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**Exploring the mediality of live and
studio composition: the case of
computer music, and its implications
in “Ambivalence of Density”**

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Western Australian Academy of Performing Arts

Edith Cowan University

Submitted in partial fulfilment of the Bachelor of Music Honours degree

2014

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Abstract

This dissertation attempts to apply the communications theory concept of “mediality,” as described by Jonathan Sterne, to the context of music composition for different mediums, namely the media of the live performance and the studio work (the recording, the concrete work). Mediality denotes the complex “web of practice and reference” between different media—how we interact with and perceive media, and how this affects the content of the medium. The mediality of live and studio composition is posited as cross-referential, non-hierarchical and non-dichotomous—a relationship of “dependence and imbrication” rather than antagonistic binaries.

I investigate the mediality of live and studio composition in three ways: historically, through the discourses surrounding gramophony in the early twentieth century and rock aesthetic in the late twentieth century; technologically, by describing how the computer evokes mediatic cultures and practices through software, and how this is informed by sociocultural discourse; and creatively, through my own suite of live and studio compositions entitled “Ambivalence of Density,” with discussions about the processes involved and how I’ve attempted to underscore mediatic discourse in the works. I conclude by suggesting that a broader understanding of the mediality of music (and sound in general) could make the dialogue surrounding new musical media (especially Internet-based media) more articulate and relevant.

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1 Introduction

“Much futile thought has been devoted to the question of whether recording is an art. The primary question—whether the very invention of recording had not transformed the entire nature of music as an art—was not raised.” This is an adapted quote from Walter Benjamin’s seminal 1936 essay “The Work of Art in the Age of Mechanical Reproduction,” in which an observation on photography and visual art is repositioned as one on sound recording and music.¹ Nearly eighty years on, it remains an entirely valid and appropriate observation. The contemporary experience of music is hinged on the fact that most music has a dual existence: a live, performed version; and a recorded, ‘studio’ version.

As a composer of electronic music, my practice involves performing live compositions and creating studio compositions, both primarily using a computer. Indeed, it is an “understood convention” that musicians will maintain a studio practice and a live performance practice, and that these practices will have a consciously constructed relationship with each other.² My experience working in both of these mediums leads me to hypothesise that live performance and studio works, in terms of their musical content, engage in a thoroughly complex relationship that cannot be reduced to merely antagonistic binaries. My experience also suggests that composers, performers and consumers tacitly understand the scope of this complexity to some extent. Consumers of music will invariably have an opinion on whether a band or musician’s live performance is better or worse than their studio works, and performers and composers invariably accept that the stage and the studio are ostensibly different artistic environments that engender different creative processes and outcomes. This is also evidenced by the potent popular mythologies of the “rock band on tour” and of the seclusive lure of the recording studio.³

The contemporary music literature is somewhat unsatisfying in how this relationship is

¹ This quote adaptation also opens the article: Andy Hamilton, “The Art of Recording and the Aesthetics of Perfection,” *The British Journal of Aesthetics* 43, no. 4 (October 2003): 345. The original quote is from: Walter Benjamin, “The Work of Art in the Age of Mechanical Reproduction,” *Illuminations* 1973, 229.

² Nicholas Earhart, “Bee Mask Interview,” *BOMB Magazine*, <http://bombmagazine.org/article/7017/>. Accessed 23 October, 2014.

³ In trying to come terms with dominance of the recorded medium in the consumption of classical music, Alex Ross says, “The fact that the Beatles broke up three years after they disappeared into the studio, and the fact that Gould died in strange psychic shape at the age of fifty, may tell us all we need to know about the seductions and sorrows of the art of recording.” Alex Ross, “The Record Effect,” *The New Yorker*, <http://www.newyorker.com/magazine/2005/06/06/the-record-effect>. Accessed 19 October, 2014.

described. Generally the live and the studio are posited against each other, as if the studio work “must measure up to a fixed standard, set by [the] longer-established artform.”⁴ The studio form is relegated to being merely a document of the ‘ideal’ live performance, or as we sometimes find in contemporary popular music, the live performance merely replicates the studio work.⁵ This has led to problematic comparisons of the mediums in terms of ontology, signification, and political economy. These arguments tend to position each medium in hierarchies, in which one subsumes the other, or otherwise somehow dominate over the other. This is at odds with how I perceive and experience these mediums as composer, performer and consumer—they are not binary or hierarchic; they are symbiotic, referential and nonlinear, embodied and codified in culture in different yet complex ways.⁶

Communication theory—specifically that of the emergent practice we now call sound studies⁷—provided a framework that accommodated my conception of these artistic media. Jonathan Sterne, in his book “MP3: The Meaning of a Format” uses the term *mediality* (or *mediatic* in adjectival form) to describe how media refer to one another in terms of practice, form, and content—mediality denotes the “complex web of practice and reference” between media.⁸ Terms like ‘mediation,’ ‘remediation,’⁹ and ‘mediatisation’¹⁰ all suggest hierarchic organisations of media, akin to Marshall McLuhan’s 1964 declaration that “the content of a medium is always another medium,”¹¹ as if to suggest that “media follow one another in a march away from reality.” Mediality does not signify hierarchical organisations—instead it “simply points to a collectively embodied process of cross-reference. It implies no particular

⁴ Hamilton, “The Art of Recording and the Aesthetics of Perfection.”

⁵ Paul Théberge, *Any Sound You Can Imagine: Making Music/Consuming Technology* (Hanover, NH, London: Wesleyan University Press, 1997), 231; Philip Auslander, *Liveness: Performance in a Mediatized Culture* (Routledge, 1999), 61–111.

⁶ For more on the embodiment and cultural codification of live and studio forms in culture, see: Holly Herndon, “Embodiment in Electronic Music Performance” (Masters diss., Mills College, 2010), 7.

⁷ For a proper description of the practice, see: Jonathan Sterne, “Sonic Imaginations,” in *The Sound Studies Reader*, ed. Jonathan Sterne (2012).

⁸ *MP3: The Meaning of a Format* (Durham: Duke University Press, 2012), 9.

⁹ Jay Bolter and Richard Grusin, *Remediation: Understanding New Media* (Cambridge, MA: MIT Press, 2000), 45.

¹⁰ The word ‘mediatisation’ has been used in various defining contexts, from Jean Baudrillard’s wholly pejorative use of the term to Fredric Jameson’s neutral stance, which he defines as “the process whereby the traditional fine arts...come to consciousness of themselves as various media within a mediatic system.” This is also the definition that Philip Auslander uses, as do I. See: Auslander, *Liveness*, 5; Fredric Jameson, *Postmodernism or the Cultural Logic of Late Capitalism* (Durham: Duke University Press, 1991), 161; Jean Baudrillard, *For a Critique of the Political Economy of the Sign*, trans. Charles Levin (St Louis, MO: Telos Press, 1981), 175–6.

¹¹ Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York: McGraw-Hill, 1964), 8.

historical or ontological priority of communicative forms.”¹²

Sterne notes that positioning media in terms of inter-referentiality already has antecedence in the arts:

*“Expressive forms like literature, poetry, art, cinema, and music refer to themselves in the sense that individual works may refer to others directly, or combine knowledge and practice from their fields (or other allied fields) in new ways. Understanding this web of reference is essential to understanding how they represent, figure, and organize broader realities and relationships. Mediality indicates a similar process in communication.”*⁸

In this sense, mediality and creative practice are virtually synonymous, yet there is no wealth of literature describing musical practice in terms of discourse between media, and even less in relation to computer music. The mediality of music is a neglected avenue of research, with rich possibilities for artistic exploration.

This thesis investigates the mediality of live and studio music in three ways: historically through sociocultural discourse; technologically through computers and software; and creatively through my own compositions. It is hoped that through these undertakings, I can develop a better understanding of the divide and relationship between my live and studio practices, and therefore, create works that collectively embrace both mediums while still approaching them on their own terms.

In the first chapter I document mediatic discourse within history by recounting the rise of the gramophone¹³ in the early twentieth century. Much of this early discourse is antagonistic and hyperbolic, as musicians and theorists debated whether the gramophone represented the death of music or the liberation of music. From the 1960s onwards, the relationship changed with the growing popularity and monetisation of rock music, such that the very existence of the live was—apparently—threatening to disappear. Amidst these

¹² Sterne, *MP3*, 9–11.

¹³ When discussing the early recording medium, I prefer to use the European terms ‘gramophone’ and ‘grammophon’ rather than the American ‘phonograph’ and ‘phonography’, as much of my discussions of early mediatic discourse focus on continental Europe. This is based partly on the term’s proximity to the German *Grammophon*, and Emile Berliner’s playing discs, as opposed to Thomas Edison’s phonograph cylinders. See E.J. Scheinberg, *Music and the Technological Imagination in the Weimar Republic: Media, Machines, and the New Objectivity* (University of California, Los Angeles, 2007), 1; Evan Eisenburg, *The Recording Angel: Music, Records and Culture from Aristotle to Zappa*, Second ed. (New Haven, CT: Yale University Press, 1987), 35.

shifting paradigms, a theory of mediality and the “post-media condition” emerges.

The second chapter draws specific attention to the mediality of computer music. Here, conceptions of the live and the studio become increasingly vague and intertwined, to the point where it can be difficult to perceive difference at all. I try to clarify this by describing the role of software in creating live and studio music, and how software’s handling of different temporal paradigms can be seen as a response to, and an evocation of, the mediality of computer music.

The third chapter describes the compositional process and outcomes of *Ambivalence of Density*, making observations on the process of interpreting live and studio media, and how this process effectively furthered my understanding of the relationship between my live and studio practices.

I conclude by reflecting on this methodology in terms of my own artistic development, and how similar ideas can be applied in future discourses between the live and the studio.

1.1 Defining ‘studio’

Before beginning, a proper definition of what I consider the ‘studio’ medium must be addressed. I use the term ‘studio’ to describe music made specifically to be consumed by way of a sound storage medium, like CD, digitally, vinyl, cassette, and Internet streaming. Using ‘studio’ here is perhaps not semantically sound, but to use a term like ‘recording’ would acknowledge that the music has a primarily real-time existence, and my conception of electronic ‘studio’ music would not liken it to ever being ‘recorded’, in the classic sense of the term. I also don’t use terms like ‘album’, ‘LP’, ‘EP’, or terms that denote a physical form—however the term ‘studio’ here acknowledges all cultures surrounding those formats as still engendering their own creative and mediatic practices. It wouldn’t be controversial to suggest the musical structure of an LP differs from that of an EP, and that these structures are informed different cultural contexts.

Moreover, I’d like to suggest that ‘studio’ articulates a primarily solitary listening practice, starting from the 1960s onwards. Kathleen M. Higgins notes that “it is only in the aberrant

case that one experiences music in a live, group format.”¹⁴ Thus, while acousmatic music might well engender a studio practice, if it’s written specifically for concert performance then I consider it to be a primarily ‘live’ work. It’s already apparent why this usage of the word ‘studio’ isn’t semantically sound, but as I hope to demonstrate in this dissertation, this is an intricacy that an understanding of the mediality of music might help to negotiate.

An underlying theme of this thesis is that mediality implies, by its definition, a transitory nature. Mediality unfolds over multiple time-scales, geographies, cultures, and belief systems.¹⁵ Thus I should stress that this thesis articulates contemporary (up to 2014) mediality in ways that would likely be redundant in several years time. With that said, I believe that opening up the discussion surrounding the live/studio relationship to its cross-referential nature rather than restricting ourselves to the classic, materialistic conceptions of the “medium”, we can understand the live/studio relationship in more advanced ways.

¹⁴ Kathleen Marie Higgins, *The Music of Our Lives* (Philadelphia: Temple University Press, 1991).

¹⁵ Sterne, *MP3*, 10.

2 Dependence and imbrication: the emergence of gramophony and the fickle relationship of stage and studio

Jonathan Sterne suggests that the “raw material[s]” that comprise the contemporary mediality of music are the “ongoing histories of the ear and listening.”¹⁶ Extrapolating from that, in order to articulate the contemporary relationship between the live and the studio, we first must look to how their relationship has developed throughout history, as this may hold clues as to how they interact today.

Here, I investigate two important histories in this development: the emergence of the gramophone in the early twentieth century, specifically the European modernist and avant-garde traditions; and the emergence of rock aesthetic in the late twentieth century, chiefly in North America and Europe. These two histories present the live/studio dialectic in two different lights. Following these histories, I briefly discuss the ontology of the live and studio mediums, and from this I try to elucidate the contemporary mediality of live and studio music today, as it applies to my practice.

2.1 The emergence of gramophony

Music and listening culture experienced an important paradigm shift with the popular emergence of the gramophone in the 1890s: the divorce of the auditory from the visual.¹⁷ The American composer John Philip Sousa (1854–1932) was an early and vocal opponent of recorded music, in 1906 suggesting that no one will want to learn music anymore.¹⁸ Even in these early stages, there was evidence that recordings were affecting performance on a massive yet subliminal scale—Mark Katz rather radically suggests that the liberal vibrato employed by contemporary violinists, a hallmark of modern performance practice of classical string music yet considered to be rather gauche before the twentieth century, owes its current tradition to recording, due to the hugely popular recordings of Fritz Kreisler, who

¹⁶ Ibid., 183.

¹⁷ Dave Laing, “A Voice without a Face: Popular Music and the Phonograph in the 1890s,” *Popular Music* 10, no. 1 (1991).

¹⁸ Ross, “The Record Effect”.

played with a liberal vibrato that was highly unconventional at the time. This effect may have helped mask the trembling pitch caused by the uneven platter speed of early gramophones.¹⁹

The early twentieth century in Europe was notable for the way composers were increasingly scrupulous over how their work was to be performed. Arnold Schoenberg (1874–1951), for instance, was renowned for trying to eliminate performance interpretation from his music altogether.²⁰ German critic Hans Heinz Stuckenschmidt (1901–1988) suggested that the intentions of the composer, eventually, would surpass the abilities of the human performer-interpreter, or at the very least, suppress the necessity of performance interpretation.²¹ This precipitated the rise of machine music, the product of a growing notion among artists and composers that “the true realisation of sound and spirit can only happen on a machine.”²²

The rise of “machine aesthetic” indicates a greater acceptance of using reproductive technologies as artistic tools, and the use of machines to convey composers’ intentions became pervasive even in non-mechanical music—Debussy and Ravel both recorded themselves playing their pieces onto piano rolls specifically to show other pianists precisely how they were meant to be played.²³ Stravinsky wrote music specifically for pianolas as early as 1917. Meanwhile, other artists were looking to the gramophone to realise a new dialogue with the musical medium, and the Bauhaus artists were among the most radical in their approach.

In 1923, Hungarian Bauhaus artist László Moholy-Nagy (1895–1946) advocated for “a transformation of the gramophone from a *repro-ductive* to a *pro-ductive* technology,” (italics added) and the development of a “groove-script alphabet” that would incise “new sound formations” directly onto the record at a potentially microscopic level.²⁴ These views were

¹⁹ Mark Katz, *Capturing Sound: How Technology Has Changed Music* (Berkeley and Los Angeles: University of California Press, 2004), 101–05.

²⁰ K.M. Hirt, *When Machines Play Chopin: Musical Spirit and Automation in Nineteenth-Century German Literature* (de Gruyter, 2010), 127.

²¹ *Ibid.*, 50.

²² *Ibid.*, 127–34.

²³ *Ibid.*, 127.

²⁴ Thomas Y Levin, “For the Record: Adorno on Music in the Age of Its Technological Reproducibility,” *October* 55 (Winter 1990): 34; Scheinberg, *Music and the Technological Imagination in the Weimar Republic: Media, Machines, and*

echoed by Stuckenschmidt in his 1925 article “The Mechanization of Music,” published in *Pult und Takstock*, a magazine for conductors, writing that “the authentic gramophone has the great advantage over the mechanical piano and the orchestration, to unify all conceivable tone colours in one extremely simple and small device.”²⁵

The 1920s brought about emphatic, provocative and frequently ostentatious discourse regarding the future of music after the gramophone, in which intense optimism and pessimism for the future of music were engaged in heated debate. Stuckenschmidt was notable for his stark progressivism and antagonism on the topic. In “The Mechanization of Music” he wrote of “the intrinsic inability of people to be regarded as interpreters of artworks ... the role of the interpreter belongs to the past.”²⁶ The subsequent publications of *Pult und Takstock* encouraged readers to respond to the article in writing, many of whom were acerbic in their objection.

Paul Hindemith (1895–1963) became possibly the first composer to use gramophones in a creative capacity in performance, in a 1930 performance of what he called *Trickaufnahmen*, or trick recordings, in which he uses no less than three gramophones playing recordings of his singing voice, re-pitched outside his natural singing range by manipulating the platter speed. Another piece utilised re-pitched recordings of his viola and a xylophone recording played in reverse.²⁷

From then until after World War II, the discourse around gramphony was spearheaded by the writings of Theodor Adorno (1903–1969). Adorno’s writings on gramphony cover a range of topics through which he attempts to define gramphony in contrast to the ‘standard,’ live mode of music transmission. He celebrated the notion that people could now own music as its own “closed totality”, as well as the inherent reclusiveness—loneliness—of gramphonic listening, which Adorno celebrates in opposition to the mainstream “anxiety of

the New Objectivity, 43.

²⁵ Hans Stuckenschmidt, “The Mechanization of Music,” *Pult und Takstock* 1925): 11–15; Hirt, *When Machines Play Chopin: Musical Spirit and Automation in Nineteenth-Century German Literature*, 134.

²⁶ Stuckenschmidt, “The Mechanization of Music.”; Hirt, *When Machines Play Chopin: Musical Spirit and Automation in Nineteenth-Century German Literature*, 129; Scheinberg, *Music and the Technological Imagination in the Weimar Republic: Media, Machines, and the New Objectivity*, 47–48.

²⁷ *Music and the Technological Imagination in the Weimar Republic: Media, Machines, and the New Objectivity*, 1–2; Katz, *Capturing Sound: How Technology Has Changed Music*, 101.

the lonely.”²⁸

Adorno was highly optimistic about the gramphonic conveyance of music. In his 1939 essay “The Form of the Phonographic Record,” he writes of music as a language for a “determined yet encrypted message” in which recorded music “approaches decisively its true character of writing ... at the price of its immediacy.” He goes as far as describing music as the “final language of all mankind.”²⁹ Somewhat contradictorily, Adorno repeatedly denied the possibility of composing gramophone-specific music, but he maintained that music’s “aesthetic significance can only be established by focusing attention on its form, on its status prior to rephenomenalisation.”³⁰

Adorno’s final major essay on gramphony, “Opera and the Long-Playing Record”, published in *Der Spiegel* in 1969, places the gramophone as the “optimal” presentation of opera, providing “a concentration on music as the true object of opera.”³¹ This “*théorique immersion*”³² implies gramphony as re-presentation of an ideal scene—one in which the “force and intensity that had been worn threadbare in the opera house”³³ was recaptured, and the preclusion of optical stimuli, that he proclaimed “must be subordinated to the primacy of music,”³⁴ was guaranteed.

There was great optimism and great ambivalence for a new paradigm where live performance was no longer inseparable from the transmission of music. Post-war composers and musicians reacted in different and often ambivalent ways to the recording medium. Karlheinz Stockhausen (1928–2007) was lavish in his praise of the new possibilities, effectively declaring Moholy-Nagy’s vision a reality: “Electronic music no longer employs tape and loudspeaker for reproduction, but rather for production. The listener at the loudspeaker will sooner or later understand that it makes more sense that music coming from a loudspeaker be music that can be heard only over a loudspeaker and by no

²⁸ Theodor W Adorno, *Philosophy of Modern Music* (New York; London: Continuum, 2003); Fred Moten, “The Phonographic Mise-En-Scène,” *Cambridge Opera Journal* 16, no. 3 (2004).

²⁹ Theodor W Adorno, “The Form of the Phonograph Record,” *October* 55 Winter 1990): 59.

³⁰ Thomas Y Levin, “For the Record: Adorno on Music in the Age of Its Technological Reproducibility,” *ibid.* (Winter 1990).

³¹ Theodor W Adorno, “Opera and the Long-Playing Record,” *ibid.* Winter 1990): 62–66.

³² Yasunao Tone, “John Cage and Recording,” *Leonardo Music Journal* 13 (2003).

³³ Adorno, “Opera and the Long-Playing Record.”

³⁴ Thomas Y Levin, “For the Record: Adorno on Music in the Age of Its Technological Reproducibility,” *ibid.* (Winter 1990).

other means.”³⁵ Having said this, he concedes that loudspeakers could only approximately convey a sense of space, whereas instrumental music was effectively “three-dimensional music.”³⁶ Pierre Boulez (1925–) declared that studio recording should be merely reproductive—recording engineers should not interpret the music any more than necessary.³⁷

John Cage’s (1912–1992) views on recording are well documented,³⁸ and generally accepted to be fraught with inconsistency and ambivalence. Yasunao Tone writes that Cage’s views were altogether against the idea of the re-presentation of the live as the record, but he saw great use for recordings as educational tools. Having understood his own importance as a composer, this explains why he authorised so many recordings of his works later in his life.³⁹ György Ligeti and La Monte Young, among others, were very particular about their demands from recordings of their music, and refused to allow recordings for much of their lives.

Within the continental European modernist and avant-garde traditions, despite the best efforts of Stuckenschmidt and Adorno, the live largely retained its hegemony as the primary medium of musical expression. As early as 1942, Pierre Schaeffer (1910–1995) envisioned a theoretical performance instrument, “an enormous instrument capable not only of replacing all existing instruments, but of every conceivable instrument, musical or not,” that would allow him to realise his yet to be formally realised *musique concrète* in real-time performance.⁴⁰ Pierre Schaeffer’s establishment of the Groupe de Recherches de Musique Concrète (GRMC) in 1951 can be seen as a turning point whereby studio composition and techniques became more widespread, as state of the art tape facilities were made available for pioneering composers to experiment with. The GRMC attracted the leading avant-garde composers of the time, like Pierre Boulez, Iannis Xenakis, and Karlheinz Stockhausen. The

³⁵ Karlheinz Stockhausen, “Electronic and Experimental Music,” in *Audio Culture: Readings in Modern Music*, ed. Christoph Cox and Daniel Warner (Continuum, 2004), 376.

³⁶ *Ibid.*, 379.

³⁷ Hamilton, “The Art of Recording and the Aesthetics of Perfection,” 350; Tim Hecker, “Glenn Gould, the Vanishing Performer and the Ambivalence of the Studio,” *Leonardo Music Journal* 18 (2008): 79.

³⁸ For a more complete analysis of John Cage’s views on recording, see David Grubbs, *Records Ruin the Landscape* (Durham: Duke University Press, 2014).

³⁹ Tone, “John Cage and Recording.”

⁴⁰ Pierre Schaeffer, *A La Recherche D'une Musique Concrète* (Paris: du Seuil, 1952), 15–16; Simon Emmerson, *Living Electronic Music* (Hampshire: Ashgate Publishing Ltd, 2007), 25.

period between 1951 and 1958 was an intensely productive time, with many 'firsts' for studio music: the first mixed work appeared: André Hodeir's *Jazz et Jazz* (1953) for tape and piano; and Schaeffer and Pierre Henry composed the first "musique concrète opera" *Orphée 53* (1953), which was heckled in its premiere performance.⁴¹

By the 1960s, the development of the studio medium was in full swing at the GRM (Groupe de Recherches Musicalé, established after an aesthetic schism of the GRMC in 1958 which led to the resignation of Pierre Henry), with a variety of electronic, concrète and other tape works being conceived in a highly fertile artistic environment, spearheaded by the likes of François Bayle, Bernard Parmegiani, Iannis Xenakis and more. From here on out, the studio was no longer a reproductive technology, but capable of an entirely new discourse with what can be achieved with music. From this new studio aesthetic, I now turn to rock music, another genre whose existence is perennially focused around the studio medium.

2.2 Rock authenticity

The seclusive lure of the studio proved to be appealing for musicians of many styles and geographies, as evidenced perhaps by two of the most famous withdrawals from live performance of two of the greatest titans of their respective genres: Glenn Gould's departure, and the Beatles' departure, both playing their final live performances in 1964. Shortly afterwards, the long-playing album format became the "*de facto* formal structure for creativity in rock music."⁴²

The primary object of rock music is the recording.⁴³ Theodore Gracyk argues that unlike any musical practice before rock, the most characteristic aspect of rock music—itsself an extremely vague term that mostly refers to sociological stance rather than definable musical characteristics⁴⁴—is that it is predominantly based on recordings, "no matter how much

⁴¹ Évelyne Gayou, "The GRM: Landmarks on a Historic Route," *Organised Sound* 12, no. 3 (2007): 206.

⁴² Simon Zagorski-Thomas, "The Stadium in Your Bedroom: Functional Staging, Authenticity and the Audience-Led Aesthetic in Record Production," *Popular Music* 29, no. 2 (2010): 255.

⁴³ Theodore Gracyk, *Rhythm and Noise: An Aesthetics of Rock* (Durham: Duke University Press, 1996), 204; Auslander, *Liveness*, 63.

⁴⁴ Lee B Brown, "Phonography, Rock Records, and the Ontology of Recorded Music," *The Journal of Aesthetics and Art Criticism* 58 (2000).

time rock musicians spend practicing their instruments or playing live.”⁴⁵

Gracyk’s view is too extreme—Simon Zagorski-Thomas argues that while playing albums in living rooms and bedrooms was the primary form of consumption of rock music, “the *ideal* form of consumption was the live concert,” which led to sound engineers endeavouring to recreate “an idealised or stylised version of the large-scale rock concert sound for playback in the domestic environment.”⁴² Zagorski-Thomas calls this “functional staging,” and argues that studio works have different sound stages (perceived spatial location of instruments and sounds) based on the genre and culture the music is made from.

Live performances of rock music were generally subsumed in service to the record—performances and tours were used as a means to promote and sell more records.⁴⁶ Simon Frith suggests that rock music fans, nonetheless, listen to recordings as if they are performances, despite being aware that they do not represent one single performance, but as the product of many performances. “Nevertheless,” says Frith, “it is now happening, in a single time and space: it is thus a performance and I hear it as one.”⁴⁷

Philip Auslander, in his book “Liveness: Performance in a Mediatized Culture” writes extensively on the role of the live performance in the context of a genre (or social movement) whose primary medium is the recording. Auslander acknowledges the importance of the live performance in the context of a record-centric culture, and he places rock as having a strong discourse with notions of authenticity. Authenticity in rock aesthetic can mean anything from reckless disregard of social norms; a reasonably virtuosic command of their instrument; and all the visual and fashion aesthetic of rock musicians. For Auslander, authenticity is merely suggested by the recording, but it is also suggested in its record sleeve art and other paraphernalia. Authenticity is then *confirmed* by the live performance. If a listener likes the rock record, they will likely endeavour to see the rock band perform. If the rock band’s performance does not imply the authenticity suggested by the record, then the rock band would be deemed inauthentic, thus conflicting with the fundamental premise of rock aesthetic. A performance might be deemed inauthentic if one of the musicians was

⁴⁵ Gracyk, *Rhythm and Noise*, 204.

⁴⁶ Auslander, *Liveness*, 64.

⁴⁷ Simon Frith, *Performing Rites: On the Value of Popular Music* (Cambridge: Harvard University Press, 1996), 211.

not as virtuosic as on the record, or their visual aesthetic didn't align with that of the record sleeve and paraphernalia.

Auslander describes the relationship of the live and the studio in rock aesthetic as one of "dependence and imbrication,"⁴⁸ They affirm each other's authenticity, and thus their validity as rock music.

Live performance defined itself not necessarily in opposition to recorded media but *because* of recorded media—indeed the contemporary use of the word 'live' was only defined as such in the mid-1930s, well after the advent of recorded media.⁴⁹

Peggy Phelan in her 1993 book "Unmarked: The Politics of Performance" defined performance as "representation without reproduction,"⁵⁰ in which its "independence from mass production, technologically, economically, and linguistically, is its greatest strength"⁵¹ and she infers, as if squarely castigating Adorno, that language cannot adequately capture performance—performance is non-indexical. This is indicative of a wider dismay towards the mediatisation of performance, in which it was regarded as a "contamination."⁵² Performance, for Phelan, is ostensibly ontological, whereas the mediatised cannot be.

Philip Auslander deconstructs this argument, concluding that there are no un-problematic ontological differences between the two mediums. Yet he is still pessimistic of the future of performance, describing its cultural-economic relationship with mediatisation as being "competitive, conflictual and agonistic."⁵³

Reflecting on my own practice and the cultures through which I operate, I'd suggest that this aesthetic carries through to the present day, though the cultural conceptions of authenticity perpetually change. Even in genres far removed from the rock music of the late twentieth century, like electronic music and hip hop, listeners gravitate to music that "authentically" represents the sociocultural parameters of their genre.

I'd also suggest that among musicians, composers and performers today, the expectation

⁴⁸ Auslander, *Liveness*, 41.

⁴⁹ *Ibid.*, 51–54.

⁵⁰ Peggy Phelan, *Unmarked: The Politics of Performance* (London, New York: Routledge, 1993), 3.

⁵¹ *Ibid.*, 149.

⁵² Auslander, *Liveness*, 41.

⁵³ *Ibid.*, 159.

of maintaining both a studio and performance practice is accepted and adhered to, but perhaps not enough people are asking why that is the case. By tracing this dual practice back to a product of rock aesthetic, we can ask new questions about the mediality of these practices.

2.3 Contemporary mediatic culture

In the twenty-first century we can see many examples of the practices associated with each of these mediums referring to each other in new ways. For instance, in the “classical” world, Nico Muhly (USA, 1981–) writes music with predominantly “classical” instrumentation, but by using unconventional studio techniques like placing microphones very close to each instrument, it escapes the classical recording aesthetic “where the idea is to synthesize an idealized version of live musical performance.” A wholly phonographic experience is created, whereby the “live performance isn’t necessarily the ideal context for these pieces any more or less than your stereo at home.”⁵⁴

We also see many live re-interpretations of seminal studio works, with recent examples including William Basinski’s (USA, 1958–) “Disintegration Loops I” (2002) re-created by the Wordless Music Orchestra (2011); Lou Reed’s (USA, 1942–2013) “Metal Machine Music” (1975) re-created by Zeitkratzer (2014); and Bang on a Can’s 1998 re-creation of Brian Eno’s (UK, 1948–) “Music for Airports” (1978). These reworkings are generally considered novelties within the repertoire of their respective ensembles, and have been criticised as problematic and misinterpreting their original.⁵⁵

In popular and indie music we can see performance—and updated notions of rock authenticity—spanning live and studio forms. One could see the *lo-fi* recording aesthetic as an attempt to downplay the expensive “polish” of professional studio recording practice as a means of “valoris[ing] performance practice over the techniques of production.”⁵⁶ Where hi-fi aesthetics were sometimes seen as an old-fashioned and gauche display of class and

⁵⁴ Daniel Johnson, “Speaks Volumes – Nico Muhly,” Bedroom Community, <https://nicomuhly.bandcamp.com/album/speaks-volumes>. Accessed 28 October, 2014.

⁵⁵ Cecilia Sun, “Resisting the Airport: Bang on a Can Performs Brian Eno,” *Musicology Australia* 29, no. 1 (2007).

⁵⁶ Zagorski-Thomas, “The Stadium in Your Bedroom: Functional Staging, Authenticity and the Audience-Led Aesthetic in Record Production,” 260.

cultural capital,⁵⁷ lo-fi aesthetics foregrounded the “immediacy and adherence [of] the musical artist’s real character or presence.”⁵⁸ As the lo-fi aesthetic has a desirable sonic fingerprint for many contemporary musicians, it has precipitated the rise of “analog fetishism,” whereby producers overly value the sonic footprint of analog music equipment, that Andy Kelleher Stuhl describes as the re-emphasis of performance practice through lo-fi studio practice.⁵⁹ Through this practice, the performer effectively denies that a recording, no matter how “polished,” can adequately capture a performance.⁶⁰

Another example of mediatic culture lies within the use of the sampler in electronic music, especially that of dance music, hip hop and rap, and various ‘art music’ forms. The advent of affordable samplers in the mid-1980s was largely seen as a threat to the nature of performance—Andrew Goodwin in his 1988 essay “Sample and Hold: Pop Music in the Digital Age of Reproduction,” voiced significant concern over the state of performance in light of the sampler, saying it places “authenticity and creativity in crisis, not just because of the issue of theft, but through the increasingly *automated* nature of [the samplers] mechanisms.”⁶¹ Critics in the 1990s commonly voiced their outrage over the mediatisation of live performance, in “a decade of concern over the status and legitimacy of live performance in an era of sequencers, samplers, and backing tapes.” As Paul Théberge wrote, “For critics the problem was not simply that musicians were trying to sound like their recordings when performing on stage ... but that concerts had indeed *become* recordings.”⁶²

This insecurity isn’t new—Tara Rodgers, in analysing online forums discussing hardware samplers, describes a widespread desire among hardware sampler owners to imbue their samples with humanistic qualities, such as subtle randomisation of parameters like volume and pitch. This represents an “ongoing interplay between a musician and machine where the goal is a mutual musical spontaneity that will articulate a ‘human feel’ through a digital

⁵⁷ Keir Keightley, “‘Turn It Down!’ She Shrieked: Gender, Domestic Space, and High Fidelity, 1948–1959,” *ibid.* 15 (1996): 150.

⁵⁸ Andy Kelleher Stuhl, “Reactions to Analog Fetishism in Sound-Recording Cultures,” *The Velvet Light Trap* 74, no. 1 (2014): 45.

⁵⁹ *Ibid.*, 51.

⁶⁰ Joshua Glasgow, “Hi-Fi Aesthetics,” *The Journal of Aesthetics and Art Criticism* 65, no. 2 (2007).

⁶¹ Andrew Goodwin, “Sample and Hold: Pop Music in the Digital Age of Reproduction,” in *On Record: Rock, Pop and the Written Word*, ed. Simon Frith and Andrew Goodwin (New York: Pantheon, 1990), 262.

⁶² Théberge, *Any Sound You Can Imagine: Making Music/Consuming Technology*, 231.

tool.”⁶³ She criticises writers like Goodwin for their reactionary take on the sampler (especially since the Goodwin essay is one of the most cited essays in the literature regarding sampling and samplers), by describing the practice of sampling as “musically and politically constructive, capable of encompassing a complex web of historical references and contesting dominant systems of intellectual property and musical ownership.”⁶⁴

Notably, Goodwin writes that the authentic image of the sampler-performer “can and will change” just like the evolution of the synthesiser player from alien to authentic over the development of rock music.⁶⁵ My contemporary observation of the sampler now is that it has progressed to become an “authentic” instrument and mode of performance, and I’d argue that it has done so in reaction to the perceived incapacity for authentic laptop performance (though this, as Goodwin says, can and will change). This will be discussed in detail in the next chapter.

2.4 Conclusion

I have attempted to demonstrate here that by articulating the live/studio dialectic in terms of *mediality* rather than mediation, we can move beyond simplistic generalisations and reflect on the historical, sociocultural reification of mediums, styles, genres and practices, by the ways in which these reference each other. In the avant-garde tradition, the recently emergent studio form saw inspiration in alienating itself from the live tradition as much as possible, whereas in rock music we start to see a referentiality in which each medium becomes reliant on each other to establish authenticity. Lo-fi aesthetics and the discourse surrounding the use of the sampler as a performance instrument also point toward practices whereby the live/studio dialectic is so intertwined it wouldn’t be entirely fruitful to consider them as one medium or the other. The mediality of music is formulated through the history of music and its mediums, and this brief history of certain practices suggests that the cross-reference of other mediums is routine in establishing new practices and aesthetics.

⁶³ Tara Rodgers, "On the Process and Aesthetics of Sampling in Electronic Music Production," *Organised Sound* 8, no. 3 (2003): 316.

⁶⁴ *Ibid.*, 314.

⁶⁵ Goodwin, "Sample and Hold," 269.

For mediums with a relatively short history, like computer music performance, articulating its mediality may require a different approach, as I have attempted in the next chapter.

3 The mediality of live and studio computer music

The discussion in the previous chapter described a relatively long history of how live and studio mediums interact with and inform each other. This interaction also occurs in computer music, though we must consider it differently to previous histories of mediality. While the use of computers in the studio isn't new, live performance using computers has only emerged in the last twenty years or so. Nowadays, it seems to be a minority of electronic musicians and DJs who do *not* use computers when performing live, and it's universally expected that studio music is made with a computer. Indeed, more electronic musicians are playing live now than ever before,⁶⁶ and it is entirely feasible for studio and live compositions to be made with the same computer, even using the same software.

This chapter aims to come to terms with the accession of the computer as a central music-making agent, by describing its short history as a mediatic discourse. Moreover, I suggest that this mediality is recognised by recent developments in music software, and discuss the limitations of the dual live/studio practice with respect to mediality.

3.1 The audio-visual dissociation

In the late 1990s and early 2000s as laptops became widely adopted as performance instruments, it was not uncommon for performers to sit or stand motionless behind the computer or laptop, "looking deeply into the screen ... his eyes raise in surprise, followed by a frown and a slight tut before he is again lost in thought, his face blank."⁶⁷ The gestural connection with music "disappear[ed] into the micro-movements of the laptop performer's fingers and wrists."⁶⁸ The emergence of almost stationary performance practice was commonly seen to be an affront to performance, and was the subject of ridicule.

⁶⁶ Michael A. D'Errico, "Behind the Beat: Technical and Practical Aspects of Instrumental Hip-Hop Composition" (Masters diss., Tufts University, 2011), 67.

⁶⁷ Caleb Stuart, "The Object of Performance: Aural Performativity in Contemporary Laptop Music," *Contemporary Music Review* 22, no. 4 (2003 2003).

⁶⁸ Kim Cascone, "Laptop Music – Counterfeiting Aura in the Age of Infinite Reproduction," *Parachute*, no. 107 (2002).

One of the most frequent complaints relating to this practice is a distrust that the performer is actively “performing.” The observation that the performer could just be checking their email, or the myriad variations on that trope⁶⁹ might be a tired cliché, but it is still a vital aspect of the mediality of computer music because it underpins much of the contemporary usage of the laptop as a performance instrument.⁷⁰

The insecurity brought about by this observation indicates an anxiety of the dissociation of the auditory and the visual/bodily.⁷¹ This dissociation is certainly not new—for Adorno, this was precisely the beauty of the gramophone.⁷² But the emergence of computer performance was arguably the first time that performers—*en masse*—actively dissociated music performance from visual spectacle. Kim Cascone writes in 2002:

Usually, music performed on laptop is presented in a traditional proscenium setting, framed in the traditional performer-audience polarity. This context frustrates the audience because they are unable to resolve the setting with a lack of spectacularized gestures (i.e. the lack of theatrical codes) which signify “performance” ... Thus, the cultural artifact produced by the laptop musician is deemed a counterfeit, leaving the audience unable to determine a use-value.”⁷³

Although my experience as a laptop performer in 2014 suggests that a laptop performance no longer seems intentionally political, it’d be wrong to deny that this sentiment still exists at a broader cultural level, what Cascone calls “super-culture.” Cascone writes that super-culture and sub-cultures (the sub-culture of laptop performance specifically) “gravitate towards [each] other to co-exist in parasitic orbit.”⁷⁴

Cascone’s language is clearly derogatory, and recalls a certain modernist notion of

⁶⁹ The variations I’ve found while researching for this dissertation include “checking email,” “playing solitaire,” “playing *Pac-Man*,” and “filing a tax return.” Adam Parkinson, *Embodied Listening, Affordances and Performing with Computers*, 2013. 324–30; Emmerson, *Living Electronic Music*, 26; D’Errico, “Behind the Beat,” 63–71; Stuart, “The Object of Performance.”

⁷⁰ Parkinson, *Embodied Listening, Affordances and Performing with Computers*.

⁷¹ Franziska Schroeder, “Re-Situating Performance within the Ambiguous, the Liminal, and the Threshold: Performance Practice Understood through Theories of Embodiment” (PhD diss., University of Edinburgh, 2006), 47.

⁷² Adorno, “Opera and the Long-Playing Record.”; Thomas Y Levin, “For the Record: Adorno on Music in the Age of Its Technological Reproducibility,” *ibid.* (Winter 1990).

⁷³ Cascone, “Laptop Music,” 56–57.

⁷⁴ *Ibid.*, 60.

“purity.”⁷⁵ I’d like to reframe this, instead, as a mediatic engagement of cultural conceptions of liveness. Super-culture and sub-culture are therefore not parasitically connected, but rather engage in constant reference to each other. The terminology “reference” is important here as it doesn’t connote that this relationship is positive or negative—the duty of this thesis does not include the passing of judgement on these mediatic relationships.

There have been a few noticeable trends in computer performance embodying more super-cultural perceptions of liveness. For instance, in the American instrumental hip hop cultures exemplified by the music of Madlib (Otis Jackson Jr, USA, 1973–) and Flying Lotus (Steven Ellison, USA, 1983–), the use of hardware controllers like the Akai MPD32 in performance signifies a return to super-cultural conceptions of visual cause-and-effect. Michael A. D’Errico, in a thesis describing instrumental hip hop live/studio practices, describes a Flying Lotus performance in terms of his interaction with the audience through the use of the MPD, as a means of not only drawing from a history of hip hop performance (with the Akai APC, a sampler widely used in 1990s hip hop) but to engage with the audience in a way that emphasises audio-visual causality. “It is the physicality of the gesture which defines notions of presence and ‘liveness,’ and which connect [instrumental hip hop producers] to a more extensive tradition of hip-hop performance and DJing.”⁷⁶

This performance practice also presents itself in the studio practice of Flying Lotus et al. Flying Lotus’ studio works are often characterised by his beats being non-quantised, meaning that sequences of notes that make up a drum pattern or loop are not restricted to metric values but can take any value, usually slightly “off-the-grid.” The non-quantisation of rhythmic sequences in his studio works implies not only “liveness” but also “rawness,” an advanced performative and rhythmic “feel,” in aesthetically humanistic response to the “ultra-mechanical” rhythmic patterns of earlier drum machines.⁷⁷ Later I’ll suggest that this could be an effect of the foregrounding of quantisation in music software.

In another genre and practice, we have seen a renaissance in analogue modular synthesis,

⁷⁵My use of “purity” here stems from critique of the medium specificity thesis, discussed in the next chapter. See also: Steven Maras and David Sutton, “Medium Specificity Revisited,” *Convergence* 6, no. 2 (2000).

⁷⁶ D’Errico, “Behind the Beat,” 67.

⁷⁷ *Ibid.*, 54–59.

and I believe this can be seen as a reaction against computer performance practice. Although modular synthesis was not initially to be used as a performance instrument,⁷⁸ it is now regarded in some circles to provide a tactile performability, and a non-objective, serendipitous sense of play that computers were perceived to lack. As sound designer Richard Devine describes, on computers, “everything’s calculated, everything’s perfect, everything’s coded. If there’s any sort of deviation or randomness you have to actually program that randomness into the computer yourself, whereas on the modular [synthesiser] it’s kind of an open game.”⁷⁹

In instrumental hip hop and modular synthesis music, liveness as a re-association of the auditory with the visual/bodily is still very much a sought-after aesthetic, and these aesthetic qualities often inform the composition of studio music. The contemporary mediality of computer music is thus always asking questions about its live presentation and the auditory/visual/bodily relationship, and this can affect studio compositions in many ways.

To describe the mediality of computer music in terms of its cultural agency is perhaps not sufficient. As an emergent medium, computer music performance is still perceived in ambivalent ways that are not entirely constructive. Indeed, the usage of the word *medium* can be haphazard and vague—Rosalind Krauss and Peter Weibel have each used the term “post-medium condition” to try and escape the materiality implied by the term *medium* in the visual art world.⁸⁰ Sterne recognises that the conception of the medium in the visual arts doesn’t necessarily translate to music and sound—instead he describes mediums as *diluted*. According to Sterne “the relevant materiality for creative [music and sound] work exists beneath what is connoted in a word like ‘medium.’”⁸¹

Albert Koschorke writes that any theory that seeks to explain the relationship of media must first understand “the *interdependence of technological mediality and semiosis*, the

⁷⁸ Thom Holmes, *Electronic and Experimental Music: Technology, Music and Culture*, 3rd ed. (New York and London: Routledge, 1985), 220.

⁷⁹ "Richard Devine Interview," musicradar.com, <http://www.musicradar.com/news/tech/richard-devine-interview-578399/>. Accessed 30 October, 2014.

⁸⁰ Rosalind Krauss, "Two Moments from the Post-Medium Condition," *October* 116, no. 2 (2006); Peter Weibel, "The Post-Media Condition," Media Lab Madrid, <http://www.metamute.org/editorial/lab/post-media-condition>. Accessed 19 October, 2014.

⁸¹ Sterne, *MP3*, 236.

narrow overlap of the 'form' and 'content' of such signifying events."⁸² (*italics in original*) In this sense, the music's technology and medium is bound to music's meaning. We can discuss technology further by interrogating the way software is used to engage and encourage mediatic discourse. Here, I'd like to argue that music software, "the tools on which [computer musicians] rely so heavily on,"⁸³ have adapted to this mediality of live and studio music.

3.2 Software adaptation to mediatic discourse

A 2013 paper by Myriam Desainte-Catherine et al., suggests that studio composition and live composition operate in two antagonistic temporal paradigms: "time line," and "time flow." "Time line" is a static representation of time, where future events are fixed, and this is embodied by the studio composition—a studio composition does not change with repeated listens. The "time flow" paradigm is a dynamic representation of time, where there is effectively no future-tense—there is only what is happening now, being processed in real-time—and this is embodied by the live performance.

According to Desainte-Catherine et al, "time line" compositions are made using the classic digital audio workstation (DAW), such as Avid Pro Tools and Apple Logic, while "time flow" compositions are made using musical programming languages (MPLs) such as Max, Pure Data and SuperCollider. They acknowledge that a hybrid of these temporal paradigms is necessary for interpretation and performance of notated music, and suggest that this hybrid exists to some extent in software.⁸⁴ I'd like to extend this by interrogating how this hybridity occurs in new software.

An example of software that engenders both live performance and studio composition is Ableton Live (hereafter written as Live). Live embodies both "time line" and "time flow" paradigms in ways that are unique to the classic DAW or programming environment.⁸⁵ Indeed, the Max for Live platform completely integrates Max into Live, establishing the "time

⁸² Albert Koschorke, *Körperströme Und Schriftverkehr: Mediologie Des 18. Jahrhunderts* (Munich: Fink, 1999), 269. Excerpt translated by Andrew Piper—see Sterne, *MP3*, 252fn34.

⁸³ Matthew Duignan, James Noble, and Robert Biddle, "Abstraction and Activity in Computer-Mediated Music Production," *Computer Music Journal* 34, no. 4 (2010).

⁸⁴ Myriam Desainte-Catherin, Antoine Allombert, and Gérard Assayag, "Towards a Hybrid Temporal Paradigm for Musical Composition and Performance: The Case of Musical Interpretation," *ibid.* 37, no. 2 (2013).

⁸⁵ D'Errico, "Behind the Beat," 63.

flow” paradigm while still retaining all the functionality of the classic DAW. Reflecting on this, Ableton CEO and founder Gerhard Behles says that Ableton Live emerged from a frustration due to the lack of common ground between live performance and studio composition in software, given that he “did not differentiate between working in the studio or performing live. They were the same thing and I think many people still work like that to this day.”⁸⁶

I believe this is a poignant example of how the mediality of computer music unveils itself within software. Ableton Live encourages its users to take sounds made in the ‘studio’ (“time line”) to perform with them live (“time flow”) all within the same software environment. Ableton’s commercial success leads me to suggest that this more-or-less unified approach to both live and studio music is an attractive prospect for many musicians. Other software have emerged utilising this same selling point (for example, Bitwig), and most classic DAW software now have at least a few features that might be considered “time flow.” These recent developments facilitate a mediatic discourse in new ways, in that “time line” and “time flow” cease to be entirely incompatible, but become highly intertwined through software.

Simon Waters notes that “what musicians tend to be interested in and good at is using devices in a manner which operates at the edges of or outside the design brief.”⁸⁷ This might be a reason for instrumental hip hop’s success—by subverting Ableton’s easy-to-use and highly popular quantisation function, instrumental hip hop producers explored the possibilities of non-quantised sound. My own use of Live in a performance context involves actively subverting the discrete nature of Live’s “Session View” matrix by not quantising any material, and utilising continuous and nonlinear performance strategies. Indeed, if DAWs and MPLs didn’t make this kind of composition so difficult, perhaps I wouldn’t find this compositional strategy so appealing.

3.3 Limitations of mediality

Simon Emmerson describes laptop performance as choosing to move *some* of the activity

⁸⁶ Brock Cardiner, "Ableton CEO Gerhard Behles Talks Killing Your Darlings, Piracy and More," High Snobiety, <http://www.highsnobiety.com/2014/10/14/ableton-ceo-gerhard-behles-interview/>. Accessed 29 October, 2014.

⁸⁷ Simon Waters, "Performance Ecosystems: Ecological Approaches to Musical Interaction," in *Electroacoustic Music Studies Network* (2007).

of the studio process into the real-time, performed domain. What the composer-performer chooses to move to the live domain is, in my experience, entirely a matter of creative concern, more so than a logistical one. Emmerson goes on to say that with the advancement of technology (laptop processing power), “an ever greater proportion of what used to be the studio’s domain becomes available for ‘live’ working. There is, in principle, no limit to this development.”⁸⁸ I’d like to suggest that there *is*, in fact, a limit to this development, though not in the technological sense as Emmerson implies.

Horacio Vaggione writes that “the role of the [computer musician] is not one of setting a mechanism and watching it run, but one of setting the conditions that will allow him or her to perform musical actions.”⁸⁹ This is an important acknowledgement in computer music performance—the computer musician is unable to control all the parameters that may be manipulated in a studio work at once, due not only to practicality but also our cognitive inability to process and control that many parameters simultaneously. Thus, we choose to “abstract” some of that control away through some sort of “mechanism,” such as an automatic or randomised control process, or to leave a sound as static, not to be manipulated in real-time. In creating live works from studio material I’m always assessing what elements of the work are ‘performable,’ and would assume greater meaning and expression through performance rather than remaining static, non-real-time elements.

Matthew Duignan et al., in a series of qualitative interviews with professional music producers, document how producers overcome perceived flaws or difficulties with DAW software, the processes of bringing music productions to live performance, and other duties that music producers are expected to do. They found that producers “need to deal with extreme levels of complexity when manipulating the multitude of time-based parameters,” and that they need to “visibly and conceptually abstract away this complexity.” If producers can see how heavily they’ve edited a piece of music, then this can cause self-doubt and cognitive overload. The easiest way to abstract this complexity for these producers was simply to bounce the audio down, thereby converting “time flow” musical material to “time

⁸⁸ Emmerson, *Living Electronic Music*, 27.

⁸⁹ Horacio Vaggione, “Some Ontological Remarks About Music Composition Processes,” *Computer Music Journal* 25, no. 1 (2001): 58.

line.” However, this is a destructive process—the producer can no longer edit the musical material at its original “time flow” level, and while this helps alleviate perceived complexity, it creates apprehension in case more “time flow” editing is seriously needed.⁹⁰

In live and studio computer music, the management of perceived complexity is an essential and often ignored aspect of the compositional process. If a performer is to perform computer music live, then it would seem to be cognitively impossible to manage such complexity in real-time. Again, the performer must make choices here as to what complexities can be destructively “bounced down,” and what material is of a digestible complexity that is manageable and manipulable in real-time.

3.4 Conclusion

I’ve attempted to articulate certain aspects of the contemporary mediality of computer music, and how this is realised in computer music performance, in recent music software, and the challenges and limitations faced by computer musicians in engaging with mediality. We have already seen, in some genres and traditions, computer music performance practices informing studio practices and vice versa, and it’s reasonable to say that this mediatic discourse will only become more rich, multifarious and complex into the future, as each medium defines its own sets of practices, means of referentiality, and sociocultural agency.

In approaching the *Ambivalence of Density* suite of live and studio works, researching the history of the relationships between live and studio media, and the technologies that presuppose those relationships, was a significant aspect of the creative process, that I believe culminated in a series of works that effectively responded to this mediality. These processes, and its outcomes, are outlined in the next chapter.

4 Mediatic ideas in “Ambivalence of Density”

In order to investigate and draw attention to the relationships between live and studio

⁹⁰ Matthew Duignan, James Noble, and Robert Biddle, “Abstraction and Activity in Computer-Mediated Music Production,” *ibid.* 34, no. 4 (2010).

forms, I composed a suite of electronic and electroacoustic works collectively titled “Ambivalence of Density”, each of which exist as both live and studio interpretations. The live interpretation was a recital performed on the 15th of October, 2014 at the Western Australian Academy of Performing Arts—a recording of which is submitted as Appendix A, with accompanying documentation as Appendices B and C—and the studio work is submitted with this dissertation as Appendix D.

My artistic goal here was for each of these works to be as successful as possible within their medium’s own terms, while still retaining some identity as a singular ‘work’—many of these interpretations are only subtly different from their counterparts. The reasons for this are twofold: the majority of composers, performers and musicians are expected to retain a relationship between their live and studio output,⁹¹ and composing completely separate works between each medium would not effectively draw attention to this mediality, rather it would only serve to distance and antagonise each medium.⁹² Nonetheless, this also raises the compelling question of what defines the ‘work’ if it exists differently and concurrently in two mediums, though this is outside the scope of this thesis.⁹³

The outcomes of this research do not intend to propose a hubristic and immobile interpretation of mediality in music, but rather serve only to consolidate and expand my own live and studio practices by interrogating the relationship between them.

Table 1 shows a list of live and studio compositions that comprise *Ambivalence of Density*, with each interpretation’s durations, and the instrumentation of the live works.

⁹¹ American composer Chris Madak, also known as Bee Mask, summarises it nicely: “One of the understood conventions of doing “music,” as opposed to “sound art” or “performance art” ... is that you are expected to maintain a studio practice and a performance practice and that these will have some sort of ... consciously constructed relationship with each other.” Earhart, “Bee Mask Interview” 30.

⁹² This isn’t to say that divergent approaches to live and studio media can’t be effective at approaching a mediatic discourse—Italian composer Valerio Tricoli’s improvised live works and meticulous studio compositions are very different in approach and content. “all my (solo) performances and all my (solo) studio works end-up expressing quite the same ideas, or better, the same sensations, and in a way the point is that the sound is always different, very different, but *the song remains the same*, so to say.” mixmag.info, “Podcast #87: Valerio Tricoli,” <http://www.mixmag.info/?action=PageMaterial&News=1323002>. Accessed 21 October, 2014.

⁹³ Jonathan Impett describes the difficulty of negotiating the ‘work’ in computer music performance. His “*work-without-content*” thesis suggests the work-quality of computer music performance can be defined as “an assemblage that with its particular mode of performance makes possible the reinstantiation of the original impulse and its exploration in a shared present reality.” (457) For Adorno (as described by Gerard Bruns), the work “is as much an event as it is an object; that is, it is something whose mode of existence is fluid, dynamic, and irreducible to the thinglike condition in which it is nevertheless constituted as a *work*,” which I generally accept in my usage of the term. See Johnathon Impett, *What Are We Making? The Work-without-Content in Live Computer Music*, 2011. 456-59; Gerald L. Bruns, “On the Conundrum of Form and Material in Adorno’s Aesthetic Theory,” *The Journal of Aesthetics and Art Criticism* 66, no. 3 (2008): 227.

Table 1: List of live and studio works comprising "Ambivalence of Density"

Live			Studio	
Name	Instrumentation	Duration	Name	Duration
-ecstasy	Soprano clarinet and laptop	6:18	—	—
As Rendered	Flute, bass clarinet, violin, cello, piano and laptop	12:15	As Rendered	5:57
Whirling Knives/Panacea	Laptop and mixer	24:44	Whirling Knives 1	4:43
			Whirling Knives 2	3:43
			Whirling Knives 3	3:42
			Panacea 1	5:41
			Panacea 2	4:22
			Panacea 3	4:21

4.1 Observations and discussion

The compositional processes of these works were reflexive and chaotic, in which my artistic goals were open to change and intuitive experimentation. In beginning this process, I envisioned that the live and studio interpretations would be structurally very different from each other—that the ontological qualities of each medium could indeed be extrapolated to create two essentially different interpretations of the work. Upon further research and investigation into the medium specificity thesis, this initial process revealed itself to be a little misguided.

4.1.1 On medium specificity

The medium specificity thesis promotes the idea that artistic mediums imbue the content of art with qualities unique to their medium, and that artistic styles *should* develop by interpreting the ontological characteristics embodied by the medium. The idea originated as early as 1766, with Gotthold Ephraim Lessing (1729–1781) refuting Horace’s famous claim “*ut pictura poesis*” (“as is painting, so is poetry”) by pointing out their inherent ontological differences as poetry unfolds over time, while painting exists in space.⁹⁴ Clement Greenberg (1909–1994) later used the term to describe abstract painting’s “surrender” to the opaque,

⁹⁴ Gotthold Ephraim Lessing, *Laocoon*, 1984 ed. (New York: Bobbs-Merrill Company, 1766), 91.

flat canvas, as a rejection of the painterly imitation of natural scenes,⁹⁵ though Marshall McLuhan's infamous dictum that "the medium is the message" remains the most resolute proponent of medium specificity.⁹⁶

The problems with medium specificity in art are well documented, and the idea lost much of its currency with the emergence of postmodernism. Noël Carroll (1947–) criticised the medium specificity thesis as an attempt "to extrapolate from the structure of the medium" to the "appropriate subject of the medium,"⁹⁷ which implies a universal standard of excellence that all art forms should aspire to, while also "seek[ing] to eliminate medium hybridity for the sake of 'purity.'"⁹⁸

The medium specificity thesis is mostly evoked in the analysis of visual art and new media art, and as far as I can tell it has not been evoked in the analysis of music and sound mediums. Such analysis won't take place here, though I mention it to point out that my initial attempts at creating medium-specific work were unfruitful and seemed contrived, and the negation of the medium specificity thesis opened up the possibility of engaging with the mediality of music without blatant compositional differentiation (although in some cases there was a significant differentiation).

4.1.2 Sociocultural conceptions of media

The compositional process became more of an interpretation of the culture, history and contemporaneity of the live and studio, rather than an interpretation of ontology. Cultural context was an essential component in this process—after all, the mediality of music points to the *practices* associated with musical media. This process was a sort of stocktake of where my music comes from, in terms of artists I'm most compositionally influenced by, and my place within broader cultures and practices such as those associated with genre, geography, and demographics.

I've been lucky enough to see live performances of many of the artists whose studio works are most influential on my practice. These experiences, as well as reading several interviews

⁹⁵ Clement Greenberg, "Avant-Garde and Kitsch," *Partisan Review* (July–August 1940): 8.

⁹⁶ McLuhan, *Understanding Media*, 20.

⁹⁷ Noël Carroll, *Problems of Classical Film Theory* (Princeton, New Jersey: Princeton University Press, 1988), 81.

⁹⁸ Maras and Sutton, "Medium Specificity Revisited," 100.

with those artists, helped develop my approach to these works,⁹⁹ while also confirming that the realisation of live works from a studio work remains a challenging affair that can have wildly varying results, which in a way precipitated the desire to write this thesis. Not all of these performances were effective—I’ve seen many performances that were not satisfying due to their lack of engagement with the liveness of the performance.

Mark Ashby describes the defining characteristics of listening to recorded music as predicated on “acuteness of reception, presumed repetition, attention to detail, [and] scattered modes of awareness.”¹⁰⁰ Although these characteristics could arguably be considered objective and ontological, I believe these traits are a significant factor in how composers have approached the studio medium in the past.¹⁰¹ My interpretation of these characteristics took the form of meticulous editing in the DAW. Much of my musical material is loosely structured, non-rhythmic (in the metric sense) yet contains a lot of transients—editing these sounds to avoid accidental clashes with other layers was time-consuming but ultimately a significant component of the studio process.

In the live works, this kind of editing isn’t entirely possible, and for my purposes it isn’t even desirable. I like a certain roughness in my live performance practice, an acknowledgement that the performance has the *capacity* to go wrong, but ultimately (hopefully) doesn’t. Having said this, some layers were bounced down and played in their highly edited, studio form in the live performance—the grainy rhythm in the introduction of *Panacea 1* is one such sound that was too undesirable in its unedited, “time flow” form.

4.1.3 Control aesthetic and affordance in computer music performance

One of my favourite aspects of the live medium is that time is not indexical in the way that studio mediums imply. I am very interested in exploring the elastic, dynamic, even porous

⁹⁹ Two particularly insightful interviews were: Earhart, “Bee Mask Interview”; mixmag.info, “Podcast #87: Valerio Tricoli”.

¹⁰⁰ Arved Mark Ashby, *Absolute Music, Mechanical Reproduction* (Berkeley: University of California Press, 2010).

¹⁰¹ Two notable examples who inspire my practice deviate from this notion: Brian Eno and Pete Swanson. For Eno, the pursuit of studio perfection engenders “characterlessness,” while Pete Swanson—whose studio and live practices are almost entirely improvised—said, “one aspect of contemporary music that I really loathe is the focus on perfection in recording. I generally see the processes that have been developed for creating records as promoting a premium on ‘correctness’ and diminishing the emotional potency of the original performance.” See: Dunhill, “Brian Eno by Alfred Dunhill,” <http://youtu.be/5mqtc2Z3K8o>. Accessed 7 November, 2014; Joseph Burnett, “Supremely Demolished Beats: An Interview with Pete Swanson,” *The Quietus*, <http://thequietus.com/articles/10749-pete-swanson-interview-sarin-smoke>. Accessed 7 November, 2014.

nature of real-time in terms of the musical event—I call this temporal elasticity.

The most obvious way one might manipulate temporality in music is the centuries-old practice of rubato. In this sense, my previous training as a classical pianist shines through, where the Romantic tradition's manipulation of temporality was one of the primary means of performative expression. The rubato isn't often used to describe computer music in a performative capacity, probably because of the Romantic connotations of the word. My use of rubato is quite simple—musical material simply isn't quantised. I play most of the material on the *monome*, a device with a grid of backlit buttons designed in such a way that “impose[s] creative constraints that temper the endless reprogrammable possibilities.”¹⁰² Each button corresponds to a synthetic sound (or a sequence of a few sounds) being played once. Throughout *Panacea* this sort of control is exhibited, and the second movement of *Whirling Knives* is very liberal in its rubato.

I use Ableton Live for my performances, and there are some difficulties with performing with totally free temporality, as the software is predominantly built for loop-based, quantised musical material. It can be hard to rehearse performances in this style with Live—often in order to rehearse them I have to start from the beginning of the piece, so the automation and MIDI events can register properly. This is a problem of which over the last few years, I've been trying to develop solutions for.

A frustrating cliché in contemporary electronic music performance is the liberal and garish embellishment of sound just as an excuse to ‘control’ the sound physically, using MIDI encoders or faders or whatever new interface for musical expression (NIME) is fashionable. I colloquially call this “knob-twiddling”, where non-meaningful musical gestures are rife—things like filter sweeps and other effects that dramatically alter the timbre of the sound, only used because they're there to be used and manipulated by the performer. To me, this isn't good composition, and in response to this my performance setup is quite restrained in terms of what kinds of control I afford myself. My performance setup does not use any continuous MIDI encoders, simply so I'm not tempted to “twiddle” in performance. My use

¹⁰² Brian Crabtree and Kelli Cain, "Grid One Twenty Eight," *Monome*, <http://monome.org/grid/>. Accessed 24 October, 2014.

of the monome, though, indicates a preference towards a sort of discrete intentionality, which is not necessarily afforded by using encoders. This control paradigm—and, in essence, control aesthetic—means that almost all performative gestures within the computer are discrete and intentional as opposed to continuous and exploratory, a limitation that I find to be liberating.

However, I use a 12-channel mixer in my live stereo performances which, when paired with an external effects processor and the effects processor built into the mixer, has been a very satisfying means of creating a mix in performance. Using a mixer in live performance, especially an analogue one with EQ and effects functionality, can be dangerous—it's easy to make a bad mix in live performance, so the use of a mixer acknowledges a sense of danger and real-time interaction with the sound as it disperses in the space. In live performance, this results in a thoroughly dynamic soundstage—admittedly not a common feature in electronic music performance in venues with a high noise-floor, but the concert-hall setting affords a high dynamic range that I believe my performance utilised effectively.

4.1.4 Engaging with space and implying space

In composing the live works, negotiating with how the sound would interact with the space (the Music Auditorium at the Western Australian Academy of Performing Arts—the acoustic of the room doesn't lend itself well to loud, midrange-heavy electronic music) was an integral part of the composition. Using a mixer in performance helped to this effect—controlling the dynamic range of any given sound encourages a more nuanced interaction with the acoustic of the space.

Within the studio paradigm, space must be implied—studio works rarely take into account the acoustic of its playback situation simply because it can vary so widely, from cheap headphones and laptop speakers, to car speakers¹⁰³ and concert-style diffusion systems. For me, creating this illusion of space is a fulfilling artistic avenue. In *Whirling Knives 2*, I created reverberation characteristics that are not quite 'real-sounding' nor completely non-

¹⁰³ Holly Herndon's work *Car* (cassette, 2012) specifically acknowledges the acoustic of the car—upon conducting a poll of how and where people listen to cassettes, most participants specified the car as their most common mode of playback. This is a rare example of a studio work that directly references its playback situation, though I mention it here to point out that the practice of incorporating the presumed playback scenario into a studio work isn't unheard of.

real. In *Panacea 1*, I extrapolate on this to create concurrent perceptions of space, where certain sounds that are made to sound like they're situated in a small and reflective room, are posited against sounds situated at the back of a large hall. I believe this has a jarring effect that situates the listener in a state of spatial ambivalence.

4.1.5 More limitations of mediality

The work *-ecstasy*, for soprano clarinet and laptop, was an attempt to come to terms with the academic electroacoustic (live) tradition, of which I'd had little previous experience composing for in the past. It was a departure from my usual practice in many aspects, and represented an immersion in ideas surrounding the liveness of electroacoustic music.

-ecstasy does not have a studio interpretation, but not for lack of trying. Many attempts were made to try and create a version I deemed acceptable as a studio work, but these attempts both compromised the identity of the work and did not reflect my interests as they relate to the studio medium.

My studio work is generally involved with synthesis-based, abstract music, working in and around the traditions of ambient, drone, and noise musics. Where *-ecstasy* has a fairly rigid and "classic" ternary form, my studio work usually takes on more sprawling forms, informed by timbral development and exploration more than thematic or harmonic structure. There are aesthetic clashes beyond structure too—the use of the soprano clarinet doesn't align well with the traditions through which my studio works tend to operate. While I don't want to categorically reject the crossing-over of more "classical" aesthetics with those of contemporary studio-based genres, I felt that all attempts at this seemed dislocated, and either lost a lot of the work's unstable energy or didn't gel with the rest of the studio works, thus I decided to exclude *-ecstasy* from the studio interpretation of *Ambivalence of Density*.

As Rendered, on the other hand, is the most highly differentiated between its live and studio interpretation. Its live work, for small ensemble and laptop, was absolutely within the live tradition, and was in many ways a response to the tradition of the concert work, taking a conceptual approach that I feel was contextually suitable within that tradition.¹⁰⁴ I

¹⁰⁴ See Appendix B and C (pp. 24–32 in the PDF folio) for program notes and full documentation and description of

decided this concept wouldn't suit the studio medium as concisely—instrumental mimesis is a more pertinent and interesting concept to live music than studio music in my opinion—so I approached *As Rendered* with similar studio-based strategies to my other works. The studio interpretation still utilises the electronic component of the live work (the crackling and wind sounds), but places this with a series of understated drones and incidental (electronic) sounds. The result is a studio work that doesn't share the live work's conceptual framework, or indeed much of its acoustic sonorities, but I feel that its integrity as a "work" isn't compromised due to each sharing that distinctive electronic component.

4.1.6 Conclusions

These observations on the compositional process of *Ambivalence of Density* are in no way universals that apply to my practice in the future, but this process was a compelling and rewarding application of my research into the mediality of music. By drawing attention to the relationship between the live and the studio here, I've exposed some technical and practical avenues for creativity, such as the historical and contemporaneous component of each medium, the interaction and perception of space, and the aesthetics of control in live performance. Furthermore, I've suggested there are limits to this practice, where creating studio works from live works or vice versa may sometimes yield lesser, compromised results, or that better results can be achieved by adjusting a work's concept between media.

This process was effective in clarifying the relationship between my live and studio practices, my reasoning for differentiating between them, and in future works I believe that this investigation will be helpful in creating new processes and engendering new relationships and logics between my live and studio works.

5 Conclusion

By researching the mediality of music, it was hoped that I would be able to clarify some aspects of the complexity that is the relationship between the live performance and the studio work. I've interrogated it in terms of its history, its technology, and in my own musical compositions.

In the twentieth century, the theoretical groundwork was laid for the studio medium to rise from, and in the 1950s it did so through Pierre Schaeffer's GRMC. Much of the discourse regarding the live/studio dialectic was antagonistic however, and analysis of rock music aesthetic suggests that there is a degree of dependence between each medium in terms of establishing a notion of authenticity.

With the rise of the personal computer and laptop as a music-making device, the live/studio relationship becomes increasingly blurred. I've suggested that the alienating tendencies of early computer performance enabled a more bodily, performative pursuit of authenticity, that has affected how computer musicians perform live (as in instrumental hip hop) and that this often influences studio works. Moreover, I suggest that there are limitations to mediality in computer music—only so much can be done live that can be done in the studio, and this requires creative decisions from the composer as to what can be performed.

With this in mind, my suite of compositions *Ambivalence of Density* hopes to draw attention to this mediality, and respond to it through my own live and studio works. I believe it has done this effectively, and I believe that this process has benefited the music in both mediums. Constructing meaningful relationships between my live and studio “interpretations” of the works has helped me to understand why I approach each medium the way I have in the past, and these relationships will hopefully be stronger and richer in future works.

By thinking about musical media in terms of mediality, we can understand more about the nature of music than we can by segregating the live and studio as binaries. Mediatic cultures acknowledge that live and studio are two symbiotic practices that a musician

undertakes. By recognising the complex relationships between mediums like the live and studio, as I have done here, further research and creative practice can be done towards teasing out new relationships between these media. This is a broad, long-term goal for my artistic output going into the future.

This thesis hasn't attempt to address the mediality of sound—for Sterne that is essentially the premise behind sound studies—but further research could be done as to the influence between forms such as music and sound art, or music and music for multimedia. Such research would be wise to consider them in terms of their “complex web of practice and reference” rather than their hierarchical organisation. Lately, we've seen the beginnings of a kind of music composed specifically for consumption on the Internet. As well as this, the mainstream consumption of music now occurs via Internet streaming through clients like Spotify and YouTube. I believe discussions surrounding the mediality of music will become richer through this exploding propagation of musical media and formats, and how internet-based music might engage with the conventional live/studio relationship. This thesis could serve as a stepping-stone towards greater understandings of the implications of the Internet as a musical medium.

I hope this thesis describes the relationship between the live and studio in a more constructive manner than has been done in the past, and that musicians who engage in live and studio practices may take a mediatic approach to their work in order to facilitate symbiotic relationships between their practices.

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Appendices

Appendix A

Ambivalence of Density Live (320k MP3 format)

Recorded on 15 October 2014 in the Music Auditorium at the Western Australian Academy of Performing Arts. Room recording by Kris Bowtell, mastered by Michael Terren.

All works composed by Michael Terren in 2014.

1. -ecstasy (6:18)

For soprano clarinet and laptop

2. As Rendered (12:15)

For flute, bass clarinet, violin, cello, amplified piano and laptop

3. Whirling Knives/Panacea (24:44)

For laptop and mixer

Performers

Alexandra Thomson – soprano clarinet

Alexandra Chetter – flute

Gabbi Fusco – violin

Lindsay Vickery – bass clarinet

Steve Paraskos – amplified piano

Michael Terren – laptop, mixer, cello

Appendix B

Program for the “Ambivalence of Density” concert (double-sided A4 and PDF).

Appendix C

Ambivalence of Density electronic portfolio (PDF and iBook format)

A portfolio describing the compositions, concepts, and processes in *Ambivalence of Density*. Created using iBooks Author v2.2, with accompanying scores, images, diagrams, sound examples, and video examples. 56 pages. Submitted to the review panel with the performance of *Ambivalence of Density* on October 15, 2014.

While the ideas discussed in this dissertation are included to a lesser extent in this portfolio, the central focus is on other compositional ideas, as well as documenting my achievements and developments in 2014.

Appendix D

Ambivalence of Density (320k MP3 format)

All works composed, mixed and mastered by Michael Terren.

1. Panacea 1 (5:41)
2. Panacea 2 (4:22)
3. Whirling Knives 3 (3:42)
4. As Rendered (5:57)
5. Whirling Knives 1 (4:43)
6. Whirling Knives 2 (3:43)
7. Panacea 3 (4:21)