system of 'Simandl style' positions; and employing thumb position (the register where the thumb is brought onto the fingerboard and used to close the string) in lower registers than many traditional methods. Quarrington states that his revised technical approach led to wider, more expressive vibrato, improved intonation, greater 'inherent rhythm of the fingers,' 'resistance to string friction,' and 'retained strength in the hand.' Furthermore, he found that this approach mobilised his hand frame to 'encompass a minor third and more,' which increased 'fingering possibilities for musical and technical solutions.' Finally, this flexible and mobile approach allowed Quarrington to play a bass tuned in fifths, which would otherwise have required excessive and awkward shifting.<sup>70</sup>

The **Documentation** stage was unchanged from McLean's original model, outlined as follows:

The documentation phase comprises processes by which creative practice is documented, producing research data for analysis. In many cases, this will be the point at which creative ideas are corralled into discrete creative works or texts, however this is not essential so long as data is produced ... Potential research outputs from this phase are the creative works themselves.<sup>71</sup>

The original repertoire was re-recorded with piano accompaniment to provide harmonic context for the listener.<sup>72</sup> The categories coded in the PSOP were used to gauge any transformations in technique that could be linked to CSDB, studied during the Intervention phase. The omission of verbal self-reporting in the documentation phase was intended to avoid any 'selective perception' biases, which may now be present given the now established categories for analysis.<sup>73</sup>

The **Comparison and Analysis of Outputs** phase was closely tied to McLean's original Analysis of Outputs, a phase comprising 'any process by which outputs of creative practice are analysed or otherwise reflected upon.'<sup>74</sup> However, my analysis primarily focussed on points of difference in the Documentation phase, in contrast to observations coded in the PSOP, with traceable links to the Intervention. As such it has been retitled.

These recordings were analysed and compared to observations categorised in the PSOP to gauge any transformations in technique. Where possible, exemplar video clips illustrating certain physical phenomena were compiled.<sup>75</sup> Further comments were made suggesting how these technical transformations appeared to impact melodic choices made while soloing.<sup>76</sup> The final result is an after-profile with recorded examples set in contrast to the PSOP.

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<sup>70</sup> Quarrington, *Canadian School of Double Bass*, 4–6; Brun, *A New History of the Double Bass*, 16. While CSDB is decidedly bass focussed, the overall left-hand approach expounded in this method would prove equally valuable to fourths and fifths tuned cellists, electric bassists, and guitarists. Furthermore, many of the observations in this work relating to the right hand, including the Galamian bow studies provided in the final pages of CSDB, would undoubtedly prove beneficial for any bowed string instrument.

<sup>71</sup> Thomas, 'General Inductive Approach,' 5.

<sup>72</sup> Kwiatkowska, 'Technical Exercises for Double Bass,' 52.

<sup>73</sup> Christopher M. Massad, Michael Hubbard, and Darren Newtonson, 'Selective Perception of Events,' *Journal of Experimental Social Psychology* 15.6 (1979): 513.

<sup>74</sup> McLean, 'New Way of Moving,' 5.

<sup>75</sup> McLean, 'New Way of Moving,' 77.

<sup>76</sup> Dean, 'Pat Metheny Finger Routes,' 45.

My intention in adapting McLean's methodology in this way was to further contribute a flexible practice-led model for assessing the influence of varying interventions on artistic practice. I predict that this model will prove useful for a broad array of interventions and practices, musical or otherwise.

## Results

The large pool of raw data collected in the PSOP was coded into the following categories: Hand Frame, Shifting, Register, Sources, Technical Critiques, Tension, and Tempo. These categories were then used to construct a profile of my overall improvisational approach prior to my forthcoming technical intervention.<sup>77</sup>

In parsing the before data set, I observed several factors relating to the posture and frame of the left hand, or the **Hand Frame**. I observed a tendency to consider notes that fell within the hand frame as 'in position,' and melodic ideas that used these notes were generally referred to as 'cells,' 'blocks,' or 'positions.'<sup>78</sup> I further observed a certain preference for two-note, binary fingerings of either a tone, fingered 1–4, or a semitone fingered 1–2 or 2–4, as well as three-note 'chromatic cells.'<sup>79</sup>

With regard to **Shifting**, I observed a preference for ideas that fell within these hand frames, or 'in position,' versus ideas that required a 'shift.' Occasionally I articulated a feeling of being 'stuck' in positions. Furthermore, this preference for ideas 'in position' appears to have extended to the aural imagination. I suggest that these physical preferences conditioned aural habits leading me to 'think' within these positions. I further observed certain technical problems associated with shifting, particularly intonation, and a certain difficulty playing 'through' positions. I also noted certain 'tricks' I habitually used to overcome these problems: for example, the use of broken thirds. In general, there appeared to be more 'playing through the instrument,' at slower tempos and more 'getting stuck in position,' or 'moving around in little blocks,' at faster tempos.<sup>80</sup>

**Register** highlighted specific registers and regions of the bass that I habitually gravitated towards. In general, these 'comfortable areas' were lower registers, both in terms of pitch and physical position on the fingerboard. I described experiencing problems with intonation and shifting outside these zones. In the lowest positions I tended to play on all four strings, allowing for a more horizontal, or positional approach. As I travelled further up the fingerboard, I tended to play more on the D and G strings and eventually just the G string. I observed a tendency to consider notes, chords, and melodies as specific physical locations on the fingerboard, generally within these 'comfortable areas.' At certain times I suggested practicing melodies and improvisation in different positions of the instrument to break these habits. In general, I appeared to resort to these 'comfortable areas' more frequently at faster tempos.<sup>81</sup>

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<sup>77</sup> All the quoted material hereafter has been taken from transcriptions of verbal-self reports and commentated reviews.

<sup>78</sup> These melodic ideas described as 'positions' do not relate to Simandl's concept of positions.

<sup>79</sup> Samuel Dobson, 'The Role of Instrumental Technique in Creative Process: Applying the "Canadian School of Double Bass" to Jazz Performance' (MMus thesis, University of Sydney, 2020), 64.

<sup>80</sup> Dobson, 'Role of Instrumental Technique in Creative Process,' 65.

<sup>81</sup> Dobson, 'Role of Instrumental Technique in Creative Process,' 78–79.

The **Sources** category articulated from where I perceived an idea as originating, and drew upon the three categories outlined in Wendy Hargreaves's 'Generating Ideas in Jazz Improvisation,' namely 'Strategy-Generated,' 'Audiation-Generated,' and 'Motor-Generated.'<sup>82</sup> I observed that while certain sources did occasionally play a more dominant role, in general there did not appear to be a discrete distinction between these sources. More regularly, there was a complex interlay of two or all three sources involved in the generation of an idea at any given moment.<sup>83</sup> Crossover points between dominant sources also revealed themselves at points of error, and I refer to this process of recovery as 'resetting' or 'resituating.' Errors are generally moments where there was a perceived discrepancy between my intentions and outputs. At these moments, the flow was disrupted, and I used one or a combination of sources to aurally 'reset' or 'resituate' myself on the fingerboard.<sup>84</sup>

**Technical Critiques** were any general technical criticisms including comments on vibrato, intonation, tone, synchronicity of the right and left hands, fingering choices, phrasing, 'running out of bow,' and/or 'wrong siding' bow strokes (accidentally reversing the direction of bow strokes). Intonation appeared to be a problem when I was playing outside of my 'safe zones' or where shifting was involved, leading me to avoid large vertical shifts (see Shifting and Register). Issues with synchronicity of the hands and phrasing appeared to become more problematic at fast tempos (see Tempo, below). 'Running out of bow' and 'wrong siding' the bow appeared to become more problematic at slow tempos.

**Tension** describes any physical or mental tension perceived during the recordings. Typical areas where I regularly observed physical tension included my right shoulder, arm, wrist, hand, and thumb. I cite various sources for tension including playing too loudly, playing double-stops, playing fast, not being 'warmed up', as well as other external factors: for example, muscular fatigue from 'last night's gig' or playing sport. Curiously, it also appeared to be the case that mental tension could manifest itself as physical tension and vice versa. For example, a physical inability to 'keep up' with a tempo could result in feeling mentally tense; however, mental challenges associated with 'difficult' chord progressions could also result in physical tension.<sup>85</sup>

Finally, **Tempo** was frequently cited as a factor impacting my improvisational process. Overall, tempo appeared to have the greatest impact on the interplay of the aforementioned categories. In general, I adopted a more positional approach at faster tempos, and shifted more at slower tempos. I resorted more to 'comfortable' areas at faster tempos, while using a more versatile range at slower tempos. While all three sources were generally present, I tended to rely more heavily on motor and strategy generated ideas at fast tempos and had more clearly audiated ideas at slower tempos. I also appeared to experience more physical and mental tension at faster tempos.

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<sup>82</sup> Wendy Hargreaves, 'Generating Ideas in Jazz Improvisation: Where Theory Meets Practice,' *International Journal of Music Education* 30.4 (2012): 359–62.

<sup>83</sup> In my verbal self-reports and commentary, when ideas are primarily audiated I use terminology such as 'aural connectivity' or the 'ear to instrument connection.' When ideas are primarily motor-generated I use phrases like 'thinking with my fingers.' Where ideas are primarily strategy-generated I use the phrases 'playing what I know will work' or 'just cutting the chords.' In general, the influence of physical positioning and strategic knowledge play a more primary role at faster tempos. See Dobson, 'Role of Instrumental Technique in Creative Process,' 70.

<sup>84</sup> Dobson, 'Role of Instrumental Technique in Creative Process,' 70.

<sup>85</sup> Dobson, 'Role of Instrumental Technique in Creative Process,' 73.

The next phase of my experiment was the Intervention period, and it was during this stage that I studied Quarrington's *The Canadian School of Double Bass*. Using this e-book as my primary learning source, I practised this method at as close to daily intervals as possible, diarising my progress. The final weeks of this technical intervention were spent studying privately with Quarrington, during which time he offered advice and critiques of my interpretation of his method. This final period with Quarrington was an invaluable stage in galvanising many of the technical transformations I had developed.<sup>86</sup>

Following the Intervention period, I performed the final Documentation before completing the Comparison and Analysis of Outputs. The goal was to highlight any physical transformations in technique compared to the coded categories listed in the PSOP that could be linked to changes in creative process reflected in the melodic content of my solos.

I observed significant transformations in Hand Frame. In the PSOP, I recognised my preference for melodic ideas that used the notes available within my hand's frame, or 'in position'. Following my intervention, the spectrum of notes falling in position greatly diversified to include a variety of flexible and dynamic three- and four-note hand frames, greater than a tone. I observed myself playing in thumb positions in a lower register than in the PSOP. Furthermore, the thumb displayed increased mobility and independence, further diversifying intervallic options available within a given hand frame. The prevalence of melodic material exploiting these newly developed, flexible hand frames suggested that the fundamental structure of my melodic ideas had shifted to fit the framework of this new technical knowledge.

Post-intervention I observed a prevalence in Shifting reflected in melodic material requiring multiple vertical shifts, suggesting that these preferences had now evolved to fit the framework of my new technical knowledge. Furthermore, I now observed melodic ideas that may previously have been executed in one position now being played up the string, further illustrating a shift in my previous preferences. I observed an increased number of large vertical intervals, now more frequent and greater in size than previously observed in the PSOP. This improved fluency for shifting and executing large, vertical intervals appears to be a tool used to relocate me to different areas of the instrument. This, coupled with a diversified hand frame, greatly augmented the intervallic options accessible to me across the fingerboard, further impacting my melodic choices. The prevalence of melodic material exploiting this transformed fluency for shifting and vertical playing further suggests that my melodic ideas had adjusted to fit the framework of my revised technical approach.

I also observed an increased diversity of Register, reflected in a greater fluency in the middle, upper, and extreme upper registers of the bass. This newfound proficiency in the higher registers enabled me to play the composed melodies of my repertoire up the octave, which I posit impacted my tendency to think of notes, chords, and melodies as specific locations on the fingerboard, generally in lower registers. Furthermore, tempo appeared to be less of an influential factor affecting register, and I observed increased fluency playing in higher registers at fast tempos. Finally, my new, more vertical approach increased the accessible register of each string, most notably diversifying my use of the E and A string. These factors, coupled with a

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<sup>86</sup> For a detailed overview of Quarrington's method and the Intervention phase of this experiment see Dobson, 'Role of Instrumental Technique in Creative Process,' 78–133.

more flexible hand frame and greater fluency in shifting, appear to have greatly impacted the intervallic potentials accessible to me while soloing, and can be seen reflected in my melodic choices post-intervention. The prevalence of melodic material executed in registers that I had previously avoided further suggests that this new technical approach had fundamentally influenced my melodic ideas.

In general, I did not experience any major transformations in Sources and, much like the PSOP, my ideas appeared to be derived from a mélange of ‘Audiation-Generated,’ ‘Strategy-Generated’ and ‘Motor-Generated’ origins.<sup>87</sup> I did, however, perceive an improvement in aural connectivity when shifting vertically, influenced by specific exercises from CSDB, which perhaps explains the overall increase in vertical shifts and larger vertical intervals in my performances.<sup>88</sup>

In reviewing the final performance recordings there appeared to be an overall decrease in Technical Critiques. I observed improved intonation, particularly in upper registers and through large shifts. This improved intonation seems to have impacted my confidence in playing melodies that involved large vertical shifts and /or the upper registers of the instrument. Post-intervention, my tendency to become ‘tongue tied’ with the bow at fast tempos, run out of bow, or get bow strokes reversed, appeared to happen significantly less.

I also appeared to experience less overall physical Tension, resulting from changes in posture. The result of this appears to have mobilised many of the aforementioned aspects including observations detailed in Shifting, Register, and Technical Critiques. Based on the connection between mental and physical tension detailed in the PSOP, I suggest that this relaxed physical state led to a more relaxed mental state, which may also impact the conception of my ideas.

Post-intervention I observed improved dexterity playing at faster Tempos. I posit that these improvements may be connected to my decreased physical tension, which aided in thinking at fast tempos. This improved dexterity and more relaxed mental approach appears to have influenced me to play using more shifts and a more diverse register. The prevalence of melodic material harnessing my improved dexterity suggests that my technical developments had fundamentally impacted the structure of my ideas.

## Conclusion

This article set out to explore the impacts of instrumental technique on creative process through the development of a new practice-led, autoethnographic methodology. By mapping out my period of technical transition, informed by Joel Quarrington’s *The Canadian School of Double Bass*, I observed a number of instances where the confluence of established and newly introduced techniques resulted in transformations in my creative outputs. The prevalence of melodic material executed using techniques described in the CSDB, which were also inconsistent with the technical approach observed in the Practitioner-State-of-Play, suggests that these newly developed physical techniques had a significant impact on the melodic outputs of my performance. The most significant of these were related to changes in hand frame, increased fluency shifting, and an extended use of register, as well as decreased tension and greater

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<sup>87</sup> Hargreaves, ‘Generating Ideas in Jazz Improvisation,’ 359–62.

<sup>88</sup> See exercises detailed in Quarrington, *The Canadian School of Double Bass: Fourths Tuning Edition*, 17.



dexterity. My transformed technical approach affected what intervallic options were physically accessible to me on my instrument, and this change in access appears to have fundamentally impacted the conception and construction of my melodic ideas on a cognitive level. This new technical approach appears to be an addition to those observed in the PSOP. Post-intervention I can still be observed using three-note chromatic cells and binary fingering spanning a tone; however, my previous approach has now been extended by these new technical developments, augmenting the melodic options accessible to me on the bass. Likewise, my increased fluency at vertical shifting did not replace *all* horizontal playing; rather, both approaches could be applied contextually with the effect of resituating my hand to different areas on the fingerboard, influencing the development of subsequent ideas.

This practice-led approach has highlighted specific relationships between technical and creative processes in my practice, supporting theories of embodiment that suggest 'the body, the brain, and the mind must be understood as one system,' and that 'musical knowledge is not grounded in bodies alone, but in an interplay of techniques and technologies.'<sup>89</sup> Further suggested research may include repurposing my proposed methodology to explore the impact of other technical methods for any instrument, both in improvised and non-improvised contexts. This repurposing could extend beyond the realms of technical methods or even music, allowing a variety of interventions to be used to explore various facets of creative practice in visual art, creative writing, dance, or theatre.

#### **About the Author**

Samuel Dobson is a Sydney based double bassist, improviser, and composer. He attained both honours and master's in jazz performance through the Sydney Conservatorium of Music. His current research interests include skill acquisition, improvisation, phenomenology, and creative process in performance.

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<sup>89</sup> Iyer, 'Improvisation, Action Understanding and Music,' 76; De Souza, *Music at Hand*, 2.