Finding Echo:
The Electric Violinist and Digital Delay

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Abstract

This dissertation examines the expressive environment in which musical effects, particularly those that are electronically generated (such as echo), are operated by the improvising composer, with a view to illuminating the role an electronic effect plays in contemporary musical performance. Stemming from the question of why I desire the effect of digital delay, this dissertation aims to assist in influencing future understanding and implementation of the digital delay pedal in music performance through a deeper appreciation for the phenomenon of echo that the digital delay pedal aims to imitate.
Declaration

This thesis comprises, to the best of my knowledge, only my own original work towards the Master of Music Performance (by Research) degree, except where due acknowledgement has been made in the text to all other material used.
Acknowledgements

I would firstly like to thank my family for their loving support year after year. I would also like to thank my supervisor, Geoff Hughes, my teacher and mentor, Peter Knight and my lecturer for her inspiration, Dr. Donna Coleman.
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Introduction

Echo. I want to deal with her. I want to define what she means to me so that I may use her properly. Rather than slathering her on in abundance, rather than flooding myself with broken reflections, as opposed to floundering around in a pool of imitations in which to drown myself, I want to locate her and control her. At present, she is nothing but my own disembodied sound and a conspicuous reminder that I will never have what I desire most: my own sound. Although Echo can bring my sound back to me, she also brings a certain transparency of the temporality of music performance.

Because of her, I am even more terrified of the abrupt silence that engulfs space when my bow is no longer touching the string.

(Journal Entry, August 2010)

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“Only the echo teaches our hearing the presence of absence and the absence of presence... we must ultimately let it go and let it be.”

(Levin 1989, p. 238).

In 2008, I wrote a minor thesis about distortion. I was interested in electronically derived distortion as an effect, achievable through the use of a distortion pedal specifically designed to imitate the sound of increased gain on an amplifier to a level that distorts sound.

As a contemporary electric violinist, my experience with the effect was limited, and therefore, an analysis of the work of other electric violinists and their use of distortion in both recording and performance contexts helped me develop a better understanding of how to use the effect in my own practice. However, in retrospect, the research undertaken did not necessarily improve my understanding of the phenomenon of distortion, rather it improved a practical approach to the effect in a reasonably stereotypical way, as such, my
implementation of the effect in live music performance continues to be underdeveloped.

Perhaps techniques for the successful implementation of electronic effects into live music performance can be developed and achieved through an exploration of the meaning of the effect – rather than solely the manner of operating the effect. This thesis suggests that a starting point for this research can be explored through both phenomenological inquiry and heuristic research. Due to my fascination with digital delay and the phenomenon of echo that it imitates, research into the meaning of echo (and not distortion) is the focus of this project. This dissertation examines the expressive environment in which the electronically generated effect of echo is operated by the improvising composer, with a view to illuminating the role echo plays in my contemporary musical performance. In the process, I hope to achieve a more discriminating artistic sensibility when approaching such electronic effects pedals in musical performance in the future. As such, this dissertation is a heuristic rather than theoretical project, exploring the way echo 'affects' my music in the moment of performing.

Primarily, this dissertation documents my rigorous search into the present meaning of echo in my performance of original contemporary and improvised music. This thesis stems from the question of why I desire the effect of digital delay and aims to influence my future understanding and implementation of the phenomenon of echo in music performance through the use of the digital delay pedal. At the beginning of the research process, it was especially clear that echo was highly desirable and used perhaps to overcome certain aspects of music performance that were subjectively undesirable, such as the abrupt silences that exist between phrases and the perceived lack of power and strength of the violin’s tone in comparison with the timbre of other instruments such as drums with which I regularly perform. However, in the process of writing this dissertation, it has been revealed that the relationship between the performing musician and the phenomenon of echo - as imitated by the digital delay pedal - is one of dependence that is arguably counterproductive to the development of a discerning attitude when approaching electronic effects. Therefore, this
dissertation presents the progression from desiring a phenomenon, to understanding the meaning of the phenomenon, leading to becoming more adept at incorporating the effect of the phenomenon into live music performance.

The research methodology employed in the preparation of this dissertation is primarily heuristic, referring at times to my own phenomenological writing about echo (italicized). A review of existing literature on echo and delay, as well as on spatiality and acoustics, broadens the scope of the topic of this dissertation. From here, further research can be conducted into the development of a pedagogy for the use of digital delay in contemporary music performance contexts.

Chapter Breakdown

Chapter 1 – A Brief Context – presents a brief description of the origin of the research question necessary for further exploration into the topic.


Chapter 3 – Desiring Echo – the phenomenon of echo as imitated by the digital delay pedal, an electronic device that can be incorporated into the performing musician’s practice, affects the performing musician in several ways. This chapter examines the impact of the effect on the developing relationship between external electronic device and performing musician.

Chapter 4 – Digital Delay in Music Performance – through a series of reflections on performance, certain factors influencing the way the performing musician might experience the impact of using digital delay were revealed. This chapter documents the experience of these reflections.

Chapter 5 – Echo Incarnate – deals with the idea of combining the theoretical research undertaken throughout this dissertation with the practical implementation of the digital delay and how the electronic device can co-exist with one’s instrument; bringing the phenomenon of echo into the digital delay.
- Chapter 1 -

A Brief Context

Before delving into the research conducted throughout the course of this project, it is perhaps necessary to present a brief context to the reader within which the findings (detailed in the conclusion) were explored. As a contemporary electric violinist – and indeed as a performing musician - there exists a blurring of sound worlds, stylistic influences, but also an amalgamation of approaches to the incorporation of modern technology (in this case electronic and digital technology) and the effects being produced. My sound world is influenced by the sounds and approach to music by artists such as Sigur Ros, Camille, Björk and Vampire Weekend; but also by Astor Piazzolla, Billie Holiday and Martin Hayes.

Live performances predominantly feature original compositions in the self-prescribed style of "art-pop". I accompany my own voice and lyrics with a myriad sounds of the violin as processed through various electronic effects pedals, all of which can be looped live using a BOSS RC-50 loop station while playing alongside a drummer. This project is called The Twoks. Aside from this project, I play live improvisations solo that are entirely instrumental which may or may not incorporate the live looping technology.

Listening critically and analysing live performances, as well as recordings of my own music, it became very obvious to me that I desired a sense of immersion to occur whereby my sound would surround me. In the case of studio recordings, Björk’s "Medúlla" and Camille's "Le Fil" fuelled a reaction to absorb similar extravagant use of overdubbing technology. That is, their own voices doubled and tripled as a way of exploring the variances and nuances of the different timbres that can be achieved using their one voice. I wanted to achieve this same effect using the violin as played through many effects and using different playing techniques such as bow articulations, tapping and...
striking the strings with different implements and so on. From here, a focus on reproducing this live using live looping technology commenced.

A defining moment in the assessment of my playing triggered this research project when upon being called to perform an impromptu live show, I discovered that I could not use the RC-50 (as I did not have it with me) but only effects pedals. It was empowering to enjoy both the performing experience and the analysis of the live recording. What became clear was the excessive use of the digital delay pedal to replace the RC-50 in order to create a similar immersion of sound. Was it possible to still create something aesthetically pleasing without the use of this effect? Could I ever strip my artistic tools back to a single violin? Perhaps an immersion of sound was inescapable.

I have chosen to explore the phenomenon of echo and its hold over me as a performer. This draws on my experience of both controlling and experiencing the effect in ‘real time' and will refer to the philosophies and ideas that have shaped our ideas about echo and the way it affects our perceptions.
What is Echo?

Naturally occurring echo – hearing one’s own voice ‘emanating’ from a chasm or cliff . . . remains a deeply intriguing effect: that which is manifestly not the self seems to reproduce the sounds we make, or may even address us with our own voice. Atavistically, the phenomenon suggests that the world is animist: the non-human possesses human characteristics, it ‘talks.’ Echo suggests at once the possibility of a deep, extended reciprocity between the self and the world, just as it indicates a total imprisonment in selfhood. (Doyle 2004, 32)

Echo, fundamentally, is sound repeated, reverberations delayed and extended so that perceptions of space are altered and expanded. It is an effect determined by environment that is fascinating, as Doyle suggests, because of its ability to repeat a sound without being that sound. This dissertation proposes that echo can be experienced not only as sound repeated, but as sound imitated, where imitation is “not merely a repetition, a copy, but knowledge of the essence” (Dixon 2006, p. 22). From here, a deeper understanding of the meaning of echo will emerge so that the phenomenon of echo can be more accurately imitated by the digital delay in music performance. This chapter in particular aims to illuminate the essence of echo as fundamental in approaching the effect in music performance.

Echo and The Original Sound

What, in essence, is echo? An echo is distinguishable from what shall be described as the ‘original sound.’ The original sound is the initial and first creation of a sound, whereas the echo is the imitation – through non-exact repetition of that sound. Arguably, echo thrives when its relationship with the original sound is particularly delayed. That is, a sound occurs, and its echo
follows several moments later. In this instance, echo occurs independent of the original sound despite sharing similarities in gestural shape, timbre and pitch. Echo, in this context, is conspicuous and asserts its presence in response to the original sound. It is familiar, it has been heard before, and yet it is not the same. This phenomenon is not dissimilar to that of the shadow, which can often share no likeness to the object to which it belongs, challenging the idea that it belongs to an object at all. Depending on the directness of the light source, the shadow can be weightless, colourless, and misshapen when compared to the object and moves differently to the object. Echo, when particularly delayed, occupies its own acoustic space independently of the original sound. In contrast however, if the echo’s delay is relatively short, it might seemingly belong to and be dependent on the original sound, whereby the echo functions more like the phenomenon of reverb. In this instance, an echo might be compared to a reflection in a pane of glass whereby the two appear the same although a distance apart. Doyle’s article on the use of reverb and echo (as distinguishable from one another) in the recording studio delves into the use of such effects in film soundtracks, suggesting that they function as catalysts for the synthesis of visual binaries not unlike a reflection or a shadow and their ability to function both independently of the original object as well as dependently:

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-Zones between day and night – twilight rather than full night or day, implicitly hypnagogic rather than fully conscious or unconscious, the lighting is dim rather than simply light or dark, the ambience is changing rather than static. Night or day may be characterised as long – a seemingly interminable torment – but twilight is fleeting, teasingly transient. Rather than being a trope which implied stability or closure, this recorded spatiality in its very constitution implied an ephemeral, momentary state, arising out of a subtle dialectic between shifting sonic and visual signifiers. (Doyle 2004, p. 36-37)

Echo, despite its ability to alter perception of space and nearness, as well as its power to prolong the life of sound, is dependent on an original sound source to exist. It is arguable therefore whether echo retains any identity exclusive to itself. Echo, a character in Ovid’s Metarmorphosis (Ovid 2004) is forced to suffer a similar fate. She speaks only by imitating the words of Narcissus, and thus, her very existence depends upon him. However, while echo must lie
dormant waiting for an original sound, once the original sound is produced, echo
takes on a life of its own independent of both the original sound and the creator
of the original sound, existing as if it could potentially be controlled by itself and
by its environment. For example, an echo may be quieter, less articulated, and
sound from a different direction altogether than its original sound. Ovid
illustrates this imitation as a form of non-exact repetition when his Echo repeats
only the last few words of Narcissus’s speech to slightly alter their meaning:

Often she [Echo] wanted to come on to him, accost him with endearments, tender
prayers – but her nature won’t permit such forwardness: advances are denied her,
though she may repeat, in her own voice, a sound she hears. That day he
[Narcissus] was cut off from his companions, and called out, ‘Anyone here?’ . . .
‘Here!’ answered Echo. (Ovid 2004, p. 105)

Ovid’s Echo must repeat what she hears. However, she has the freedom to do so
with her own voice. Consequently, she can not only repeat but also imitate the
words that she hears. Similarly, in music performance, echo repeats an original
sound producing a new sound. It is a sound that, although heard before in a
similar form, is perceived differently because it occurs at a different stage during
the performance when compared with the original sound. Echo, in this light, is a
sonic event unto itself and therefore demands a different approach when
compared to the original sound (if it can be approached at all). If echo is an
event unto itself, it is separable and distinguishable from the original sound. If an
echo is distinguishable from the original sound – but is still derived from the
original sound – then a form of disembodiment has taken place.

Disembodiment

The son is born from his mother, but once the umbilical cord is cut, he is no
longer a physical extension of his mother’s body. Ovid alluded to the
disembodiment between echo and the original sound when describing Echo as
one who turns to stone leaving only her voice behind, demonstrating, as Jacques
Derrida says, the “structural possibility of being severed from [the] . . . alleged
‘production’ or origin [and becoming a] nonpresent remaining” (Spivak 1993, p.
Dixon describes the experience of such disembodiment from the perspective of the performing musician:

We recognize that the reverberant characteristics of musical instruments and the acoustically active spaces we play in give independent life and presence to the sound they make. Depress the sustaining pedal and the decaying sound of the piano suddenly belongs to itself and exists outside of us: we hear the recession of the impetuous that was once ours; the acoustic of the hall carries off ‘our’ sound into the distance. At this moment, instruments cease to be extensions of our bodies, they have a being that stands up to us and flees from us. Their sounding is their own. Here we experience the reality of sound and the physicality of the instrument as a reality that surpasses us. (Dixon 2006, p. 21)

Dixon describes this disembodiment as the experience of the reality of sound. It is realistic to acknowledge that sound will die away eventually and that sound must be let go – such is the nature of music performance in which ephemerality defines “how performance ceases to be at the same moment as it becomes” (Reason 2006, p. 1). Sound as ephemeral is untouchable and ungraspable, and passes as “an audience watches . . . yet at the same time as it disappears . . . also endures” (Reason 2006, p. 1). Although echo can artificially prolong the life of sound, thus extending the ephemeral nature of music performance, an echo also emphasizes the disembodiment of sound – of our sound no longer belonging to us. In a sense, echo prolongs the inevitable, separating the sound from its sound source and altering the perception of nearness. The ramifications of such disembodiment are complex. David Levin elaborates:

Where does the echo go? Where does it take us? It carries us back, metaphorically, into the song of the elemental silence; it carries us back into the primordial ecstasy of sound itself: the interplay of silence and melodiousness where the empty sounds of metaphysics gradually die out in the self-concealment of Being. And there, in that dimension where it sounds the depths of Being and reaches into the abyss beyond sounds and silences, it leaves us behind . . . [echo] goes into hiding . . . we must ultimately let it go and let it be. (Levin 1989, p. 238)
This chapter has suggested some possible ways to consider echo as a phenomenon. The next chapter will discuss the desire of echo from the perspective of the performing musician.
Chapter 3

Desiring Echo

Lacan states, “I am unable to see myself from the place where the Other is looking at me” (Phelan 1993, p. 15). In the same way, the performing musician is unable to hear herself from the place where the Other is looking at her, where the Other is the audience member. Dixon states:

When I place myself in a sonic landscape, be it actual or virtual, I experience sound as somehow bereft, belated, perhaps tragic. Even as I respond and play with my own echo, I recognize a difference from myself, a disembodiment, a loss. (Dixon 2006, p. 25)

The listener or audience member experiences echo in several ways. Beranek suggests that “longer reverberation adds both fullness of tone and loudness and gives the listeners a sense of being enveloped by the sound” (Beranek 1992, p. 26). This enveloping experience is most noticeable, and indeed exclusive, in the case of the shorter echo example, where echoes sound simultaneously with original sounds, producing the fullness of tone that Beranek describes. In this context, the echo functions more like extended reverberation – a phenomenon that can also be imitated by venue construction or electronic manipulation of sound signals by way of a ‘reverb’ pedal. This fullness of tone that Baranek describes, however, is a fabrication – an imitation – of full tone. Rather than being one rounded, singing, full sound, many small, thin sounds clinging together to sound like one rounded, full sound are experienced. Just as “the actor imitates the madness of Hamlet . . . [but] is not actually mad” (Dixon 2006, p. 22), the echoes imitate the fullness of tone without being a full-sounding tone. In essence, the listeners perceive something that is not real. Acousticians design performance spaces to make sound fuller and rounder, more powerful, and therefore more demanding of audience appreciation; audience members are subjected to the experience of being seated in rows often beneath a huge dome.
or ceiling throughout which sound is free to circulate above the audience’s heads – unreachable, untouchable, heavenly. Just as the listener might feel enveloped by the fullness of tone fabricated by the effect of short echoes, so to does the performer feel enveloped by the fullness of her own sound. My desire for echo begins with its ability to fabricate such enveloping.

The experience of one’s own sound after the event has taken place is intriguing, because during a music performance, the performer hears the creating of sound while the listener (the audience member, the Other) perceives the creation of sound. Echo, however, can alter what the musician hears during performance because of its ability to return one’s sound to her. For example, the musician plays a note – the original sound – and echo imitates the sound while emanating from a different direction. Therefore, the performer temporarily occupies the role of the audience member (the Other) and hears herself from the sonic space in which the Other hears her. All the while, the performer continues to add new original sounds to the texture. This experience of one’s sound occurring after the original sound has been produced, demonstrates the reciprocity allowed by the phenomenon of echo as suggested by Doyle at the beginning of the previous chapter. The musician and her relationship with her sound change when echo is introduced; suddenly she is both performer and audience member – both Self and Other. According to Robert A. Johnson, Carl Jung suggested that “the human psyche strives always toward wholeness, strives to complete itself” (Johnson 1984, p. 3). However, in order to complete such a “chaotic mess of conflicting desires, values, ideals and possibilities . . . pulling us in many directions at once” (Johnson 1984, p. 19), he suggests that human beings believe that we must fall in love: “when we are ‘in love’ we believe we have found the ultimate meaning of life, revealed in another human being. We feel we are finally completed, that we have found the missing parts of ourselves” (Johnson 1984, p. xii). Perhaps the performer, desiring the experience of hearing her own sound, engages in a narcissistic, loving relationship with her own sound in order to feel a sense of being complete or whole. That is, the performing musician longs to be enveloped by her sound, not unlike the way in which Narcissus longed to have the reflection of himself that stared up at him from the pool of
water. Without a reflection of oneself, one’s image is unknown. Peggy Phelan explores this notion and states:

Identity is perceptible only through a relation to an other – which is to say, it is a form of both resisting and claiming the other, declaring the boundary where the self diverges from and merges with the other. In that declaration of identity and identification, there is always loss, the loss of not-being the other and yet remaining dependent on that other for self-seeing, self-being. (Phelan 1993, p. 13)

In the same way, the performing musician may experience her own sound from afar. Echo returns the original sound to its creator from a different direction while seeking her own audible reflection, reminding the musician that she is performing and listening in a multi-directional way.

More than anything I desire my own sound. I want to hear the sounds that I make because they are like tiny fragments of myself that I let go when I perform. I want them to come back to me, to make me feel whole and complete again. In essence, I perform and I lose myself.

(Journal Entry, May 2010)

I like what I look at, but what I look at and like I can’t locate…my pain is even greater, for no ocean lies between us, nor some highway without end, nor mountain range to cross, nor gates to scale: only this shallow pool. (Ovid 2004)

The similarity of content in the above excerpts validates speculation about the idea of the performing musician as narcissist. The second excerpt is spoken by Narcissus. Echo cannot exist without Narcissus and vice versa; thus, comparisons between the myth of Echo and Narcissus and the notion of performing musician as narcissist imitating the phenomenon of echo are apt. As Johnson states:
Myths are rich sources of psychological insight. Great literature, as all great art, records and portrays the human condition with indelible accuracy... a myth may be a fantasy; it may be a product of the imagination, but it is nonetheless true and real. It depicts levels of reality that include the outer rational world as well as the less understood inner world within the psyche of each individual. (Johnson 1976, p. 1-2)

The tale of Narcissus is commonly referenced, especially in the field of psychoanalysis referring to Freud’s Narcissistic Personality Disorder among others. The widespread assumption that narcissism is a condition of the self-absorbed personality type is perhaps only part of the story, in that narcissism may also be described as a tragic state of helplessness in which one cannot have what one greatly desires. Genuine aesthetic pain and frustration can attend the performer’s sense of being excluded from her desired sound. What is the point of performing if I cannot enjoy it? Continuing this line of questioning would lead to more overwhelming questions such as, What is the purpose of music? Whom is it for? and other related topics of inquiry beyond the scope of this research project. As such, this dissertation remains concerned with the premise that although performance can be for an audience, the performing musician, in order to continue to create aesthetically pleasing music, must also find joy in music-making and performing.

The performing musician, having spent a considerable amount of time reasoning with individual instrumental design and playing technique to coincide with a personal aesthetic disposition born from a form of desire (Echard 2006, p. 12), is ironically situated in the least musically satisfying position when performing. If one’s sound has been carefully crafted based on what is specifically desired, then it follows that one should wish to hear this resulting sound. Due to the inability of the musician to simultaneously perform for and be an audience member however, hearing and experiencing one's own sound from this perspective is difficult. Where the performing musician is unable to experience sound from the audience’s perspective, she can assert a certain intimacy with sound that the audience member cannot - such as the feel of the vibration of sound through one's own instrument. This thesis however, is concerned primarily with the hearing back of one's sound as an echo. This
particular version of the performer's sound cannot be felt as the vibration caused by creating the sound as the performer did not create it, rather the digital delay pedal is controlling it through the distanced medium of an amplifier. Perhaps further practical research could involve a study in which the performing musician experiments with ways in which one can engage with echo in a more tactile sense.

Referring again to Narcissus, what he desired most and what he found most aesthetically pleasing was impossible to obtain without reflection; an echo is also a form of reflection, bringing the exterior sound world to the interior world of the individual. Here, the parallels can be drawn between Narcissus and the performing musician. Realising that it was his own reflection that he longed for, Narcissus cried, “I am that . . . I now know my image . . . I have what I desire. Strange prayer for a lover, I would that what I love were absent . . . Death is not serious for me for in death I will leave my sorrow” (Ovid 2004, p. 109). Spivak suggests that it is the “knowledge of the division in identity that kills and inscribes him [Narcissus] in nature” (Spivak 1993, 24). Similarly, the performing musician, upon realizing that she cannot hear her own sound except as a reflection (and as such, never truly have her sound), becomes aware of such division in identity whereby one’s own sound is disembodied from the self, and as Narcissus suggests, the performing musician may have to accept that she is “the last step before disappearance” (Ovid 2004, p. 24).

Is a narcissistic relationship with one’s own sound unnecessary or unhealthy? Copious amounts of research have been undertaken into the relationship between musician and instrument; indeed, William Echard suggests that “a musician, as musician, cannot pre-exist her or his instruments, but becomes and remains a musician only through a long relationship with them” (Echard 2006, p. 13). However, Echard continues by recognizing the importance of maintaining an awareness of the differences between musician and instrument, describing the relationship as an example of a “disjunctive synthesis: the combination of divergent entities into a whole that does not erase their difference” (Echard 2006, p. 13). Naomi Cumming offers a more nostalgic description of such a relationship, suggesting that “the violin had the potential to become the voice I
lacked” (Cumming 2000, p. 3). Such descriptions allude to the relationship between performer and instrument, but not necessarily to the relationship between performer and sounds created (in this instance, the *music*). Perhaps performer (body), instrument and music (sound) co-exist in an intertwining relationship, forming yet another disjunctive synthesis as described above. Echard explains:

A body can be subject to instruments and to music: transformed over long years if practiced to a state of proficient compliance. Or, an instrument can be subject to music and to bodies: designed, refined and produced to satisfy aesthetic and biomechanical specifications. Or, both can be subject to music, and vice versa. The becomings of all three are entwined yet distinct. They cooperate and struggle, diverge and converge. (Echard 2006, p. 7)

A relationship develops between the performing musician and her instrument and the music she creates using that instrument, and as Franziska Schroeder suggests, “the body becomes transferred onto the instrument” (Schroeder 2006, p. 132). Consequently, a narcissistic relationship develops not only between performer and music, but also performer and instrument, as both can exist as one and the same.

**Fabrication of Space**

An effect such as digital delay – a device constructed to imitate the phenomenon of echo – ensures that one possesses the power to fabricate space in music performance. It is this possession of power – albeit artificial, assisted, and temporary – that perpetuates the increasing desire for digital delay, for without it, the control over perceived spatiality diminishes back into reality.

*Between the notes there exists a deadening silence. For a moment, there is nothing but the death of what had previously been alive. Echo and reverb, due to their ability to blur one sound into another by artificially prolonging the life of both sounds, diminishes the volume of the noise of death.*

*I place my hope in Echo. I hope that she will bring my fragmented self back to me.*

(Journal Entry July, 2010)
For the performing musician, echo offers spatial power not without restraints. These restraints include the dependence of the echo(es) on an original sound, the location of the performer in respect to the original sound and its echo(es), as well as the inability to sustain control over a sound once it begins its decay and is repeated as an echo. However, the power to sustain sonic gestures supersedes these restraints initially, mainly due to the fear of abrupt silences between notes or phrases. The performing musician is aware of silence between phrases. Indeed, these silences are necessary to separate musical ideas, distinguishing one phrase from the next and allowing the music to breathe. However, these silences can also be deadening:

If I am to stand on stage, violin in hand, while all around me the evidence of worth is represented by sound, how can I play nothing? How can I rest, how can I play death? How can I be silence when silence lacks any significant shape or gesture? I play the violin, therefore I need no rest, I am the machine that can go on and on, spitting out note after note, idea after idea.

(Journal Entry, September 2009)

Echo is the compromise. The performing musician gestures the end of a phrase and prepares for silence, while the decaying phrase continues as echoes, blurring the end of an audible gesture with the beginning of a silent one. The performing musician experiences echo’s ability to assume control over the original sound. However, this experience can prove to be both useful and a hindrance. The latter can occur when a sound is repeated more than is desired or at an inappropriate point in the performance such as at an abrupt ending of an entire piece. If one were performing using naturally occurring echo, this hindrance would be unavoidable. The digital delay pedal, in contrast, ensures that the performing musician is able to assume relatively complete control over the effect, such as the ability to manipulate the frequency with which the original sound is repeated as well as the ability to turn the effect off altogether. This control is limited to the extent that the manipulation of such parameters must occur before the effect is used, for once the echo(es) sound, the performing musician submits control to the nature of the effect. Echo must be allowed to imitate sound using its own voice.
Immersion

Fear of abrupt silence is not the sole source of the desire for echo. Once a note or a sound is released into audible space, the sonic gesture is transformed into audience perception. Although the performing musician creates this gesture, it is the audience that receives it. In essence, the musician, during performance, creates sound to be given away or let go. Echo, with its ability to fabricate the directionality of nearness, can alter the experience from the perspective of the performer so that a sonic gesture, once created, is both transformed into audience perception as well as performer perception. Arguably, the performer perceives the sonic gesture as she creates it, but this experience is affected by certain factors. In the case of the electric violinist, for example, the creation of a sonic gesture embraces 1) the sound of the acoustic instrument within close proximity to the ear; 2) the sound of the instrument amplified and emanating from the fold-back speaker; and 3) the sound of the amplified instrument as it emanates from the front-of-house public address system. All occur simultaneously while the performer attends to the technical execution of a certain phrase or note. Echo can bring sound closer to the creator of the sound, allowing for a nearness of one’s sound and a sense of being enveloped by one’s sound. Dixon describes this experience of sound being brought back or returned to the performer by echo:

Through a microphone, I make a sound and I listen for the response. A sense of the playful arises because what I give is returned to me: my action has a response—a repetition. (Dixon 2006, p. 20)

Dixon continues by suggesting that this sense of playing with one’s own sound poses a few problems:

Do I wait for the sounds to subside or go again with another sound? And which sound? I quickly notice that whatever I do will tirelessly be thrown back at me and this causes me to consider extremely carefully what it is that I should submit to the patch… I am also aware that this coordination can go awry; rhythmically I can make a false move and the patch will only draw attention to my mistake. (Dixon 2006, p. 21)
Questioning one’s response to an effect is important when approaching the musical operation of an effect such as digital delay. However, this emphasis on echo as a phenomenon that occurs after a sonic event may reflect a lack of understanding of the meaning of echo before the effect is used in a music performance. Up to this point in the discussion, echo has been considered as dependent on an original sound and desired because of its power to prolong the decay of the sound after the event. However, the performing musician has little control over the echo(es) once they have sounded. How does the performing musician approach the phenomenon of echo, as imitated by the digital delay pedal, for example, knowing that the effect is both reliant on the creation of sound and independent of that sound simultaneously? In essence, the way sound returns to the performer is, to a certain extent, uncontrollable by the performer. In order to understand the essence of echo in music performance, an understanding of ways to prepare for echo is as important as how to respond to echo. The next chapter examines in more detail an experiential approach to the incorporation of the digital delay pedal, based on the issues that have been illuminated in the above two chapters.
In music performance, echo prolongs the decay of sonic gestures while allowing new sonic gestures to be created simultaneously. Echo functions in the same sound world as reverb – a highly desired phenomenon in the construction of the earliest great cathedrals – where both phenomena operate as reflected sound with the potential to “determine [the] perception and directionality of nearness” (Doyle 2004, p. 31). However, the audible experience of the two effects can be distinguished. Reverb ensures that the reflections of sound “are so many and so close together that no single discontinuous repeat of the source sound is heard” (Doyle 2004, p. 31). Whereas echo, although possessing the power to artificially prolong the life of decaying sound, repeats the discontinuity of sound resulting in the experience of sound as disembodied from itself, not unlike the shadow as disembodied from its image. This discontinuity is regarded as a “major fault” by acousticians, and therefore it is reverb, and not echo, that remains desirable when designing spaces suitable for musical performances (Beranek 1992, p. 28). Yet, a device such as the digital delay pedal was constructed for performing musicians to imitate this major fault, suggesting both its usability as an effect and the fascination with the phenomenon of echo. This chapter focuses on digital delay and the relationship it has with the phenomenon of naturally occurring echo with the view to establishing what the effect is and why the performing musician desires its incorporation into music performance practice.

Preparing for Echo

Preparation for incorporation of the effect of echo in music performance begins when one acknowledges that echo occurs after the event. Therefore, the performing musician prepares for post-creation of sound. The first, striking
difference between preparing to create a specific sound in music performance using a violin and when using the digital delay, is the way in which the body interacts with the instrument or with the machine. The violinist can create a specific sound by operating the instrument with the fingers of the left hand and the bow with the right hand (and by the fingers of the right hand in the case of pizzicato effects). Both hands work together to create certain timbral inflections as desired by the performing musician. Simultaneous operation of the digital delay and the violin, by contrast, requires the involvement of the feet and toes as well as the fingers and arms. The digital delay is constructed to be used in this way; indeed, the device is called the digital delay pedal. If the BOSS Giga Delay Pedal is being used, the device is activated by pressing the left pedal, and the tempo at which the echoes occur are set by tapping the right pedal. Additionally, the type of echo can be manipulated by turning a knob using one’s toes. Digital delays come in many varieties, all with similar functions enabling the musician to hear her instrument’s sound repeated for a desired length of time, with the option to manipulate the echo further by adjusting the settings on the particular pedal. These effects can include an analogue or digital sounding echo, a reverse echo, a smooth or plain echo, and in some instances, the echo can rise and fall in pitch, which is commonly referred to as the “twist” function. Usually, the echo can be manipulated in terms of the length of time between the original sound and the echo as well as how long the echo(es) will continue to repeat (and die away eventually). The latter manipulation can be referred to as the feedback setting.

Echo and reverb digital effects have been used in concert settings and in recording studios since the 1950s. Attempts to capture the acoustics of different reverberant spaces in recordings began as early as the mid-1920s, simultaneously with the move towards electronic recording processes (Doyle 2004, p. 30). The move to electronic recording processes meant that “a real sense of spatial depth became possible... Small, varying degrees of reverberation ‘attached’ to separate voices imparted a sense of actual dimensionality, a sense of life-like roominess in recording. A listener might now apprehend a recording and simultaneously experience a sense of a physical space” (Doyle 2004, p. 33-34). Once the violinist decides to incorporate the electronic device into her music performance, and consequently her instrument
feedback loop – body, instrument, sounds, music – she must engage not only the violin and the bow, but also the electronic device, thus using all four limbs of her body to perform. It is perhaps important to acknowledge however, that the violinist already engages the violin and bow using her entire body.

The second difference between violin and electronic device is the preparation time involved in order to elicit the desired sound. The violin, when bowed or plucked, responds immediately. The digital delay pedal responds only after certain functions have been manually adjusted. Furthermore, the digital delay relies on the violin’s audible signal before it can affect sound. Added to this, the effect of the echo is not perceived until after the original sound has been performed, hence being an echo. This experience contrasts with the acoustic violinist’s previous focus on the simultaneous technical production and perception of the sound.

To prepare for the use of echo, the above two factors must be acknowledged. Once the violinist is aware of these differences to the usual practice of performing using a violin, she can begin responding to one’s echo.

**Responding to Echo**

As previously quoted by Dixon, many possible approaches are available to the performer when implementing the effect of echo. The most obvious choice for the performer is whether to let the echoes exist by themselves, or to create polyphonic textures by continuing to play over the top of each echo. Depending on the aesthetic desire of the musician, responses to echo fluctuate. One might choose to let the echoes sound, as if the digital delay pedal were an instrument that one plays in which no further operation is necessary once the echoes sound. Alternatively, the digital delay pedal may be used for the freedom it allows the musician to perform with echoes of the Self, in imitation of the experience and sound that results when performing with Others. The reality of sound has been stretched to include the imitation of sounds by other sounds, and this has a profound effect on not only the audience’s experience of music performance but also on the performer. Indeed, echo allows the artificial prolongation of the life
of sound as well as the alteration and manipulation of sound, as if sound in its purest form is not enough. Artificially induced echo as a phenomenon is perhaps kin to that of sound recording, both determined to prolong an otherwise momentary, ephemeral event, as Phelan describes:

> Performance’s only life is in the present. Performance cannot be saved, recorded, documented, or otherwise participate in the circulation of representations of representations: once it does so, it becomes something other than performance... Performance’s being... becomes itself through disappearance. (Phelan 1993, p. 146)

Echo, specifically when it occurs as imitated or fabricated echo, arguably transforms performance into something other than performance. However, perhaps a device such as the digital delay pedal – capable of imitating and fabricating the phenomenon of echo – can be included in the entwining chain of body, subject and music and therefore adopt the same ephemeral characteristics of performance to performance. In order to better understand the meaning of echo in my own music performance and to explore the relationship I have as, the performing musician, with both my instrument and its extensions – such as the digital delay – specific experiments were conducted throughout the course of this research project. The remainder of this chapter will discuss these experiments in technical detail with the aim to suggest possible solutions to the issues already raised about the digital delay pedal’s role in artistic practice and aesthetic design.

**Reflections on Experience**

During live music performances, where previously I had used the digital delay pedal excessively, I began to turn the pedal off entirely or intermittently to experience my echo-less sound. This experimentation revealed several things about my desire for echo such as where this desire stemmed from and how the effect functioned in my performance. What follows is the documentation of the experience of an echo-less performance as a way towards understanding the experience of and desire for an echo-full performance.
The performing musician cannot know what the audience member hears during a music performance. Therefore, what the musician practices for performance is based on what the musician herself desires from her own sound. In the beginning stages of learning to play an instrument, the desired sound is projected by the teacher. However, as technical proficiency develops, the desired sound is projected by the performer, and the instrument becomes a metaphoric imitation of one’s own voice. The experience of that sound differs between performer and listener, as the experience of one’s speaking voice differs between speaker and listener. This difference is especially noticeable to the electric violinist, who, in order to achieve an aesthetically pleasing tone, might use a semi-acoustic violin that combines acoustic violin sound qualities with electronic instrument potential for amplification and application of other effects. The performer, with the instrument placed extremely close to the ear, hears the acoustic sound of the instrument as well as the electronic signal as it emanates from the amplifier. In comparison, the audience member can detect only the amplified sound (depending on how close the audience member is to the performer). For the performing musician, this experience of hearing two different versions of the same instrument can pose problems. For the electric violinist using a semi-acoustic instrument, the acoustic sound of the violin is within very close proximity to the left ear. Depending on the stage set-up, the amplified sound of the violin can be closer to the right ear if the amplifier is positioned to the performer’s right. Consequently, the performer experiences a bombardment of two different conflicting versions of the one sound. The sound of the acoustic instrument can be harsh, thin, and aesthetically displeasing, which is particularly frustrating to the performer who has invested time in pursuit of the most desirable tone achievable when such an instrument is amplified. She is then forced to listen to this particularly undesirable acoustic sound while listening for the amplified sound, which is spatially further away from her.

The phenomenon of echo can help to resolve the frustration of hearing two vastly different sounds simultaneously. When performing, I struggle to hear the sound that I am creating because the acoustic sound of the violin seems to cancel out the sound of the amplified violin. The conflict of two different sounds, rather than being aurally overwhelming, becomes insufficient. In the process of
listening for the amplified sound, I attempt to ignore the acoustic sound. The digital delay provides the performer with a delayed fold-back of the amplified sound, which, because it occurs after the event has taken place, is uncluttered by the acoustic sound of the instrument. The digital delay blurs the two different sounds together, acting as a reinforcement of the original sound and simultaneously allowing the performer the opportunity to hear what has just been created. In essence, the performer is engaging with the sound of the performance after the performance of the sound has taken place.

Echo, as a resolution for inadequate fold-back, is predominantly of concern to the performer, as the audience does not necessarily hear this conflict. The performer can experience this conflict only at a secondary level by listening to a recording of the performance to assess whether the effect of echo has been used in an aesthetically successful way. This technique was employed during the course of this research project; I recorded performances in which the digital delay was used extensively. I made notes about the performance prior to listening to the recordings, and although I usually noted that I had enjoyed the performance while performing it, upon hearing the recording, I determined that the use of digital delay was excessive and resulted in a lack of clarity. This realisation was confronting, as it suggested that the experience of performance and the sound of the performance differ significantly. I began to question whether one experience was more important than the other and whether I had to sacrifice my own pleasure in performance to satisfy that of the listener.

To experiment with differing degrees of echo in performance, I tried performing without using the digital delay. I discovered that I could only play an entire piece without the effect of echo if certain environmental factors were adequate, including: the accompanying instrumentalists’ dynamic volume and the place of my violin’s dynamic level within that spectrum; the amount of noise surrounding the performance such as sounds made by the audience and extraneous noises associated with the performance venue; and the material being performed. If the sound of the accompanying instruments in the ensemble setting seemed to be too loud in comparison with that of my violin, my experience of the performance would only be enjoyable if the digital delay was employed. In this sense, the
digital delay acted as reinforcement of my original sound so that the sound emanating from the instrument sounded bigger than actual, fabricating the spatial capabilities of the violin’s tonal capacity to project over the top of instruments such as drums or electric bass. Extraneous noises from an audience or venue tend to be heightened when performance is taking place in a venue other than a concert hall or other performance space not necessarily designed specifically for music performance, including a licensed bar or hotel. In this context, listening to a music performance is optional from the perspective of the ‘audience’ (loosely defined), allowing audience members the opportunity to listen, socialize, drink, and talk simultaneously and at one’s leisure. In this environment, I discovered that my use of the digital delay increased when compared to a performance in a venue where audiences were silent for the duration of the performance. This observation was particularly interesting, as prior to this realisation, I had hypothesised that a fear of silence was the driving force behind the incessant desire for the phenomenon of echo in my music performance. In the concert hall environment however, I observed that I could perform without the use of the digital delay pedal for an entire piece of music and that I enjoyed the experience of the abrupt silences that fell between each sound I made. I did not need echo when I was surrounded by enough space and enough silence to really hear what I was playing.

When performing in an ensemble context without echo, it was observed that although the digital delay was not used, a loop station was used more often than usual. A loop station is an electronic device that allows the performer to perform a particular phrase that is then recorded and played back repeatedly while allowing for new phrases to be recorded and overdubbed. Arguably, the loop station offers the performing musician a different type of echo, one that never dies away. In a sense, the performer is still drawn to echo and to the repetition of her sound. Reflecting on solo performances – a context whereby competition between dynamic volume between other instrumentalists. It was discovered that in this context, I could play an entire piece without digital delay or loop station and still enjoyed the performance. If, however, at any point during a piece I implemented the use of the digital delay, the remainder of the piece would be similarly affected. Essentially, once digital delay was employed, it remained in
use for the entire piece. Echo, used in this way, functions like an addiction whereby it is desired increasingly once it has been experienced.

It was hypothesized that in order to use the digital delay more effectively and with a more discerning approach in music performance – so as to create an aesthetically pleasing sounding performance for performer and listener alike – the experience of performing and the sound of the performance needed to resemble one another more accurately. Attempts to explore repositioning of amplifiers did not completely solve the problem, nor did better quality fold-back speakers and equalization. However, one possible solution to this issue (although not yet carried out due to both the expense involved and the fact that the idea arose during the writing stages of this thesis) is to employ the use of in-ear monitoring device, which would allow for careful and precise equalizing to match fold-back with front-of-house sound as well as removing the distraction of having the acoustic sound of the instrument within such close proximity of the performer’s ear, however, a possible potential problem includes the inability to hear other instrumentalists in an ensemble context. It is my aim to experiment with this possible solution at a later date so that the effectiveness of in-ear monitoring for the semi-acoustic violinist in an amplified music context, while employing the use of electronic effects such as digital delay, can be explored and documented.

This chapter examined the technical aspects of incorporating the digital delay into music performance posing possible technical solutions to specific problems arising from implementing an electronic device such as digital delay into performance. In order to delve deeper into the impact that the experience of echo has on the performing musician, the following chapter suggests that the relationship between digital delay and performing musician need not be so separate; and that by adopting a more organic and embodied relationship between performer and extension of instrument, the performer can incorporate the use of the digital delay and the phenomenon of echo that it imitates more successfully.
Ihde states that “praxis philosophies, broadly defined, are those which in some way make a theory of action primary. Theory of action precedes or grounds a theory of knowledge” (Ihde 1979, p. xv). This dissertation stemmed from the physical experience of incorporating digital delay and the phenomenon of echo into music performance. The desire for the implementation of the effect occurred after the action had already occurred. From here, the research undertaken to explore the meaning of echo became mostly theoretical. It was hypothesized that thinking of the phenomenon of echo in this way – from a theoretical perspective – would allow for a deeper understanding of the essence of the phenomenon. Despite encouraging a new curiosity and an increasingly discerning attitude towards the successful implementation of echo in music performance, a practical approach had not yet emerged. Where this dissertation attempted to separate digital delay from performing musician so that one can better understand the other, a certain disembodiment occurred. This chapter suggests a way forward with digital delay that involves re-connecting the digital delay with the violin and furthermore, with the performing musician, so that all aspects of music performance can exist as extensions of one another, where the phenomenon of echo can become an embodying experience as opposed to a disembodied one.

This dissertation has allowed for a certain praxis to emerge when approaching the digital delay pedal in music performance. Once a phenomenological inquiry into the phenomenon of echo was attempted, the ideas discovered began to be absorbed into practice and engaged with on a regular basis while performing. However, as documented in the previous chapter, despite developing a new and deeper understanding of the phenomenon of echo – and as such, the subtle meanings inherent in the digital delay pedal as a device imitating echo – theory and practice began to appear further removed from one another. Combining ideas with technical execution was still lacking. Therefore, I propose that in
order to develop an aesthetically successful approach to the digital delay pedal in music performance, one must engage with the device whereby one is the device, or in other words, an extension of the device, much like one’s relationship with the instrument. Don Ihde, in his book *Technics and Praxis*, questions what happens between humans and their machines. A digital delay pedal is arguably no more of a machine than the violin, however one must decide whether “machines [are] finally . . . the slaves which allow us [humanity] to develop a greater culture . . . [or] alienation and exploitation” (Ihde 1979, p. 3). Ihde uses the example of a piece of chalk, acknowledging its similarities to Merleau-Ponty’s Blind Man, suggesting that:

Firstly, I clearly do not . . . primarily experience the chalk as either thematic or object. Rather, what I experience is the blackboard and more precisely, a certain complex aspect of the blackboard’s presence as texture, hardness, resistance etc. I discern that I experience the blackboard through the chalk, the chalk being taken into my ‘self-experiencing’. By this I mean that the chalk is only secondarily an ‘object’, while more primarily it is absorbed into my experiencing as an extension of myself. (Ihde 1979, p. 7)

Ihde, in his book *Bodies in Technology*, also refers to Martin Heidegger’s Hammer stating that “the hardness – but not the coldness – of the nail is experienced through the hammer” (Ihde 2002, p. 7). I use my bow to touch the violin and consequently create sound. I do not directly make contact with the string while using the bow, hence the string is experienced through the bow. I have noted however, that the experience of plucking the string with my fingers to execute certain *pizzicato* passages does not elicit a different response – I feel no more or less connected to the instrument. As Echard states, “a musical instrument is a means to actualize music as sound . . . [where] instruments are items of technology” (Echard 2006, p. 11). In the same way, the digital delay pedal exists as an instrument available to the performer to actualize different manipulations of sounds. However, up until this point, I have noted that my experience with touching and operating the digital delay pedal is different to the experience of bowing or plucking the actual violin. I experience the manipulation of sound and the echoes of sounds I create through touching the device with my feet and toes. Schroeder suggests that “when thinking of ways in
which an instrumentalist engages with his or her instrument, the notion of extension seems to be of vital significance. One thinks of the performer, the voice and the instrument as existing as a dynamic whole, in which the instrument is understood as an extension of the body” (Schroeder 2006, p. 131). She then continues by giving an example of the wind player who begins with a breath following through to the production of sound through to the actualization of the sound. Schroeder refers to a ‘starting place’ for sound, and in the case of the wind player, it starts with the breath from below the diaphragm. However, as Thomas Porcello argues, “one’s way of experiencing a given musical work needs not – in practice, likely does not – begin with the first note and end with the last” (Porcello 1998, p. 485). Similarly, the process of creating sounds – and music – need not ‘start’ somewhere and finish with the actual sound. This phenomenon is especially noticeable for me when I incorporate the digital delay into my music practice. The preparation for incorporation of the digital delay effect in music performance occurs simultaneously with preparing to produce both effected and uneffected sounds on the violin. As already stated in previous chapters, the digital delay pedal allows for the performing musician to relinquish control of sound to the electronic device while creating different sounds simultaneously. As such, the gestures of creating sound overlap with one another, blurring the clarity of the sound creation process. Incorporation of the digital delay, therefore, begs for fluidity and ambiguity. There exists no beginning and no end of manipulation of the effect, rather ongoing consideration of the effect and the phenomenon of echo it aims to imitate. Essentially, the digital delay pedal, in order to be used successfully in live music performance, begs for a constantly developing intimate relationship between it and the performing musician. Schroeder argues that the instrument exists to give the performer a voice, and she refers to French anthropologist André Leroi-Gourhan and his term exteriorisation as “the idea of transferring our abilities to some kind of external support, of transferring a skill onto body capabilities . . . this in turn recalls ideas of body ‘extension’ and ‘prosthesis’ ” (Schroeder 2006, p. 132).

A recurring theme in articles exploring the relationship between performer and instrument – especially when the instruments referred to are electronic or digital
devices – involves the idea of a *prosthesis*, and many references are made to Donna Haraway’s *A Cyborg Manifesto* and her definition of the cyborg as “a hybrid of machine and organism” (Haraway 1991, p. 149). Haraway discusses the ambiguity of the machine-organism dualism stating that:

> Pre-cybernetic machines could be haunted; there was always the spectre of the ghost in the machine... Machines were not self-moving, self-designing, autonomous. They could not achieve man’s dream, only mock it... Now we are not so sure. Late twentieth-century machines have made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that used to apply to organisms and machines. Our machines are disturbingly lively, and we ourselves frighteningly inert. (Haraway 1991, p. 153)

The digital delay pedal – and indeed the acoustic or electric violin – are items of technology; machinery distinguishable from the mind and body. The performing musician develops a process whereby one’s instrument transcends its technological origins and lifeless form to become lively whereby the musician exists *through* one’s instrument. However, I refer once again to Echard’s “disjunctive synthesis”, in which acknowledgement of the differences between performer and instrument are as important as the two coming together to form a coherent whole. In essence, the performing musician strives towards an embodied experience of self, instrument, and sound to create subjective aesthetically pleasing music performance including the incorporation of an external electronic device such as the digital delay pedal. As Gascia Ouzounian concludes, quoting R. M. Shafer, “Then the whole body will become an ear, and all sounds will come to you, the known and the unknown, the sweet, the sad, and the urgent” (Ouzounian 2006, p. 69). Perhaps the digital delay pedal can become as naturally occurring as the phenomenon that it imitates, being independent and dependent simultaneously, stretching and bending sounds alongside the performing musician, becoming Echo:
The ungraspable, unreachable echo, gathering us into the region of its perishing, a ‘place of stillness’ which is also the Nothingness where it is finally gathered into the ‘ringing of stillness’ and absorbed by silence, is consonant with the truth . . . of Being. Only the echo teaches our hearing the presence of absence and the absence of presence. (Levin 1989, p. 238)

The digital delay pedal is both present and absent, like the performing musician who is “involved in giving shape to some indeterminate potential, but can only do so by relaxing their attachment to particular actualisations (including their own selves)” (Echard 2006, p. 11). I propose that one’s relationship with an electronic device such as the digital delay pedal needs to be both deeply reciprocal and independently relaxed. I feel the phenomenon of echo through the physical manipulation of the digital delay pedal using my feet and toes. Specifically, the BOSS Giga Delay Pedal is designed in such a way that manipulations of feedback for example (the number of echoes that can be heard post-original sound), can be manipulated through the turning of a knob. This gentle movement and the increasing and decreasing motion felt through turning the knob both clockwise and anti-clockwise, assists in the process of internalising the operation of the effect and consequently, considering the digital delay pedal as an extension of one’s practice and one’s musical and instrumental self.
In the beginning stages of research for this dissertation, I hypothesized that echo in my music performance assisted, rather than hindered, my aesthetic desire to be immersed in sound completely. That is, the phenomenon of echo, when imitated by the digital delay pedal, is an electronic effect possessing the potential to provide the performing musician with a sense of occupying both the role of an audience member and performer simultaneously. Documentation of the fascinating aspects of the phenomenon of echo assisted in the process of discovering possible reasons for my intense desire for this effect in my music performance, as well as revealing the aesthetic pain and conflict that arose from such unfulfilled desire. Echo, instead of diminishing the harshness of abrupt silences that can exist between sounds, emphasized my fear of silence, reminding me that although I was filling the silences, silence still existed. Furthermore, upon listening to recordings of my performances using the digital delay, echo had camouflaged the clarity and purity of the sound of my violin as opposed to reinforcing its sound. A complex and unresolved relationship with echo emerged. The question was no longer why I would choose to use echo *as much* as I do, rather why I would choose to use echo *at all*. Despite acknowledging echo’s negative impact on my practice, I continued to perform using the digital delay in the same way as previous, perpetuating the deep sense of conflict between the theoretical and the practical. That is, my thoughts about echo and how it should be used (theoretical) conflicted with my sense of enjoyment during a music performance (practical). In an attempt to resolve this conflict, I began to question which path I should follow, – the theoretical or the practical – and upon questioning, I realized that perhaps both paths could merge together to become one.

Consequently, this dissertation took on a new direction towards researching ideas about the relationship between performer and instrument, specifically
performer and electronic instrument or machine. I decided that although the
digital delay pedal existed as an external device – more external than the violin,
which rests under my chin and connects to parts of my body in more ways than
the digital delay pedal – I still connected with it so that it felt as close to me as
my violin and arguably, inseparable from myself or the violin. Similarly, my
thoretical research into the phenomenon of echo was also inseparable from the
practical aspects of incorporating the digital delay into performance. Echo had
become the desire, and the digital delay a means to execute the echo, and hence
satisfy the desire. The circle of sound is now complete.

My research has confirmed that echo remains deeply integral to my music
practice. It is a phenomenon that I will continue to explore and engage with on a
theoretical and practical level simultaneously. The reflections presented in the
third chapter will be combined with new ideas and reflections, so that I may
develop an increasingly more discerning attitude to the implementation of echo
effects in music performance. In essence, my journey with echo revealed the
“painful and destructive qualities of desire” (Calef 2009, p. 3) just as it revealed
my will to continue exploring its complexity: strength born out of desire.
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