

The Impact of Technology on the Role and Function of the Bass in Jazz

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ABSTRACT

The thesis explores the critical impact of technology on the bass, and the extent to which that has fundamentally influenced the course of jazz. It does so according to a three-tiered framework involving technologies that are intrinsic to the instrument, including its eventual electrification; technologies extrinsic to the bass, most notably evolving recording technologies; and an evaluation of the ways in which the implementation of these technologies has transformed jazz as an art form. Topics include: the impact of organological changes brought about by the transition from tuba to string bass and the adoption of the electric bass; audio technology's role in the presentation of the jazz bassist's performance; and the influence of technical developments in the recording studio on the advancement of jazz bass style. The study also considers the challenges facing the bassist as a result of the increasing power of the recording engineer. Finally, it assesses the ways in which emerging technologies might threaten the security of the bassist within the jazz ensemble.

Among the conclusions drawn is that the technological empowerment of the bassist is largely responsible for the innovations of jazz's more celebrated soloists. In this regard the study describes the stylistic evolution of jazz from the bass player's perspective – that is, from the musical foundation up. A clear and valid link emerges between the emancipation of the bass in jazz and the role of technology in delivering its full potential.

DECLARATION

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INTRODUCTION

According to the renowned French jazz critic and producer Hugues Panassié:

Until the year 1930 and even later the tuba was much more in favor in jazz than the string bass. The tuba gave the orchestra a more weighty support, and from the point of view of sound volume and background it was far more imposing and carried much further than the string bass. But in time it no longer brought the desired suppleness and sensitive rhythm, and it could not be swung as easily as the string bass – and the latter took over.¹

Panassié in the above touches on key fundamental aesthetic and artistic factors that helped shape the role and function of the bass in jazz. At the heart of his observation lies the perennial conflict between practical issues of ergonomics and acoustics, and the desire on the part of musicians to maximize their expressive potential. The shift from the tuba to the string bass heralded the first in a series of fundamental changes to the role played by the bassist in the jazz ensemble. A similar conceptual shift occurred with the introduction in 1951 of the Fender Precision electric bass, which over time opened up a sonic and expressive vista untapped hitherto by the unamplified string bass. That vista, and the role of the bassist was in turn transformed by Jaco Pastorius' mastery of the fretless electric bass in the mid-1970s, an instrument which married the expressive nuances of the string bass with the seismic power of its electric counterpart.

Changes to the nature of the bass instrument itself – its intrinsic qualities – did not evolve in isolation, however. What Panassié leaves unsaid in the above is that the supplanting of the tuba by the string bass was in equal measure facilitated by developments extrinsic to the instrument, among them increasingly sophisticated recording technologies. Technical refinements, which saw the initial acoustic approach to recording give way to electrical methods – and the subsequent introduction of tape based systems – encouraged a progressive de-temporalization of jazz music performance. The bass, like other instruments and musical stylings, became party to an incremental recording process that gradually de-emphasized live group performance in what was an increasingly reflexive and artificial (in the sense of being far removed from the stage) studio environment. Amplification and related audio processing technologies led to a quantum shift in the dynamic capabilities of the jazz bass, which in turn impacted upon its role in the concert hall and studio. Intrinsic and extrinsic factors intersected at various

¹ Hugues Panassié, *The Real Jazz* (New York: Barnes, 1960), p. 174.

historical and chronological junctures, culminating in the widespread adoption, post-1980s, of digital technologies. These technologies allowed jazz bassists to create sounds – and indeed performances – that would have been inconceivable to their forebears, on instruments that bore no relation to the tuba or the string bass.

With these momentous shifts in mind, the current study considers the role and impact of technology on the evolution of the bass in jazz. The study posits that a more nuanced appreciation of these developments leads to a clearer understanding of the evolution of the jazz ensemble in general. As is outlined below, histories to date have tended to pursue a ‘top down’ reading, one that emphasizes the influence of the treble instruments on the melodic and harmonic trajectory of jazz.² This study seeks to augment that reading by examining the extent to which the technologically facilitated changes applied to the bass shaped that trajectory. The role and function of technologies in the narrative are brought full circle through an examination of digital sampling technology, a music production tool that has had the effect of de-coupling the sound of the jazz bass from traditional bass instruments, while at the same time providing powerful forensic tools by which its evolution can be examined. The investigation of the electrification of the bass necessitates tracing, where appropriate, developments in other vernacular musical genres, rock and blues in particular. This is done in order to assess how, and the degree to which, technological advances first deployed in these other styles gradually became to be incorporated into general jazz practice. This occasional flexing of the research parameters has been undertaken in order to support the assertion that technology, though perhaps more conspicuously applied in other areas of popular music, has not been their exclusive domain. It is for this reason that the study treats as primary resources recordings supported where appropriate by ethnographic evidence, for it is within the diegesis of recordings that technology’s mediations can most clearly be seen.

Arguably, jazz musicians have always taken as axiomatic the highly interactive nature of their art. The incursion of machine assisted or indeed machine driven musical material into modern performances transforms much of this creative dynamic. The adaptations required of the bassist in performing with drum machines for example, is symptomatic of the broader scope of concessions the modern jazz musician has been

² See, for example Gunther Schuller, *Early Jazz* (New York: Oxford University Press, 1968).

obliged to make. This relationship between man and machine, in what was previously an exclusively inter-human activity, is one important aspect visited by the study.

- Literature Review

Over the last twenty-five years research into jazz has moved beyond explorations of its provenance and socio-cultural significance. In keeping with this trend, the current study uses a number of seminal (and some less well-known) texts as the springboard for a more multi-dimensional approach to deepening our understanding of the genre, one that incorporates audio electronics, acoustics and aspects of performance practice. The study has engaged with definitive histories of jazz undertaken by Gunther Schuller, Ted Gioia, Joachim Berendt, Paul Berliner, Donald Clarke and Rudy Blesh, among others.³ While these titles have long served as authoritative texts, their general approach has been to construct a history of jazz from the perspective of its seminal jazz soloists, a tendency also shared by contemporary documentary makers such as Ken Burns. The project, while acknowledging the legitimacy of this top-down reading, re-examines the narrative from the bottom up. It investigates how the bass, with its increasingly assertive sonic profile, has transformed the rhythm section. It focuses on the ways in which its technologically driven evolution influenced the soloists that have hitherto received the lion's share of attention. The definitive accounts referred to above tend to ignore, or at least marginalize the contribution of bass players to the stylistic and aesthetic trajectory of the genre. A typical example of this is Berendt's *The Jazz Book*, which addresses the role on the bass in a mere six of its 459 pages. That said, Berendt is able to make an observation that captures the essence of the current study:

The bass provides the harmonic foundation for the jazz ensemble. Since this foundation is indispensable, the bass is of the greatest importance – though it may not seem so to the layman, since its sound is not very loud. It is the backbone of a jazz ensemble.⁴

According to Berendt the importance of the bass is in many ways obscured by its sonic limitations – and it is the tracing of the various ways that technologies have dealt with this issue that is the core activity of this study. For Schuller the lack of audibility of the

³ See bibliography for publication details.

⁴ Joachim Berendt, *The Jazz Book* (New York: Lawrence Hill, 1975), p. 278.

bass was compounded by the absence of a score against which to cross-check his aural analyses:

The musical analysis of jazz brings with it very special problems, particularly with regard to aural perception, problems which do not necessarily arise, for example, in an analysis of Bach fugues.⁵

It will be argued that problems of reception have impacted on our understanding of the evolution of jazz as a genre.

Schuller undertook his critical listening over 40 years ago, when audio technology was incapable of providing either the resolution or forensic capabilities now available. Arguably, to some extent, the primitive nature of his research tools influenced the formulation of his narrative. His primary sources – 78rpm discs, 33 $\frac{1}{3}$ rpm Long Playing discs (LPs) and reel to reel tape dubs – played on a less than sophisticated (by today's standards) reproduction system would have encouraged the top down hierarchical view simply because of the superior presentation of the higher register melodic instruments. The obvious limitation here is that, as Berendt has observed, the bass is difficult to hear. Technology – both intrinsic and extrinsic to the instrument itself – has to a large extent diminished these problems. With regard to the former, acoustic basses are now better amplified, while electric basses are louder and more distinct. With regard to the extrinsic aspects, the study exploits current advances in audio technology in order to illuminate how, and the extent to which, bassists influenced those soloists who have dominated the top-down view of jazz history championed, quite understandably, by Berendt, Schuller and others.

The study has also drawn upon other literary resources that, while engaging with technological matters, have not addressed their implications for the performing jazz bassist in a comprehensive way. These resources (listed in bibliography) include studies by Greg Milner, Michael Chanan, Timothy Day, Peter Doyle, David Ake, Roland Gelatt and Evan Eisenberg – all of which offer critiques of jazz from the perspectives of technology, politics and ideology of recorded sound. Whereas Panassié, and to a lesser extent Berendt and Schuller, have been content to limit themselves to the intrinsic factors – the musicians and their instruments – Eisenberg invests the recording industry with a

⁵ Gunther Shuller, *Early Jazz*, p. xi.

huge burden of responsibility. ‘Records’, he asserts, ‘not only disseminated jazz, but inseminated it ... in some ways they created what we call jazz’.⁶ Clearly Eisenberg believed recordings were responsible for more than just the documentation of jazz. The implied dialectic between commercial and artistic interests was not lost on Ake who suggested:

... jazz performances, the technology to preserve and reproduce them, the market forces involved in reproducing them, and the understandings effected by listening to them remain so inextricably interrelated that the category ‘jazz’ simply would not exist as it does today were it not for recordings.⁷

The study also addresses the often fractious relationship between players of the acoustic bass and those who prefer the electric bass. Conflicting viewpoints in the literature revolve around the extent to which the electric bass has been seen either as an electronic substitute for the acoustic bass or as a completely autonomous instrument, one that deserves little countenance in jazz. Bassist Charlie Haden was not alone in the view that:

As far as creative music is concerned, there can only be the acoustic bass – there cannot be electric bass. The only place that I hear and feel close to electric bass is with r&b – if you want to call it that – rock and roll.⁸

John Goldsby for his part conceded that acoustic bassists ‘have become technical wizards, due in part to influences from the electric bass’.⁹ George Duvivier found himself unable to make even that concession:

A Fender bass is really a guitar, and the technique for playing it is totally different from playing an upright, which is a violin. It’s an entirely different field and I’d rather not be involved.¹⁰

Jaco Pastorius, on the other hand, entertained no such prejudices. Believing that the acoustic bass was ‘a pain in the ass ... too much work for too little sound’,¹¹ Pastorius demonstrated that the electric bass was capable, through the mediation of technology, of

⁶ Evan Eisenberg, *The Recording Angel* (New Haven: Yale University Press, 2005), p. 118.

⁷ David A. Ake, *Jazz Cultures* (Los Angeles: University of California Press, 2002), p. 4.

⁸ Charlie Haden, cited in Arnold Jay Smith, ‘Bass Lines: Crystal Gazing With A Bonanza Of Experts’, *DownBeat* (27 January 1977), p. 15.

⁹ John Goldsby, *The Jazz Bass Book: Technique and Tradition* (San Francisco: Backbeat Books, 2002), p. xii.

¹⁰ George Duvivier, cited in Arnold Jay Smith, ‘Bass Lines’, p. 14.

¹¹ Jaco Pastorius, cited in Jim Roberts, *How the Fender Bass Changed the World* (San Francisco: Backbeat Books, 2001), p. 121.

challenging the expressive potential of the acoustic instrument. Marcus Miller also endorsed the electric bass and expressed his belief that it was responsible for re-energizing contemporary music:

The bass guitar was the instrument that let you know the '50s were over and music was going to some new places.¹²

Jim Roberts echoed the more conciliatory tone adopted in this study as he attempted to bridge the divide between the two instruments:

Perhaps we should think of the double bass and the bass guitar as 'cousins' rather than 'father and son'.¹³

While scholars and aficionados alike have tended to consider the individual instruments separately since the 1950s, this study approaches them from a more holistic viewpoint. It refers to primary sources including *DownBeat* and *Bass Player* magazine, representing the voices of the artists themselves, to determine in what ways attitudes toward the role of the bass have been transformed as a result of technology's increasing influence on jazz music. Using recordings as evidence, the study traces how the evolution of the bass' sonority has impacted on the development of jazz, and the ways in which technology has empowered the bassist. Ron Carter for example stated:

I've made only about four records without using a pickup. While those results were musically pleasing, the bass presence needed to be altered to ensure that it had more impact on the music.¹⁴

For Carter the natural sound of the acoustic bass, however satisfying in its own right, was never ideally suited to the exigencies of recording unless some form of technological mediation was applied. With that in mind the study examines works by notable recording authorities including Bruce Swedien, Bob Katz, George Martin and Roey Izhaki in order to identify the exact nature of these interventions. These sonic transformations and the increase in presence they delivered are illuminated through the use of digital audio diagrams, which provide visual evidence in support of the aural account imparted by recordings. The iterative nature of these transformations will be exposed by considering a sequence that examines their application in the studio, which in turn altered the

¹² Marcus Miller, cited in Jim Roberts, *How the Fender Bass Changed the World*, p. 12.

¹³ Jim Roberts, *How the Fender Bass Changed the World*, p. 20.

¹⁴ Ron Carter, cited in Brigid Bergin, *Ron Carter & The Importance Of Playing Music With A Big 'M'* <http://www.bassplayer.com/article/ron-carter-/sep-03/814> (accessed 18 April 2011).

expectations of concert audiences, which itself obliged bass players to attempt to reproduce their studio sound in a live performance setting.

On the other side of the acoustic/electric bass divide, Pastorius effected a marriage of technology and stylistic innovation to deliver a sound from his fretless electric bass that was a more than convincing foil for its acoustic predecessor. He spearheaded the movement to earn the acoustic bass' 'cousin' wider jazz acceptance. Ironically the top-down approach of traditional analysis, as employed by Schuller and Berendt, was also adopted by Pastorius out of necessity, and was partly responsible for his revolutionary approach to bass playing. Pastorius recalled that:

The first jazz record I heard was a Max Roach date ... I don't even know who the bassist was ... I couldn't hear the bass player at all. The only things I could hear were these [solo] lines. So I just worked them all out on the bass, without thinking anything of it.¹⁵

In this way the technological shortcomings imposed by his record player actually encouraged Pastorius to formulate a style that transcended traditional bass playing boundaries.

It emerges from this study that the organologic categorization of bass instruments so prevalent in the literature is growing less and less meaningful as technology, once thought to separate the jazz and popular music worlds, is in fact drawing them together. In resolving this area of sectarianism in jazz literature, the study offers a more integrated view of contemporary bass practice, one that reflects the attitudes of modern day players such as John Pattitucci, Christian McBride and Matt Garrison – each of whom has embraced both instruments. The study contends that these technological mediations, so essential to the recorded output of jazz and other genres, have been largely marginalized by the existing literature, or relegated to esoteric technical papers. As technology's influence expands, the consummate musician can no longer afford to remain ignorant of its impact or its implications. A more comprehensive understanding of the effects of technology on the bass in jazz must be achieved and it is to this end that the author submits the current study.

¹⁵ Jaco Pastorius, cited in Neil Tesser, 'Jaco Pastorius: The Florida Flash' *DownBeat* (27 January 1977), p. 13.

- Theoretical Framework

A theoretical framework consisting of three main components underpins the study. These involve consideration of technologies that are intrinsic to the instrument itself, those that are extrinsic and, in the nexus of the two, the ways in which their implementation have impacted on the jazz ensemble; in short, the way technology has actually transformed jazz as an art form. Their inter-relationship is encapsulated in the following remark by bassist Rufus Reid in 1977:

I think the bass more than any of the other instruments has improved and grown in the last 15 or 20 years. This is due to the availability of better strings, (and) electronic pickups for the string bass. There are so many electronic things that people have been delving into. There are different kinds of sounds happening. Those devices are there to enhance the music. Musicianship is being made easier. Pickups are better; bass players are now beginning to *play* things, express themselves better ... Now they can be heard even in large ensembles.¹⁶

The critical factors here are, first, the intrinsic aspect in the form of the reduction of physical impediments to musical facility brought about by improved strings. Second, factors extrinsic to the instrument, namely the application of pickup and amplifier technology to improve the projection of the instrument. Third, the expansion of expressive possibilities on the acoustic instrument made possible by this technology. In order to explore the intrinsic technological factors the study employs as its primary sources books, articles, technical manuals, academic research papers and relevant web sites concerned with the history of the bass in the jazz ensemble. Extrinsic technologies, which include those that have impacted on the way that the bass has been captured in performance, can best be appreciated through the medium of recordings and digital audio files derived from them. Recordings document the gradual increase in the sonic profile of the bass, and the resultant emancipation of its role in the jazz ensemble. The relationship is in fact reciprocal: just as the gradual development of recording technologies came to be reflected in the evolution of the bass in jazz, so too did the evolution of bass playing make demands on those recording procedures. This two-way dynamic is captured in the following observation from the renowned jazz bassist Red Mitchell with regard to his studio experiences:

¹⁶ Rufus Reid, cited in Arnold Jay Smith, 'Bass Lines', p. 14.

The level of musicianship by bass players has taken a great step forward. Eleven years ago, a guy could get away thumping the bass without paying any attention to musical values. Now, you can't do that – there are too many people listening to you. And not just musicians either. As critical standards have risen, so has the quality of playing.¹⁷

Audio technology commentaries (audiophile publications, magazine articles, and audio journals) have been investigated in order to assess the effect that improvements in the fidelity of recording media and playback equipment have had on perceptions of the bass. The importance of the feedback loop between performers and their recorded efforts in situ can be gleaned by studying sources concerned with the development of the recording studio. These include both published and unpublished interviews with recording engineers, producers and session musicians.

Intrinsic and extrinsic factors combine in the third component of the theoretical framework, which pertains to actual matters of style and performance. Here the methodology employed examines recorded media with an emphasis on transcriptions of the music contained within (the text as reflected in the score), rather than the sound of the recordings themselves. These stylistic analyses have been performed on seminal recordings in order to shed light on the way the bass empowered the rhythm section, and how the latter subsequently impacted on the genre. Transcriptions of performances of a single tune spanning a broad historical timeline have been used to illustrate specific transformations in musical style generated by technological developments. These mediations are illustrated through the application of technology itself, in the form of Pro Tools. Since its inception in the early 1990s, this ubiquitous audio editing/recording program and its computer-based platform have been responsible for a quantum leap in technological intervention in the performance and documentation of jazz. Herein its many capabilities are pressed into service as analytical tools in an effort to emphasize further the depth of technology's influence. The ability of Pro Tools to render audio characteristics in clear visual form is fully exploited.

¹⁷ Red Mitchell, cited in Dom Cerulli, 'The Mitchell Brothers: Whitey and Red', *DownBeat* (29 May 1958), p. 19.

- Chapter Outline

The thesis comprises nine chapters, which follow in a historically sequential order. Chapter One provides an historical context, embracing the birth of jazz to circa 1930. It details the gradual establishment of the string bass as the preferred jazz bass instrument using digital audio forensic techniques to validate previously scholarship. It examines the ways in which the string bass' incompatibility with the earliest recording technology influenced the evolution of jazz and how the substitution of easier to record instruments failed to satisfy the requirements of the music. The development of a myriad of performance techniques that confirm the bassist's struggle to achieve sonic parity within the ensemble is also investigated. Finally, the eventual resolution of many of the recording issues facing early bassists is examined. This revolves around the adoption of the Western Electric method of electrical recording, a process that could more comfortably transcribe low frequencies and delivered a more robust bass presence to recordings compared with the earlier acoustic process.

Chapter Two traces the growing sophistication of bass playing styles from 1930 to 1945 and considers the important role of recording technology in disseminating the innovations of the bassists in the bands of Ellington and Basie among others. Technology is shown to have been essential in establishing the modern integrated rhythm section. Strategies aimed at increasing the presence of the string bass and the technical problems they encountered are examined leading to a clearer understanding of the issues facing bass players as dynamic levels increased and ensemble sizes expanded. Subjects include early microphone and amplification techniques and the appearance of hybrid electro-acoustic instrument designs. These applications represent the first incursion of electrical technology into the area of live jazz performance as distinct from its previously exclusive role in the music's documentation.

Chapter Three embraces the period from 1945 until 1960. It examines the transformation in string bass style and presentation brought about by both improvements in the instrument's intrinsic features and extrinsic technological innovations including the introduction of tape recording. It investigates how the changing sites of performance from the stage to the demanding and highly technical world of the recording studio

encouraged bassists to expand their stylistic horizons and embrace a more objective and discriminating appreciation of their work. The critical reaction that greeted bass players' attempts to emancipate the instrument from its traditional role is addressed in order to demonstrate how the lack of sufficient technological resources undermined their efforts. This censure led many bass players to embrace alternative instruments with which to fulfill their soloing ambitions. The rise of a more discerning jazz audience with high art pretensions is also discussed in order to establish how its aversion to technological mediation in performance influenced the reception of the electric bass within the jazz community.

Chapter Four focuses on the period from the early 1950s to 1970. It examines the introduction of the electric bass into the jazz milieu by tracing the performance issues that encouraged its development and the conflicting attitudes concerning its suitability as a jazz instrument. The gradual transformation of the electric bass from a string bass substitute to an autonomous instrument with its own stylistic language is demonstrated with transcriptions from seminal recordings and waveform analyses. Other factors investigated include the increasing employment of multi-track recording practices in the studio, as well as influences from the competing popular music field that gained so much currency in the 1960s. Both are shown to have had a considerable impact on the development of the jazz bass. The increasing encroachment of the Fender bass in what had been an exclusively string bass driven musical style is also assessed and finally, attempts to apply some of the electric bass' technical innovations to the string bass in order to electrify the entire rhythm section are examined.

Chapter Five focuses on the period from 1969 to 1976 embracing the gestation of the fusion genre. Fundamental changes to the nature of jazz production are shown to have been the result of the application of new recording technologies and a fundamental re-conceptualization of the role of the jazz bass. Through his incorporation of rock influences, notably its electric bass underpinning, Davis introduced jazz to a greatly expanded audience with the release of his groundbreaking *Bitches Brew* album. Having gained considerable momentum due to its popularity in rock music, the electric bass began to seriously threaten the primacy of acoustic bassists as jazz artists, struggling to compete in an increasingly youth-orientated music business, began to harness its sonic

power to contemporize their repertoire. The transformation in the sonority of the string bass that occurred as amplification techniques became more widespread is examined using waveform analysis. Finally, the widespread critical backlash generated as commercial imperatives conflicted with artistic aspirations is assessed.

Chapter Six embraces the years from 1976 to 1985 and focuses on the career of Jaco Pastorius who was responsible for legitimizing the electric bass as a jazz instrument. His technological expertise is shown to have had a significant impact on his musical ambitions. Case studies are undertaken illuminating the different artistic results achieved as the result of his adoption of the fretless electric bass in what had been a traditionally string bass driven jazz context. The period also witnessed the establishment of digital technology in both the recording and live performance environments. The increasing mediation of third parties – the ‘soundperson’ in live performance contexts, and the engineer in the recording studio – is also addressed. The introduction of the Compact Disc (CD), a format that suffered none of the previous impediments to extended low frequency response, is shown to have had considerable impact on the nature of bass players’ performances arguably leading to the development of alternative bass instruments. The study further clarifies the issues generated by the introduction of MIDI technology that temporarily redirected the attentions of jazz bass players away from interactive jazz performance toward compositional matters.¹⁸

Chapter Seven embraces a period of conflict from 1980 to 1990 in which a reactionary movement led by Wynton Marsalis sought to re-establish a traditionalist jazz aesthetic. Conflicting viewpoints revolved around the extensive use of technology in the production of jazz, in particular the electric bass and amplification, resulting in musical amalgams ‘contaminated’ by funk and r&b influences. The unamplified string bass is shown to have been a symbol of purist resistance against the forces of commercialization. In opposition were the attitudes of many modern bassists including Marcus Miller who maintained that the use of technology was essential in order to assure the continued validity and relevance of contemporary jazz music.

¹⁸ MIDI is an acronym for Musical Instrument Digital Interface. It is an industry-standard protocol that enables electronic musical instruments (synthesizers, drum machines), computers and other electronic equipment (MIDI controllers, sound cards, samplers) to communicate and synchronize with each other. The MIDI protocol was ratified in 1982.

Chapter Eight describes the impact of the proliferation of digital technologies in music production from 1990 until 2000. These include the adoption of Pro Tools and other digital recording formats and the reconfiguration of recording spaces in order to satisfy their engineering requirements. The changing studio environments, increased track count and expanded automation are all investigated in relation to the bass player's performance. The challenge to the authority of bassists in the face of expanding technical intervention is investigated. Sophisticated error correction tools and editing strategies and the gradual deskilling they were often thought to cause, are assessed in relation to an undermining of musical syntax as bass tracks came to be re-conceptualized as malleable raw material rather than holistic performances. The role of the bassist as a humanizing influence within machine driven performance environments is also investigated.

Finally, Chapter Nine looks to the future prospects of the bassist under continued and aggressive technological onslaught. It surveys the strategies employed by some of jazz's most innovative bass players to reassert their artistic and market value under conditions of threatened security due to increasingly sophisticated music production tools. It argues that as new technologically inspired techniques enter the marketplace, the jazz bassist must find new ways to exploit the myriad of opportunities that inevitably will arise. The ramifications of authorship and copyright issues in an age of ubiquitous sampling and expanding Internet access are also confronted, in an effort to expose some of the dangers already jeopardizing the jazz bassist's musical legacy. The chapter considers the re-emergence of a less technologically mediated approach in which the bassist's ability to deliver a joyful pulse is being prioritized above error free performance standards.

A conclusion revisits the central findings of the study reflecting on the broad scope of technology's impact on the jazz bassist and, by extension, the jazz ensemble. Finally future research directions, which have been uncovered by the current study are suggested.

CHAPTER ONE

The Bass and the Early Mechanical Roots of Jazz (1915-1930)

Much that is written about early bass players is speculation.¹⁹ This is hardly surprising given their low standing in the early jazz ensembles. They were, as bassist George Duvivier lamented, ‘never mentioned’,²⁰ and represent a silent voice in the history of jazz overshadowed by more flamboyant frontmen such as Louis Armstrong, Sidney Bechet, and Jelly Roll Morton. By 1983 the situation remained unchanged according to Lee Jeske who remarked:

Of all the instruments commonly used in a jazz band, none is taken more for granted than the acoustic bass. For example, of the 56 members of the *DownBeat* Hall of Fame only one – Charles Mingus – is a bassist; and it’s safe to say that Mingus was elected more for his composing and band-leading than his bass playing. Names like Blanton, Pettiford, LaFaro and Chambers are missing from that list.²¹

History of course tells us that by the early 1930s, the string bass had replaced the tuba as the preferred bass instrument. This chapter examines the circumstances behind that transition, and the part played by emerging technologies in it. It begins with a brief overview of early bass players in order to establish what factors gave rise to the need for technological mediation in the first place.

The tuba is a brass instrument of considerable acoustic power and portability. As jazz evolved in New Orleans, the tuba became an essential part of the standard jazz ensemble and remained the predominant bass instrument until the late 1920s.²² Its inclusion in the ensemble back-line provided the harmonic and rhythmic underpinning upon which the melodic instruments, the cornet, clarinet and trombone, could weave their

¹⁹ Tom Stoddard alludes to this in his 1971 edition of George ‘Pops’ Foster ‘autobiography’. See Stoddard (ed.), *The Autobiography of Pops Foster: New Orleans Jazzman* (San Francisco: Backbeat Books, 2005), p.viii.

²⁰ David Chevan, ‘The Double Bass as a Solo Instrument in Early Jazz’, *The Black Perspective in Music* 17.1/2 (1989), p. 80.

²¹ Lee Jeske, ‘Ron Carter: Covering all Bases’, *DownBeat* (July 1983), p. 22.

²² Alan Lomax, *Mister Jelly Roll* (London: Pan Books, 1952), p. 78. For an anecdotal overview of historical New Orleans’ bass players see <http://www.peterunbehauen.de/jazz/jazzfotos.html> (accessed 19 December 2010).

collective improvisations.²³ The tuba bass line was distilled from the left hand part of the ragtime piano style; a style that Joachim Berendt suggested is the antecedent of jazz.²⁴ Ted Gioia confirmed the pianistic derivation of the tuba part when he observed:

The left-hand structures of ragtime were equally influential [as the right hand figures], with a whole generation of jazz pianists adopting the use of a resounding low bass note or octave (sometimes a fifth or tenth) on beats one and three, followed by a middle register chord on beats two and four.²⁵

With the piano impractical in marching bands, and according to Pops Foster, non-existent in most venues, the tuba and banjo (or guitar) generally divided the pianist's left hand part between them.²⁶ Alternatively in situations where the tuba accompanied the piano, it reinforced the keyboardist's left hand, lending it a more authoritative weight. A preponderance of roots and fifths, occurring on the first and third beat of the measure at medium march-like tempos, allowed plenty of opportunity for the tuba player to draw a comfortable breath and discharge it in an unhurried, yet assertive manner.

The following transcription from an Edison phonograph recording on the Okeh label identifies a typical tuba bass part from the mid 1920s, performed in this case by Pete Briggs (see Appendix A, CD track 1). Its notes are of short duration and staccato in articulation. The robust tuba tone contributes an imposing presence providing an unambiguous, if rhythmically stiff, harmonic foundation.

²³ 'Back-line' is the collective name given to those ensemble instruments that provided the accompaniment to the melodic instruments.

²⁴ Joachim Berendt, *The Jazz Book*, p. 247.

²⁵ Ted Gioia, *The History of Jazz* (New York: Oxford University Press, 1997), p. 21.

²⁶ Tom Stoddard, *The Autobiography of Pops Foster: New Orleans Jazzman* (San Francisco: Backbeat Books, 2005), p. 113.

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Figure 1.1 ‘Gully Low Blues’, Louis Armstrong and the Hot 7 Okeh 8474, (1927). First two choruses only, a cappella intro not shown. All transcriptions are by the author unless otherwise credited.²⁷ [CD Track 1]

²⁷ Louis Armstrong and the Hot 7, ‘Gully Low Blues’, Okeh 8474 (1927). Recording available at <http://www.redhotjazz.com/hot7.html> (accessed 18 September 2011).

The use of the tuba in jazz was not exclusive however. Photographs from the early 1900s confirm that many of the seminal New Orleans bass players, including John Lindsay and Foster, doubled on tuba and string bass.²⁸ The precedence for this doubling lies in the varied requirements of the many styles of music in which the bassists were engaged.²⁹ Social dancing was extremely popular in New Orleans and small string bands consisting of violin, guitar, mandolin, string bass and piano in various combinations were often employed to provide dancing accompaniment.³⁰

As jazz increasingly moved indoors the characteristics that had made the tuba so important became less so, and the requirements of the music itself hastened its obsolescence. At this historical juncture technology's influence was purely within the mechanical realm. The string bass, however, enjoyed some mechanical advantages that were to become an essential driving force in the musical development of jazz. One such advantage was its ability to deliver greater rhythmic accuracy resulting in a rhythmic impulse that infused the music with a more satisfactory forward motion. Its propulsive drive was the result of factors intrinsic to the instrument and performance techniques developed by the early bassists, such as the jazz pizzicato.

Schuller has argued that the pizzicato string bass is the best instrument for imparting a jazz swing feel. This he attributed to the nature of a plucked bass string's envelope – that is, the characteristics of each note's attack and decay. The jazz pizzicato provides, in Schuller's words 'the essence of swing', because the articulation of the note is more immediate, and its decay smoother, than that of a tuba. According to Schuller:

[The string bass] fulfills both the vertical and horizontal prerequisites of swing; vertical through precise impact, horizontal by sustaining into the next notes and thus providing a forward momentum.³¹

Its sharp attack lends no confusion as to the exact rhythmic disposition of the beat (see Figure 1.2).

²⁸ Tom Stoddard, *The Autobiography of Pops Foster*. Pages 26 and 28 contain photographs showing 'Pops' with both instruments.

²⁹ For an account of the range of engagements, see Tom Stoddard, *The Autobiography of Pops Foster*, p. 17.

³⁰ The musical life of early New Orleans is described in Alan Lomax, *Mister Jelly Roll*, pp. 69-109.

³¹ Gunther Schuller, *Early Jazz*, pp. 159-160.

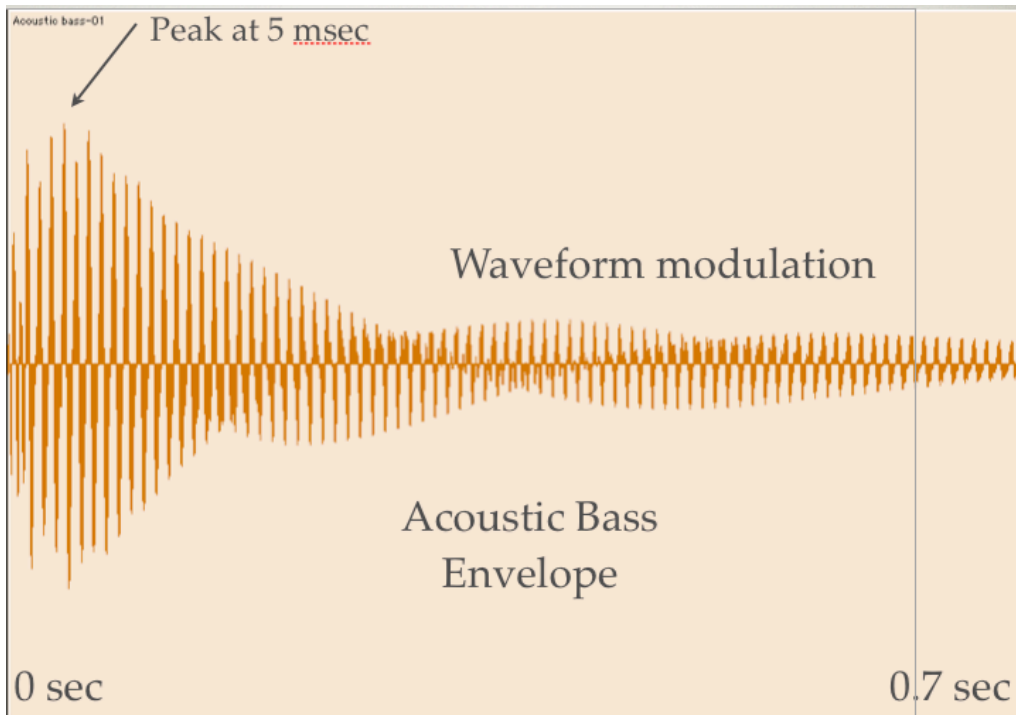


Figure 1.2 Waveform produced in Pro Tools illustrating the characteristics of the string bass' acoustic envelope. Pitch is C2 65.41Hz. The X-axis represents the time domain (0-0.7sec scale), the Y-axis the amplitude of the waveform. Note the rapid attainment of peak amplitude at 5 milliseconds. (This diagram and those hereafter were produced by the author, unless otherwise indicated.)

In contrast, the tuba has a sonic signature that is relatively slow in its attack phase, rendering its rhythmic placement less distinct. Its sound also stops abruptly as soon as the player ceases blowing, reducing the forward momentum of the music (see Figure 1.3).

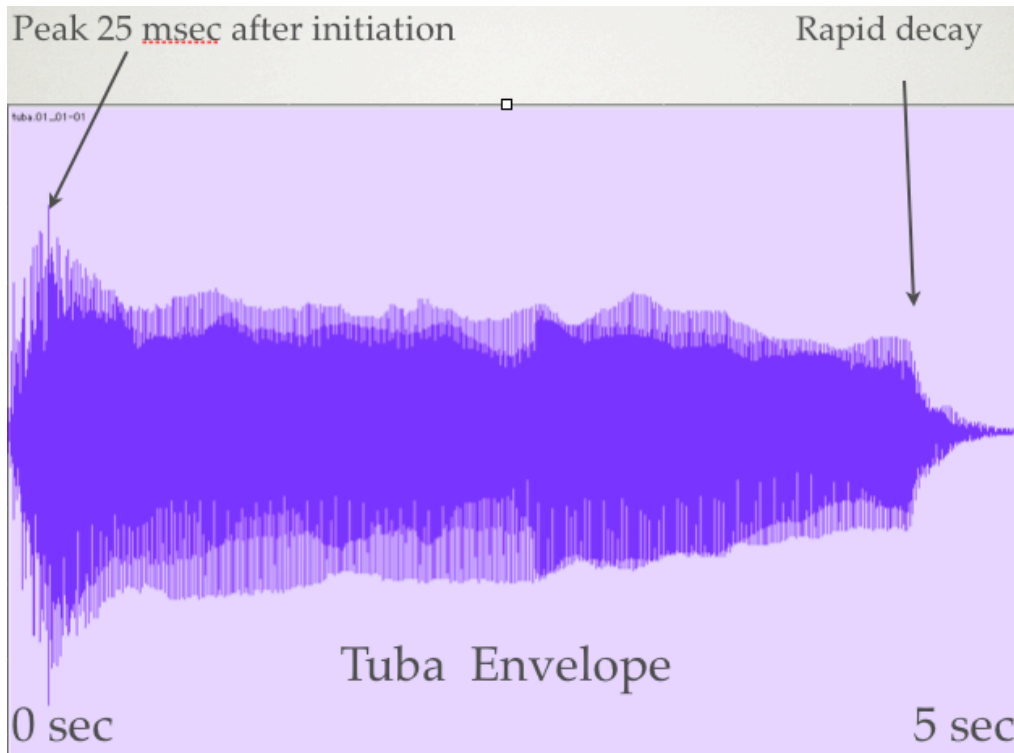


Figure 1.3 A waveform illustrating the characteristics of the tuba's acoustic envelope. Pitch is C2 65.41Hz. The X-axis represents the time domain (0-5sec scale), the Y-axis amplitude of the waveform. Note the slower attainment of peak amplitude of 25 milliseconds (five times longer than the string bass) and rapid decay once blowing ceases.

Although Schuller focuses exclusively on the right hand, performance techniques peculiar to jazz were not limited to it. Foster related how the classical left hand fingering method was in his view totally inappropriate to the performance of jazz on the string bass.

The teachers always want to tell you to finger the strings with the tip ends of your fingers. You can't finger for tin-can music like that – it's too delicate. You've got to grip those babies to get a tone. All your tone is in the left hand. If you half muffle the string you don't get no tone; it's like playing with a mute on a horn.³²

As Turetzky points out, in most photographs of Foster performing, his left hand thumb is clearly visible wrapped around the neck of the bass in a vice-like grip. In Turetzky's opinion:

Pops, however, grasped one of the most significant elements of left-hand technique, which is the necessity of depressing the string against the fingerboard with enough weight to get the fundamental overtone to dominate the sound. This gives the tone a center ... and

³² Tom Stoddard, *The Autobiography of Pops Foster*, p. 2.

greater projection. Another important aspect of this technique is its relation to the ‘attack and decay’ pattern. The securely depressed string produces ... a long decay time.³³

Clearly the priorities of the classical and jazz bassist differed. Whereas the German classical technique privileged efficiency and facility, Foster’s ‘fisticuff’ technique produced a deeper, more authoritative tone.³⁴ Consequently his unschooled method required a great deal more position shifting than traditional approaches. In order to produce the requisite tone and volume on the string bass within a jazz context, sacrifices were made in terms of facility on the instrument. The effort the lone bassist in the jazz ensemble had to expend in order to underpin the music effectively with a sustaining, fundamental-rich tone made soloing like a saxophone or clarinet player an unlikely ambition. Panassié notes that:

... the New Orleans musicians who played bass had a distinctly different style from the later string bassists. Theirs was a simple and extremely conscientious style, which limited itself to furnishing impeccable and fundamental bass notes ... a part, which corresponds to the part furnished by the pianist with his left hand.³⁵

This simple style proved convenient for both tuba and string bass players because it minimized the amount of technical facility they required. As a result, the melodic aspect of bass parts was secondary to their harmonic, textural and rhythmic functions.

The ability of the string bass to produce a strong, fundamental-rich tone reflects another advantage it had over the tuba, namely superior textural integration within the ensemble. Although plucking or slapping the string produced significant upper partials, these were transient in nature and rapidly diminished. Once the initial attack had subsided, the sustaining portion of the string sound, with its less pronounced overtones, provided a smooth, less intrusive harmonic foundation. In contrast the tuba, particularly when played forcefully, unleashed a super abundance of upper partials that could interfere with the blend of instruments further up the sonic spectrum, particularly on recordings. These characteristics are displayed in the following spectrum diagrams:

³³ Bertram Turetzky, cited in Tom Stoddard, *The Autobiography of Pops Foster*, p. xvii.

³⁴ Tom Stoddard, *The Autobiography of Pops Foster*, p. xvii.

³⁵ Hugues Panassié, *The Real Jazz*, p. 167.

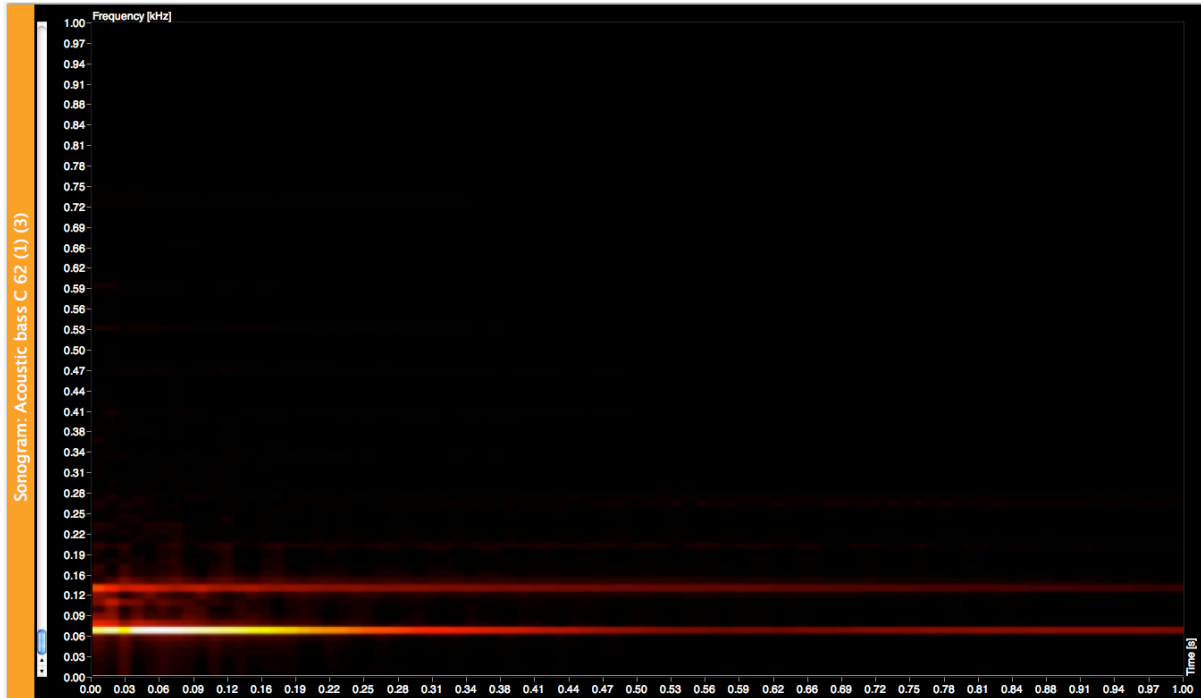


Figure 1.4 Frequency analysis. One-second window showing harmonic spectrum of a C (67Hz) as played on a string bass using a jazz pizzicato stroke. X-axis is time (0-1sec). Y-axis is frequency (0-1kHz).

Figure 1.4 reveals the reason why the plucked string bass was able to provide superior textural integration within the ensemble. Its tone is relatively pure with only the first harmonic at 134Hz powerful enough to register on the sonogram. In comparison the overtones of the tuba are considerably stronger than its fundamental at that pitch (see below Figure 1.5).

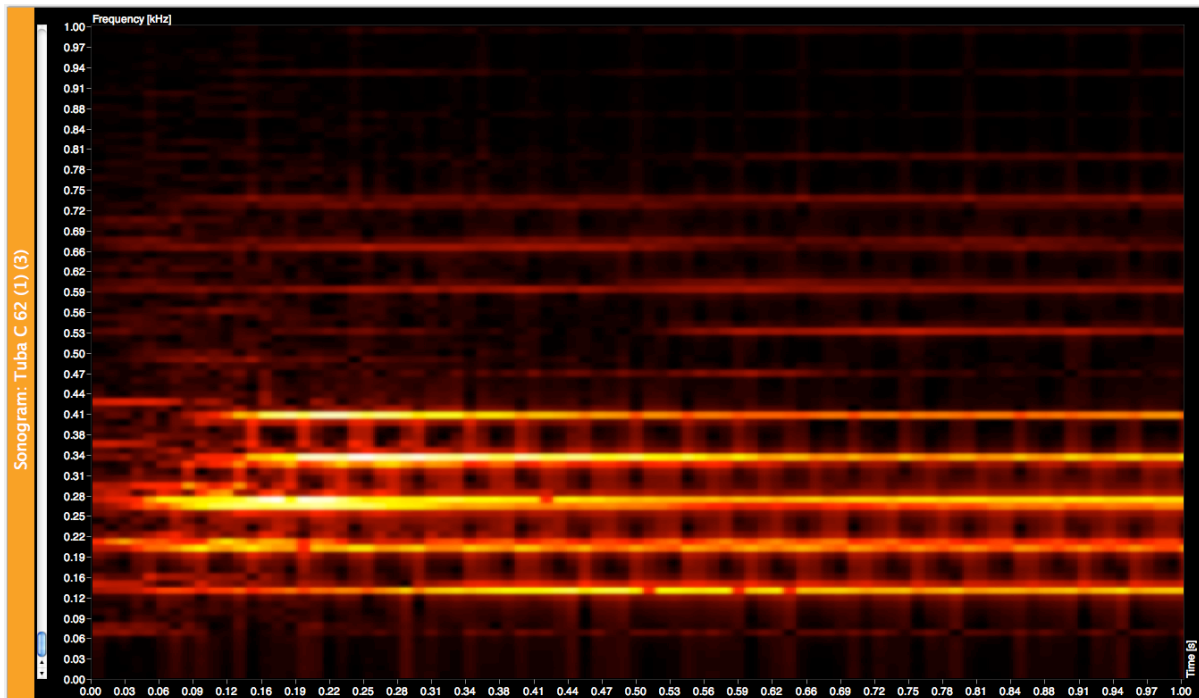


Figure 1.5 Frequency analysis. One-second window showing harmonic spectrum of a C (67Hz) as played on a tuba. X-axis is time (0-1sec). Y-axis is frequency (0-1 kHz).

The string bass was also capable of greater expressive potential than the valved tuba. The absence of frets on its fingerboard rendered it better able to mimic and/or support vocal inflections integral to the sonority of jazz. This feature would become more important as technological advances permitted the bass to develop its soloing potential in the following decades.

The need to shadow the left hand of the pianist left little opportunity for the bassist to improvise. This constriction is indicative of a musical conception that hierarchically divided the ensemble into two – the soloists, collectively improvising above on the one hand, and a more tightly structured and sublimated rhythm section, providing the rhythmic and harmonic tableaux, on the other. Gradually, due to stylistic developments, the roles of the piano and bass gained increasing independence. The string bass began to exploit its ability to perform a more sophisticated and linear underpinning. For example during a solo break on the 1928 Victor recording of ‘Bull Fiddle Blues’ by Johnny Dodds’ Washboard Band³⁶ the bass was featured in what Schuller referred to as ‘probably

³⁶ ‘Bull Fiddle Blues’ Johnny Dodds’ Washboard Band, Victor 21552-A (1928).

the first full-fledged pizzicato bass solo on record'.³⁷ The passage is perhaps more accurately described as a bass feature in which the rest of the ensemble plays stop-time accents clearing the musical fabric to allow the full resonance of the bass to shine through. Instead of disrupting his quarter note pulse and assuming a more melodic style, the bassist/banjoist Bill Johnson (1872-1972) continues as before, satisfied to add a single rhythmic syncopation in bar six. (See Appendix A, CD track 2).

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Figure 1.6 Bill Johnson's bass solo on 'Bull Fiddle Blues', Victor 21552-A (1928). [CD Track 2]

The more frequent appearance of four-to-the-bar passages in the bass part of jazz recordings from the mid 1920s reflects a rhythm section development that had an extremely important influence on the melodic vocabulary of the treble instruments above. The increasing employment of the string bass encouraged this doubling up in the fundamental pulse of jazz from the earlier two beat 'Cakewalk' style. Sustained passages of rapid quarter notes are executed quite comfortably on the string bass and seasoned players are capable of performing in this manner continuously without undue effort. Most tubists on the other hand, would approach these passages with some trepidation, particularly at faster tempos, as the continuous puffing required would leave all but the fittest tuba players hyperventilating after a few minutes. Schuller explained the significance of this gradual evolution of the rhythmic underpinning of jazz:

³⁷ Gunther Schuller, *Early Jazz*, p. 201n.

Soloists like Louis Armstrong ... had instinctively understood that the key to rhythmic freedom in jazz lay in syncopation based on a four-to-the-bar beat – not on the two-beat bar [of the tuba]. Once the player could detach himself from explicitly stating the four beats and thus get ‘inside’ the beats, a vast field of rhythmic emancipation lay ahead. Now the continuous quarter notes in the bass had relieved the soloists of the burden of stating the 4/4 beat, they could go on to more important things: melodic statements or, in fact, rhythmic counter-statements of their own.³⁸

The gradual adoption of the four-to-the-bar bass line so essential to the development of modern swing, ergonomically favored the string bass. As a result, the switch from tuba to bass facilitated a change in the language of jazz, not just its sonority.

- Slap Bass

Ergonomic, mechanical and acoustic factors intrinsic to the string bass had a significant influence on what was considered practical to play by early bass players. In the years before amplification, pioneering jazz bassists explored a unique percussive performance technique that increased the instrument’s sonic profile. Johnson was one of the first players to popularize the ‘slapping’ style. This practice involved hooking the index finger of the plucking hand under the string, pulling it aggressively up and away from the body of the bass and letting it snap back violently against the fingerboard. It lent an added percussive element to the sound of the bass, a component that reinforced the attack of each note, helping to accentuate the pulse. Other players expanded this ricochet effect by slapping the fingerboard between plucked notes, producing a more complex rhythmic undercurrent not unlike the sound produced by a tap dancer.³⁹ One of the most recorded bass players in history, Milt Hinton, related how Johnson encouraged him to employ the hook style in the late 1920s. It was ‘... the only way of getting a big sound out of the bass to be heard above the band’.⁴⁰ This suggests that the decision to adopt a slap bass style was driven by a desire to extract maximum volume, rather than a wish to exploit the rhythmic impetus it provided.

³⁸ Gunther Schuller, *Early Jazz*, p. 273.

³⁹ Alyn Shipton, ‘Double Bass’, in *The New Grove Dictionary of Jazz*, Barry Dean Kernfeld (ed.) (London: Macmillan, 1988), p. 302.

⁴⁰ Don Mopsick, *The Face of the Bass*, <http://www.jazz.com/features-and-interviews/2008/1/18/the-face-of-the-bass>, (accessed 7 April 2010).

Even during the formative stages of jazz, the bassist appears to have been struggling to compete with the remainder of the ensemble. Ironically, whilst the slapping technique does produce a pronounced percussive attack, the up and down trajectory of the string vibration is confined to the distance between the bottom of the string and the face of the fingerboard. The risk of the string's initial recoil choking against the fingerboard is far greater than when the string is plucked with a modern sideways pull. A very high string action is necessitated resulting in a reduction in facility. While hardly a pressing issue in its early stages, this reduction would have been considered an undesirable impediment to a more melodic style as the development of jazz progressed. Modern audio waveforms also illuminate a more subtle difference between the two techniques. The sideways pull offers a much warmer and lengthier sound with greater average amplitude, particularly with regard to the lower frequency component of the waveform. The slap in contrast, produces a marked attack, in other words a high instantaneous level of higher frequencies, but lower average amplitude level of the fundamental frequency. (Refer to Figures 1.7, 1.8, 1.9 and 1.10).

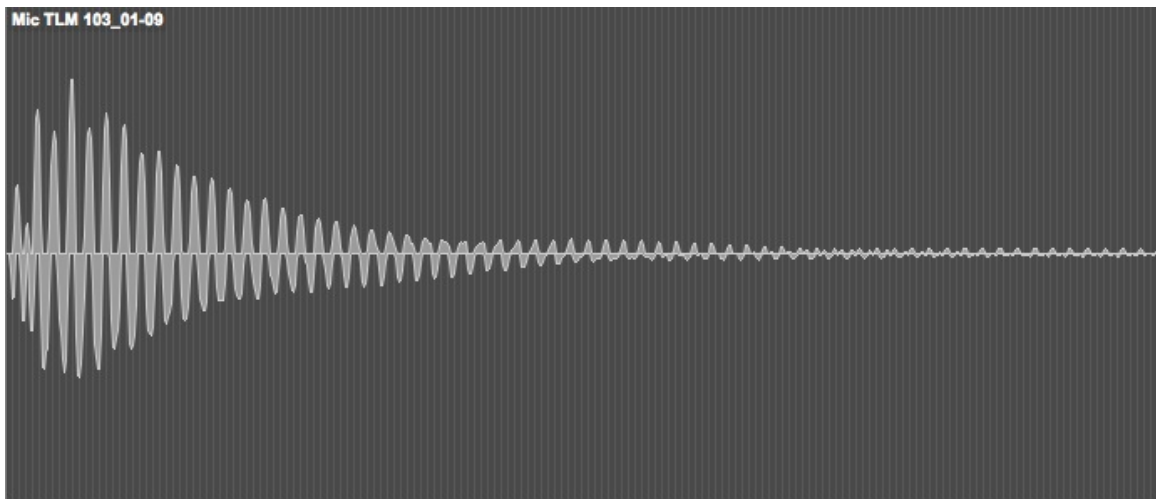


Figure 1.7 Waveform C (65.41Hz). Sideways pulled. One-second window showing strong tone bloom and gradual decay.



Figure 1.8 Frequency analysis C (65.41Hz). Sideways pulled, showing strong fundamental frequency registering minus 1.9 db from full scale, and relatively little high frequency information. (X axis represents frequency, Y axis represents amplitude, one-second duration).

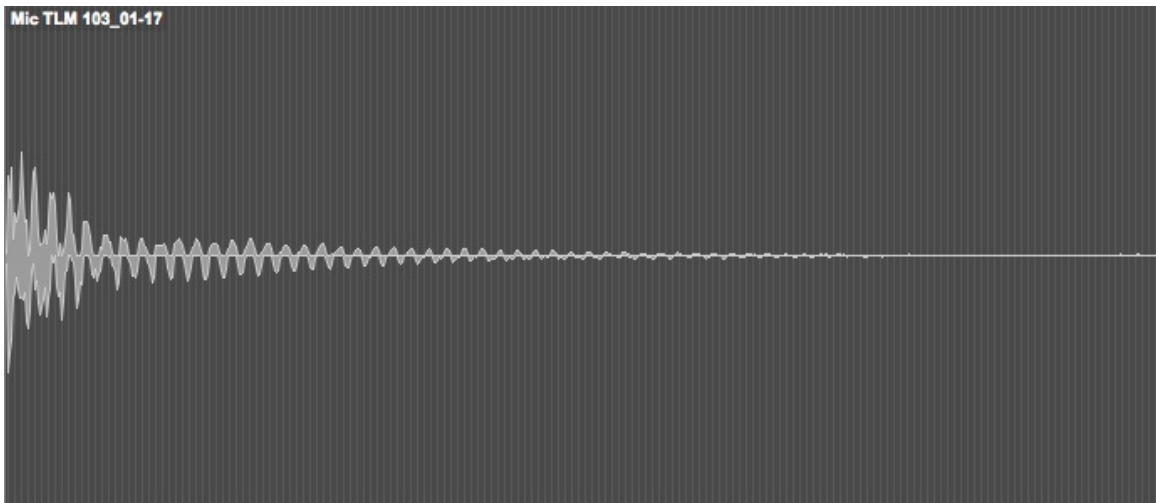


Figure 1.9 Waveform C (65.41Hz). Slapped note displaying faster attack, reduced fundamental and lower average level as well as a rapid decay and substantial high frequency percussive component. One-second window.



Figure 1.10 Frequency analysis C (65.41Hz) Slapped note displaying lower instantaneous volume (minus 5.5db), reduced fundamental, and greatly increased high frequency percussive component between 250Hz and 8kHz. (X axis represents frequency, Y axis represents amplitude).

By virtue of its superior rhythmic accuracy, greater expressive potential, better textural integration within the ensemble and facility in negotiating four-to-the-bar passages, the string bass gradually began to usurp the tuba's position as the bass instrument of choice. That it could be played with three different articulations – bowed, pizzicato and slapped – increased its desirability. The string bass was clearly the more appropriate instrument, and yet its one great disadvantage remained – dynamically it was easily overwhelmed.

The Birth of Music Recording: The Unwelcome String Bass

The significance of the engagement between jazz and the recording industry in the evolution of the music can hardly be overestimated. Chanan argued that the act of recording influenced the very development of the art form itself:

The machine that turned the intangible sound of music into a material object was also to register huge changes in interpretation and performance styles, for which it is largely itself responsible.⁴¹

In the pioneering days of recording, compromises that were made in the interests of committing jazz to disc affected the length, tempo and arrangement of studio performances. For bass players, the limitations inherent in early recording methods rendered them, as described below, hostage to technological change more than any other instrumentalist. For the great soloists such as Louis Armstrong, technology was largely inconsequential. His greatness was evident for all to witness at any of his performances. His recordings merely captured it and provided the means by which it could be marketed. Bass players on the other hand, struggling to be heard in performance, confined largely to stylistically simple parts and unwelcome at recording sessions, enjoyed fewer opportunities to display their talents effectively. Technology helped tell the story of the bass more than any other instrument in that technological developments granted access to the ear of the public in ways that unmediated live performance could not. The following section will examine the ways in which developments in recording and media playback, factors extrinsic to the instrument, influenced the early performances of jazz bassists.

By today's standards the sound of phonograph cylinders, the acoustic recording industry's earliest medium, was rudimentary in the extreme. What is more surprising is the fact that anyone should have considered applying a 'talking machine', an appliance originally conceived as a business dictation device, to the process of recording music.⁴² The device was inherently noisy and scratchy, incapable of storing more than two and a half minutes of sound and severely limited in the scope of frequencies it could in fact transcribe (168Hz to 2000Hz). Moreover, it was non-linear in all its specifications and

⁴¹ Michael Chanan, *Repeated Takes: A Short History of Recording and its Effects on Music* (New York: Verso, 1995), pp. ix -22.

⁴² David L. Morton, *Sound Recording: The Life Story of a Technology* (Baltimore: John Hopkins University Press, 2006), p. 55.

the actual recording process subjected performers to considerable inconvenience. From a commercial standpoint its products, the cylinders, were very fragile and not mass reproducible.⁴³ In order to ascertain why the string bass presented such problems, it is necessary to examine the operation of early recording apparatus.

Edison's acoustic recording machine of the late 19th century employed a method whereby sound was directed into a horn shaped funnel. A diaphragm transferred the sympathetically generated vibrations to a stylus that inscribed grooves in a wax cylinder. The reverse process resulted in the inscriptions on the cylinder causing excitation of the horn and a more or less analogous sound being produced. By 1917 the cylinder had been largely supplanted by Berliner's laterally cut disc, though the methodology remained essentially unchanged. The process was entirely mechanical and relied on sheer force of sound to imprint sufficient modulations on the recording media. Yet it was only successful to the degree that the musical performance was tempered in order to ensure the energy generated in performance was constrained within the safe operating limits of the machine.

The limitations of the recording device affected the jazz bassist in a number of ways. First, the horn itself was practically insensitive to frequencies below 168Hz, two octaves above the lowest note on a string bass at 41Hz. While this shortcoming did not theoretically preclude the upper partials of a string bass from being registered, these harmonics, as illustrated earlier, are quite weak in comparison to the fundamental of a given note (see Figure 1.4, above). The soft overtones also tended to be masked by the excessive amount of surface noise generated by chemical additives used to keep the record from wearing prematurely. Second, lower frequencies were also problematic as the large excursions they excited in the cutting stylus threatened to bounce it from its trajectory during recording. This affected bass and drums particularly, and made any attempt to capture an energetic rhythm section performance close to the apparatus fraught with difficulty. Jelly Roll Morton alluded to the impracticality of recording bass himself when he bragged: 'My contributions were many ... the first washboard was recorded by

⁴³ For a detailed description of the birth of recording see Roland Gelatt, *The Fabulous Phonograph: 1877-1977* (London: Cassell, 1977). For a more modern perspective see Emily Thompson, 'Machines, Music, and the Quest for Fidelity: Marketing the Edison Phonograph in America, 1877-1925,' *The Musical Quarterly* 79. 1 (Spring 1995), pp. 131-171.

me; bass fiddle, drums – which were supposed to be impossible to record’.⁴⁴ As a result of these issues a realistic ensemble balance was approximated by the careful distribution of instruments at various distances from the recording horn. The further away an instrument was positioned, the less likely it was to cause tracking problems, and so the bass and drums were customarily dispatched to the back of the room. The result was a decidedly top-heavy frequency balance and a poorly focused rhythm section presentation. Paradoxically the tuba, which was undergoing gradual replacement by the string bass in live applications, proved to be much easier to record. Its strong high frequency partials (Figure 1.5, above) were found to fall clearly within the range of the recording device as compared to the simpler, less harmonically rich spectrum of the acoustic bass.

A peculiarity of human hearing also proved fortuitous. The psychoacoustics of the ear enables the perception of a missing fundamental from a harmonic tone complex containing only its upper partials.⁴⁵ This means the ear will perceive a virtual, fundamental pitch of a complex wave (a tuba bass note for example) on a recording even though its pitch falls below the lower limit of the reproducing apparatus. Indeed, the ‘bass part’ on many early recordings was often provided either by the low register of the piano, the tuba or bass saxophone. The string bass was invited to ‘sit this one out’ for fear of precipitating technical problems. In other instances the bass part was performed on instruments that were incapable of producing such deep notes, the banjo or guitar for example. The extent of this issue is underlined by the following comment from Joan Peyser:

The original orchestrations should be employed as far as the characteristics of the recording diaphragm and the sound box permit. It is true that double basses and cellos must be discarded a priori ...⁴⁶

Initially therefore, the transition from tuba to string bass, whilst representing a leap forward in both the development of the language and sonority of jazz in live performance, caused problems in the studio. The instrument most suited to performing

⁴⁴ Jelly Roll Morton, cited in Ted Gioia, *The History of Jazz* (New York: Oxford University Press, 1997), p. 44.

⁴⁵ Shofner, William P. ‘Comparative Aspects of Pitch Perception’, in *Pitch: Neural Coding and Perception*, Christopher J. Plack, Andrew J Oxenham, Richard R Fay and Arthur N. Popper (eds.), Springer Handbook of Auditory Research 24 (New York: Springer, 2005), p. 65.

⁴⁶ Joan Peyser, *The Orchestra* (Michigan: Billboard Books, 2000), p. 482.

the four-to-the-bar underpinning so essential to the evolution of jazz phrasing was the instrument least compatible with the prevailing acoustic recording process. Performances had to be adjusted to accommodate the recording medium. Sound technicians, on the other hand, had to struggle to ensure that the natural exuberance of the music was not emasculated by a machine ill-suited to music applications.

Although various experiments were undertaken with a view to improving bass reproduction, it was not a high priority with the record companies that produced acoustic recordings. This was because most home phonographs of the time were inadequate in reproducing what little bass presence could be achieved.⁴⁷ In any case, owing to the relationship between frequency and size of horn necessary to reproduce it, the lowest frequencies of the bass would have required a straight horn much too large for domestic use. While discs produced using the acoustic recording method lacked any significant low frequency extension, the need for a satisfactory harmonic underpinning was not lost on early jazz performers. No doubt once they became aware of the futility of attempting to record a bass instrument that would not be heard, performers felt perfectly justified in seeking an alternative reconcilable with the prevailing technology. Playing the bass part on a banjo, a farcical idea to the modern bassist, would in those circumstances have seemed entirely appropriate. Often the trombone was called upon to fulfill this function, especially in the smaller five piece ensembles so popular in the early 1920s. Its medium range suited the acoustic recording process admirably. In order to establish a context for the bass part as performed under the limitations of nascent recording technology it is necessary to examine, in detail, a number of seminal acoustic recordings from the period.

‘Livery Stable Blues’⁴⁸ by the Original Dixieland Jazz Band is important as the first jazz recording commercially released and the first to sell one million copies.⁴⁹ Its predominant features include vulgar hokum animal onomatopoeia in keeping with philistine comic tastes of the period, coupled with a frantic, uncontrolled polyphony. Typical of many of these early recordings the trombone part vacillates between supplying

⁴⁷ Peter Unbehauen, *History of New Orleans Bass*, <http://www.neworleansjazz.de/jazz/jazzfotos.html> (accessed 15 April 2010).

⁴⁸ Original Dixieland Jazz Band, ‘Livery Stable Blues’, Victor 18255-B (1917). Cited in Frank W. Hoffmann and Howard Ferstler, *Encyclopedia of Recorded Sound* (New York: Routledge, 2005), p. 536.

⁴⁹ Henry Martin, Keith Waters, *Jazz: The First 100 Years* (New York: Schirmer, 2006), p. 55.

a melodic counterpoint to the cornet and clarinet, and delineating the chord progression. In the following example this schizophrenic trombone style is split between bass function (bars 5, 10, 15 and 16), and melodic fills and gestures (bars 6 through 7, and 11 through 14). The trombone is perhaps not quite an equal contributor to the three-part polyphony, the ‘woven tapestry of sound’, as its contributions seem somewhat tethered to its bass function. (See Appendix A, CD track 3).

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Figure 1.11 Original Dixieland Jazz Band, 'Livery Stable Blues', Victor 18255-B (1917).
[CD Track 3].

On another of the Original Dixieland Jazz Band's recordings, 'At the Jazz Band Ball', one can occasionally discern a two beat piano accompaniment in which the left hand functions in conjunction with an energetic bass drum as the low frequency underpinning.⁵⁰

The technical limitations of the acoustic recording medium suited the three part contrapuntal style of early jazz. As more instruments were introduced, particularly the tuba or string bass, it became increasingly difficult for the growing number of voices to avoid impinging on each other. These lower frequency instruments, whose use was eventually sanctioned by the improved frequency response of electrical recording, necessitated a lower limit to the free range of the trombone and made it difficult for the trombonist to avoid doubling or crowding the bass part. The contrapuntal intricacies of the music became more leaden, less uninhibited and the establishment of a more arranged style that avoided these collisions was mandated. Once the string bass usurped the harmonic underpinning role, allowing the trombone to engage in the three-part polyphony more freely, the bass performance itself took on a more ascetic character. The bass player assiduously avoided the portamentos and slides, so characteristic of the expressive language of the trombone, even though the string bass was capable of delivering them. This was the result of the considerable difficulty involved in articulating them clearly due to uncomfortably high string action. Bass players would only revisit these expressive devices once they began soloing on more streamlined instruments in later years.

⁵⁰ Original Dixieland Jazz Band, 'At the Jazz Band Ball', Victor 18457-A (1918).

Kid Ory's Sunshine Orchestra became the first African American band from New Orleans to record. On their recording of 'Society Blues',⁵¹ as in the last example, the trombone's performance is tuba-esque, with a preponderance of staccato notes. Even at this later stage the bass/melodic conception of the trombone was still enjoying popularity even among the more innovative of the original black New Orleans bands. This example demonstrates how successfully the trombone acquits itself on these technically challenged recordings. It enjoys a full-bodied presence and is easily the loudest instrument. Its medium register range fits serendipitously between the high frequency surface noise that masks the piano and percussion, and the low frequency spectrum to which the acoustic recording process is essentially deaf. One senses the futility of attempting to record low frequency instruments like string bass in recordings such as these, just as one admires the strategies of the trombonist that renders the venture unnecessary in order to satisfy the requirements of the music. (See Appendix A, CD track 4).

⁵¹ Kid Ory, 'Society Blues', Nordskog 3009B (1922).

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Figure 1.12 Kid Ory, 'Society Blues', Nordskog 3009B (1922). [CD Track 4]

'Canal St Blues' provides an excellent example of an instrument not usually conceived of as a bass instrument – in this case the banjo – being skillfully deployed in such a role by Bill Johnson.⁵² The first sixty bars of 'Canal Street Blues' are dominated by the steady 4/4 strum of the banjo. It establishes the harmony in combination with the pianist's left hand part and the trombone. During the following section Johnson's performance owes much to his background as a bassist. It displays both an imaginative

⁵² King Oliver's Creole Jazz Band, 'Canal Street Blues', Gennett #5133-B (1923), cited in Gunther Schuller, *Early Jazz*, p. 85.

use of the banjo to provide a bass accompaniment and the seeds of a more modern approach to the walking bass line. His proclivity for unsyncopated quarter notes and a limited selection of chord tones (drawing mostly on the tonic, third, fifth and sixth scale degrees as the most harmonically unambiguous), draws comparison to the style of bass playing that would become *de rigueur* in the 1930 swing bands some ten years later. The absence of any distinct low frequency grounding is one quite unfamiliar to our modern ears, but the success of the recording illustrates one of the beauties of the blues form – its simplicity. The uncomplicated harmonic structure needs only a sketch drawing to make itself apparent. Here the acoustic process provides just the barest of touches, which renders the blues form with its own modest charms. More harmonically complex tunes such as those from the subsequent Tin Pan Alley era would have been poorly served by this recording process, relying as they do on an unambiguous bass line to permit their harmonic subtleties to be more effectively exploited. (See Appendix A, CD track 5).

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Figure 1.13 Bill Johnson's walking bass lines performed on King Oliver's Creole Jazz Band, 'Canal Street Blues', Gennett #5133-B (1923). [CD Track 5].

The acoustic recording medium, then, was severely limited in its capabilities. While it reproduced the human voice quite effectively, it was far less successful in dealing with low frequencies. The desire to capture the rhythmic momentum and drive of jazz on disc was an ambition that spurred many of the pioneering record technicians and producers. The alchemy by which a piece of black wax could be transformed into an object of mass appeal required many technological innovations – and it was the capturing of increasing levels of bass that proved the magic ingredient that gave future recordings their visceral appeal. The introduction of a new recording method delivered more robust bass frequencies, thereby improving the way the string bass was presented to the public.

- Electrical Recording

Huge investments in electronics during World War One hastened the introduction in the mid 1920s of Western Electric's electrical recording system.⁵³ This process saw the old acoustic horn superseded by microphones to capture the sound, vacuum tubes to amplify it and an electromagnetic record head to register these fluctuations to disc. It brought with it a significant widening of the frequency response (100Hz to 5000Hz), and a considerable increase in playback volume. Moreover, these new electrically recorded discs were not incompatible with the old acoustic playback devices that, by 1925, were a common household appliance, a factor that helped propel their initial launch into the marketplace. The subsequent introduction of a complementary electrical system of playback allowed the consumer to take advantage of the much-improved reproduction at home, greatly increasing the attractiveness of the entertainment medium. By the mid 1930s electric recording and playback had become pervasive.

⁵³ David L. Morton, *Sound Recording: The Life Story of a Technology* (Baltimore: John Hopkins University Press, 2006), p. 65 contains a full description of the system.

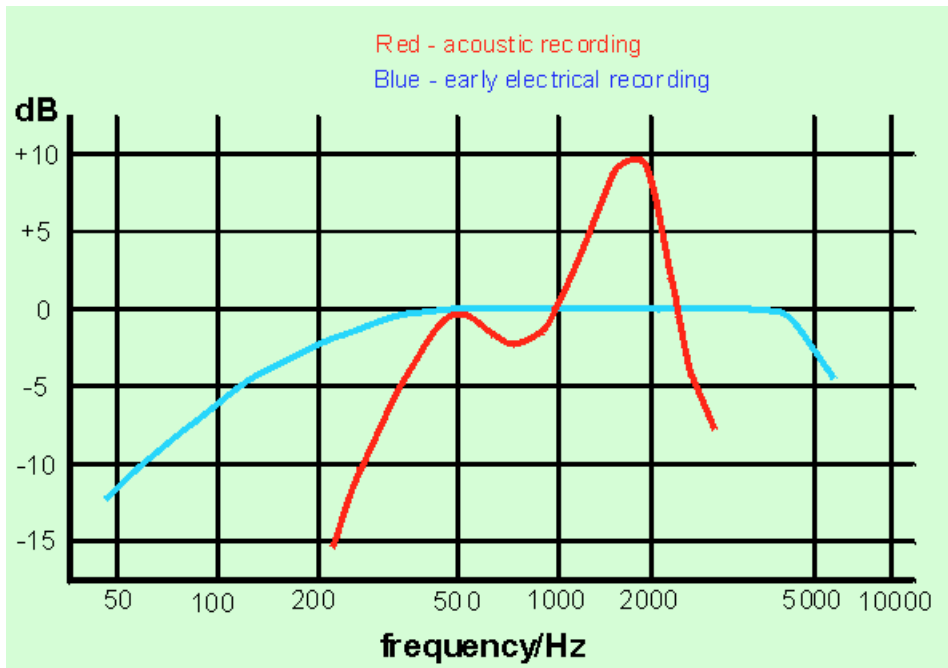


Figure 1.14 A typical recording characteristic of an early electrically recorded 78 is shown in blue compared with that of an acoustically recorded 78 shown in red. It reveals the smoother, more extended bass response of the Western Electric method.⁵⁴

Western Electric's method alleviated many of the problems associated with recording string bass. First, it was logistically easier to position microphones than to arrange large instruments around an acoustic horn which, as has been shown, was in any case essentially deaf, though susceptible to low frequencies. Second, the irregularities in the frequency response of the recording horn itself were avoided, resulting in recordings free from the much maligned 'phonograph tone', a term that referred to the sonic aberrations that these resonances impressed upon the disc during recording.⁵⁵ Third, the improvements in dynamic and frequency response finally permitted greater confidence when recording high impact, low frequency instruments such as the bass and lower pitched drums. Bassists could assume their place in the rhythm section and deliver all the enthusiasm of a live performance without concerning themselves unduly with the exigencies of recording. The need to expend undue energy simply to be heard was reduced by the employment of the microphone, resulting in a more controlled, musical

⁵⁴ From <http://www.restoring78s.co.uk/Equalisation.htm> (accessed 15 January 2011).

⁵⁵ Anon, 'New Music Machine Thrills All Hearers At First Test Here', *New York Times* (7 October 1925), p. 1.

sound. Eventually multiple microphones could be placed in such a way as to render unnatural but compositionally desirable balances possible. Here for the first time technology played an active part in allowing the vision of the composer, and the aspirations of the performers, to be realized unencumbered by the laws of natural acoustics. In this way technology was instrumental in providing jazz artists with the means to produce a recording more commensurate with their artistic vision.

The increasing fidelity of recording media also drew attention to the sound of the recording space itself. Early acoustic recording studios were designed on the premise that the musicians had to be crowded together in order to maximize the sound pressure waves arriving at the recording horn. As a result, these recordings contain little or poor ambient information. Electrical recording permitted musicians to be deployed in an expansive, well-designed acoustic space that would contribute its own bloom to the recorded sound. As Donald Clarke notes with regard to Ray Noble's 1934 recording of 'The Very Thought of You', the utilization of studio ambience as a valuable sonic enhancement was made possible by the implementation of the microphone and the extension in bass response delivered by the electrical recording process.⁵⁶ The same technologies that enabled the use of the string bass in the studio also permitted it to be presented in a more attractive sonic environment, the features of which increased the sense of realism imparted to the resulting disc. This led to the adaptation of large buildings such as churches and theaters into recording studios – Columbia's 30th Street facility in New York City being a celebrated example. It is not hard to imagine that the increased comfort these surroundings afforded the musicians and the inspirational acoustic signature of the spaces themselves lent a gravitas to the process of recording, a new recording aura, in contrast to the indignities of the bar or bordello engagement. It enhanced the stature and prestige of jazz recordings by bathing them in the same acoustic ambience as had been the exclusive provenance of the better symphony orchestras in the past. In this way the enhanced bass extension that led to more judicious selection of recording locations improved not just the sonority of jazz through superior recorded sound but arguably also its artistic stature. Eric Felten acknowledges the significance of studio ambience in his review of David Simons' book *Studio Stories*.

⁵⁶ Donald Clarke, *The Rise and Fall of Popular Music* (London: Penguin, 1995), p. 222.

Miles Davis' masterpiece, 'Kind of Blue', was recorded at 30th Street, and so too, just a couple of months later, was Dave Brubeck's album 'Time Out.' ... the success of those two records owed something to how they sounded, something that wasn't just a function of the quality of the recording equipment. There was the sympathetic resonance of the studio's unvarnished wood floor and the distant reverberations reflected by its towering ecclesiastic architecture: 'Improved fidelity was just one part of the formula; the main ingredient was the room itself'.⁵⁷

Electrical playback also brought a significant improvement to the listener's perception of the bass. As indicated by the Fletcher-Munson curves in Figure 1.15 below, the ear is uneven in its response to the loudness of different frequencies.⁵⁸ Generally as volume is reduced, the ear becomes less sensitive to extreme frequencies. The lower the volume and the lower the frequency the more dramatic the effect. Electrical playback delivered a significant increase in volume in comparison to purely acoustic reproduction. Since hearing becomes more linear with respect to frequency as the volume increases this placed the predominantly low frequency sound of the string bass at a sound pressure level that improved its perception.

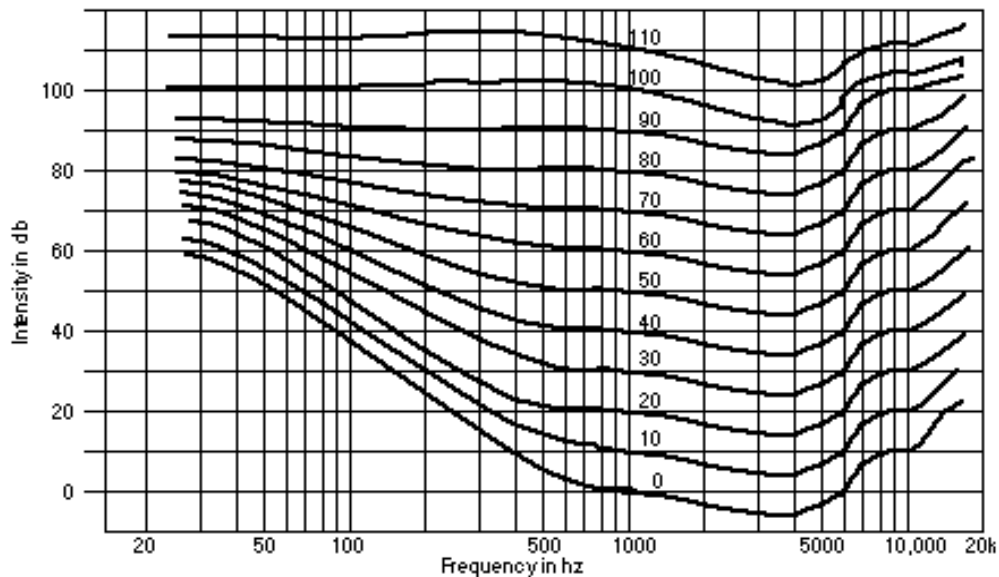


Figure 1.15 Fletcher-Munson Curves. Equal-loudness contours of the human ear. These contours reveal the relative lack of sensitivity of the ear to bass tones, especially at lower sound levels.

⁵⁷ Eric Felten, 'Abbey Road and the Day Studio Music Died', *Wall Street Journal* (19 February 2010) (accessed 15 January 2011).

⁵⁸ H. Fletcher, and W.A. Munson. 'Loudness, its definition, measurement and calculation', *Journal of the Acoustic Society of America*, 5 (1933), pp. 82-108. See also <http://www.system1audio.com/fmc.html> FMC, Fletcher Munson Compensation (accessed 23 December 2010).

Inverting these curves gives the frequency response of the ear in terms of loudness level.⁵⁹

Just how significant the introduction of microphone and electrical recording technology was to the enhancement of bass performance on disc is illustrated by comparing two Louis Armstrong performances recorded two years apart. ‘Gully Low Blues’ was recorded on the Okeh Company’s acoustic system in 1928. A transcription was previously presented on page 16 as Figure 1.1. (See Appendix A, CD track 1). ‘Mahogany Hall Stomp’, on the other hand, was recorded 22 months later after they had switched to the electrical system.⁶⁰ It represents the first time Armstrong had recorded with a pizzicato string bass instead of a tuba, and the difference is palpable. In contrast to the leaden swing generated by the tuba’s short blasts in the earlier recording, the buoyant string bass delivers lightness and forward momentum. (See Appendix A, CD track 6).

⁵⁹ F. Alton Everest, *The Master Handbook Of Acoustics*, 3rd ed. (New York: McGraw-Hill, 1994), p. 41.

⁶⁰ Louis Armstrong and his Savoy Ballroom Five, ‘Mahogany Hall Stomp’ Okeh 8680 (1929). Recording available at <http://redhotjazz.com/savoy5.html> (accessed 25 November 2011).

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Figure 1.16 Foster's string bass part to Louis Armstrong and his Savoy Ballroom Five, 'Mahogany Hall Stomp' Okeh 8680 (1929). [CD Track 6].

Originally the tuba, due to its volume, portability, and suitability for all weather use had been the primary bass instrument in New Orleans. This position was further consolidated by its compatibility with the acoustic recording process, technology's first foray into mechanical reproduction of sound. Eventually, those characteristics that made the string bass more desirable to innovators such as Jelly Roll Morton and Louis Armstrong assumed sufficient importance that they overshadowed the instrument's shortcomings. An artistic decision was made, an aesthetic choice in favor of the string bass despite its lack of power. That did not mean that bass players en masse downed the tuba and took up the string bass. Technology temporarily inhibited the substitution because acoustic recording was unable to cope with the sonic characteristics of the string bass.

The introduction of electrical recording helped remove the final impediments to the use of the string bass on record and assisted Armstrong in achieving his artistic ambitions. Once Armstrong got the four-to-the-bar string bass undertow he desired and recordings made the results public, the tuba was gradually displaced. In the words of Wynton Marsalis, 'everyone wanted to sound like Louis'.⁶¹ But the substitution of a more fluid and contrapuntal bass line for the leaden 'oomph' of the tuba was not the sole refinement the string bass wrought. As more varied articulations were possible (pizzicato, bowed and slapped) a new textural awareness became apparent, exploited in particular by Morton. The ability of string bass players to play rapid quarter notes afforded the possibility of an increase in tempo and an intensification of the music's forward momentum. Significantly, a new sense of ensemble integration was made possible, the potential for which had been denied by the harsh blast of the tuba. This was the first stage in the evolution of the rhythm section, in which the individual bass, drums, piano and guitar came to form a musically and sonically coherent unit. Doubling between the bass and the piano's left hand was increasingly discarded in favor of more autonomous contributions from each. The individual musicians and the parts they created were increasingly more attuned to the activities of the other section players, with the result that they blended into an interactive homogeneous tapestry. This integration is no better

⁶¹ Wynton Marsalis, cited in Ken Burns, *Jazz: A Film by Ken Burns* (Florentine Films, 2000), DVD 1029549-1 at 10:23.

exemplified than in the Basic rhythm section discussed in the next chapter.

CHAPTER TWO

The Bass, Technology and the Development of the Rhythm Section (1930-1945)

The previous chapter traced the evolution of the bass in early jazz and the extent of technology's involvement in providing artists such as Armstrong with a suitably flexible and inspiring rhythmic undercurrent. Soloists, however, were not the only musicians whose performances became more sophisticated during the 1930s. As bass players improved their technical abilities, extended the practical tessitura of their instrument, and embraced a more nuanced expressivity, their expanded capabilities began to impact upon the roles of the other instruments. A growing autonomy of instrumental function was evident within the rhythm section, balanced with an interdependence most effectively documented in Count Basie's electrical recordings of the late 1930s. With the employment of microphone and associated technologies developed in the broadcast industries, the bass was brought into sharper focus. Meanwhile in live performance, its audibility was being threatened by the growing size and energy of popular dance ensembles. Records and radio broadcasts stimulated a market for domestic consumption of the commercial products of these ensembles, which only served to highlight the difference between the improving presence of the bass in studio recordings, and its struggle to assert itself on stage.

In the early electrical recording studio, the mechanical recording horn was replaced with a solitary microphone, often the RCA model 44.⁶² Eventually, multiple microphones were used, allowing the targeting of specific instruments, notably the bass. Benny Goodman confirms the extent to which they were deployed in a typical big band session.

In the old recording studios on Thirtieth Street, we'd have maybe three microphones – one for guitar and bass, one for the overall band – and one for the saxophone section ... that was the extent of it.⁶³

Whereas the string bass had earlier been unwelcome in the acoustic recording studio, or

⁶² For details and data see John Eargle, *The Microphone Book* (Oxford: Focal Press, 2004), p. 344.

⁶³ Benny Goodman interviewed in 1979, in John Harvith and Sue Harvith, *Edison, Musicians, and the Phonograph* (New York: Greenwood Press, 1987), p. 161.

at best banished into the wings, now with the transition to electrical recording it was afforded a privileged location close to a transducer. This change illustrates the degree to which bass players had been hostage to the development of recording technology. In live performance however, such electronic aids were not usually available. Basie bassist Gene Ramey commented on the need for strength in the conditions confronting fellow bass player Wellman Braud while on tour: ‘Braud was strong. He might get close to the mike when they were recording, but there was no such thing as a mike in most little towns’.⁶⁴ A reader might be forgiven for wondering how string bassists, already experiencing difficulty making themselves heard in the small ensembles of the 1920s, could possibly compete within a big band. Four trumpets, five saxophones and four trombones in combination are capable of producing extremely high sound pressure levels.⁶⁵ These can easily overcome the sound of a solitary string bass regardless of the player’s exertions. In the days before amplification the bass required the cooperation of the rest of the band. Bassist Ray Brown remembered:

When I started, [mid 1940s] there were no amplifiers, and hardly any microphones. I mean, you just stood in the back of the band, and you never got to play over the microphone. So you had to be heard; you had to play with a lot of strength and dexterity. But I think that orchestras were aware of that, and you always heard the bass player. They blew so that you could, for some reason. I remember standing in front of Lunceford, Basie, Ellington and all those bands, and I could hear the bass as good as everybody else.⁶⁶

Brown suggests that the nominal level at which these large ensembles played in the 1940s was such that a sufficiently forceful bassist could successfully underpin them. Notwithstanding the fact that it was generally unavailable, amplification of the bass in his opinion was unnecessary.

It’s so strange to recall that we used to go to a dance, hear an orchestra—and you could hear the bass, just as clean as anything. You could be standing back at the end of the hall, and the bass would be booming right on out there, without the aid of a microphone.⁶⁷

⁶⁴ Gene Ramey, cited in Stanley Dance, *The World of Count Basie*, p. 264. The terms ‘mike’, ‘mic’ and ‘miking’ refer here and elsewhere to the microphone and its use.

⁶⁵ A. Folprechtova and O. Miksovská, *The Acoustic Conditions in a Symphony Orchestra* (Pracov Lek, 1978; 28:1-2). The authors above measured sound pressure levels of selected orchestral musical instruments as experienced by individual musicians. The trombone measured 85-114dBA, the bass 75-83dBA.

⁶⁶ Ray Brown, interviewed by Les Tomkins in 1980.

http://www.jazzprofessional.com/interviews/Ray%20Brown_3.htm (accessed 20 January 2011).

⁶⁷ Ray Brown, interviewed by Les Tomkins in 1980.

http://www.jazzprofessional.com/interviews/Ray%20Brown_4.htm (accessed 20 January 2011).

Brown conceded that the need to prioritize sound projection with the unamplified bass presented a physical challenge that seriously reduced the bassist's facility on the instrument. This dichotomy he felt partly explains why most of the bassists of the era appeared to be technically unsophisticated.

There is a definite difference between bass players now and bass players in my early days. Growing up in the 'thirties and 'forties, you were more involved in sound, basically. You couldn't afford to get too involved in technique, because you didn't have any amplification ... It was very difficult to project; the faster you played, the harder it was to hear what you were playing. It was a physical problem in those days. That's one of the reasons the instrument wasn't played as well – certainly not as fast. I think that developing a big sound – big enough to project through an eighteen-piece band – is going to negate some of your technique. They work against each other.⁶⁸

A generation later Ron Carter had this to say about his experiences playing in big bands prior to the introduction of electronics:

I used to prefer small groups, because you couldn't hear the bass in the big band. With the advent of adequate bass pickups that amplify the sound, I don't mind with any size group or type of instrumentation. As long as the bass can be heard, I'm happy to be playing.⁶⁹

What had changed in the intervening years to render the job of the unamplified string bassist so difficult in the modern day big band? Plausibly, the nominal volume had increased to such an extent that the unamplified bass was no longer effective. Equally, the desire for increased sophistication, encouraged by the efforts of bass players in the interim, had de-prioritized sound projection and bassists were now finding it impossible to cope without technological assistance. Both of these suppositions beg the question: In what ways did the lack of technological mediation in bass performance on stage influence the stylistic aspects of jazz in the 1930s and 1940s? This query is best answered by examining the seminal recordings of the Count Basie band in the late 1930s, and in particular the influence of bass player Walter Page. Ramey, the bassist with a later incarnation of the Basie band, looked back on his predecessor:

Walter Page saw things differently when he created the Basie rhythm section. He would constantly tell them to remember that that drum is not supposed to sound any louder than the piano or the unamplified guitar. 'Now come on down', he'd say. 'See if you can do all that stuff and come on down.' You listen to Basie's rhythm section – it was all balanced,

⁶⁸ Ray Brown, interviewed by Les Tomkins in 1980.

http://www.jazzprofessional.com/interviews/Ray%20Brown_4.htm (accessed 20 January 2011).

⁶⁹ Ron Carter, cited in Tom Tolnay, 'Double Take with Ron Carter and Richard Davis', *DownBeat* (11 May, 1972), p. 14.

the drums didn't sound any louder than the guitar, the piano or the bass.⁷⁰

Page had already developed a strong, deep tone on his string bass. As Basie's trombonist and arranger Eddie Durham enthused: 'Walter Page you could hear! He was like a house with a note.'⁷¹ Page had also introduced a musical innovation that warranted a more prominent presentation, encouraging the desire for his bass to be heard more distinctly. His bass lines developed a linear, contrapuntal aspect missing from the simplistic patterns of his forebears. Referred to as a 'walking bass' style, this more melodic underpinning provided increased forward momentum by signaling the intended targets of harmonic progression through its use of chromatic passing tones. Page's new, more improvisatory approach extended the compass of the bass into the register of the pianist's left hand and consequently, Basie was obliged to adapt his piano playing to accommodate it.⁷² Comparing two selections from the Count Basie Orchestra's 1936 to 1939 Decca recordings reveals this rhythm section development.⁷³ In the earlier 1937 version of 'Honeysuckle Rose', Basie and bassist Page are at odds in their rhythmic conception. Basie plays a two-beat stride style, his left hand pumping out root and fifths while Page walks with repeated note scalar patterns. Naturally their paths cross harmonically in many places, leading to the simultaneous sounding of conflicting bass notes. By 1939 with 'Lester Leaps In', Basie had altered his piano style to avoid these collisions. He still occasionally ventured down into the lower reaches of the piano momentarily, but in a more texturally conceived manner. The insistent two-beat left-hand had vanished, replaced by a far more modern and interactive accompanying style. At 2:44, Basie defers to the bass as Page launches into one of his characteristic 'walking solos', extending up to the tenor register. Finally the bass part has achieved sufficient artistry, even in its melodically simple walking form, to warrant an extended feature of its own.

These innovations, however, would amount to nothing if they were obscured by the pounding of the bass drum so popular with the old-style drummers such as Gene Krupa. Basie's recordings reveal how a more desirable balance was achieved. First, by

⁷⁰ Gene Ramey, cited in Stanley Dance, *The World of Count Basie*, p. 264.

⁷¹ Eddie Durham, cited in Stanley Dance, *The World of Count Basie*, p. 63. Durham played trombone, and arranged for Basie.

⁷² Gunther Schuller, *The Swing Era: The Development of Jazz, 1930-1945* (New York: Oxford University Press, 1989), p. 227.

⁷³ Count Basie, *The Complete Decca Recordings*, GRP GRD 3611 (1992).

softening the drummer's insistent four-to-the-bar bass drum underpinning. As Robert G. O'Meally explained:

Basie always wanted his drums to play four on the bass drum, but lightly. This helps the bass sound bigger and fatter as the bass drum resonance fills out the timbre of the bass. He wanted a 'dancer's touch' on the bass drum.⁷⁴

Second, drummer Jo Jones introduced into his playing a greater exploration of textural possibilities. Color, light and shade replaced the unsophisticated bombast of previous eras. As early as 1936, he was beginning to favor his cymbals as a means of providing the rhythmic impetus. By taking advantage of their longer, ringing sonority as opposed to the short, intrusive slap of the bass drum, he let his ride cymbals glide over the top of the other rhythm section instruments, 'riding above them, as it were, in a sonority which had at once the capacity to blend and to isolate'.⁷⁵ Lastly, the guitarist Freddie Green adopted a steady four-to-the-bar chordal accompaniment, providing much of the explicit harmonic coloration previously delivered by the piano.

Given the sonic limitations of his bass, Page, no doubt, had considered his options. He might have attempted to play more and more aggressively as the slap-bassists were wont to do. He would have done so in the knowledge that, as the study has demonstrated in figure 1.10 on page 27, this approach tended to change the effective role of the bass from a solid harmonic foundation to a percussion instrument by accentuating the higher frequency slaps at the expense of the fundamental pitch. This technique would undoubtedly have been less effective in showcasing his walking lines. Page, however, realizing that the technology inherent in the unamplified string bass played with a sideways pull could be made to deliver no more volume, set about adapting the rest of the rhythm section to his bass. By adopting this strategy Page helped introduce a wealth of musical sophistication generated by his refined bass playing that might otherwise have gone unexplored. In this way Page's bass was a lynchpin in the evolution of jazz music. Trombonist and Basie veteran Dicky Wells related the effectiveness of Page's bass inspired rhythm section in providing the other instrumentalists with an unobtrusive, yet stimulating undercurrent: 'Basie's rhythm section used to be so light, and so strong, that

⁷⁴ Robert G. O'Meally, *The Jazz Cadence of American Culture* (New York: Columbia University Press, 1998), p. 278. Chapter 18, 'Dancers and Big Bands', explores their close relationship.

⁷⁵ Gunther Schuller, *The Swing Era*, p. 228.

it was a real inspiration. My idea of a rhythm section is one you feel or sense, one that doesn't disturb you'.⁷⁶ Harry 'Sweets' Edison, a trumpeter with the Basie band, appreciated how much the bass had been responsible for establishing this new rhythm section conception:

Of course, Walter Page contributed a lot, too. He started that 'strolling' or 'walking' bass. The whole band would be shouting, and then all of a sudden everybody would drop out for the bridge and there would be just the rhythm with Page's bass going up and down. Oh, my goodness! That was the greatest band that's ever been on earth! I've never heard any other swing like it did.⁷⁷

The idea of a cohesive, integrated rhythm section was developed, one in which the separate elements adapted their individual contributions in service to the aggregate. Mark Tucker suggested that the 'All-American Rhythm Section' as it came to be known, helped introduce the idea of a rhythm section solo as a 'timbral oasis in the midst of a brass and reed dominated ensemble'.⁷⁸ Basie's band was not the only ensemble involved in redefining the rhythm section into a more cohesive unit. Ramey remembered a similar effort within the Duke Ellington Orchestra as early as 1930, and the part played by the electrical recording technology in documenting the result.

It was the same way with Duke when he had [bassist] Wellman Braud. I remember when *Ring Dem Bells* came out. That was a totally different kind of rhythm section. For the first time you could hear the bass player coming through, and [drummer] Sonny Greer knew how to team with that bass fiddle, because it wasn't as strong and couldn't cut through like the bass horn [tuba] had been doing.⁷⁹

Of particular significance in the history of the jazz bass is the release of a series of duet recordings in 1939 featuring Ellington and his young bass player Jimmy Blanton.⁸⁰ These recordings heralded a new conception of the bass and within them, for the first time, the bass was featured extensively as a fully-fledged soloist.⁸¹ Unlike most of his contemporaries, Blanton possessed a quite extraordinary technique and fluency on the

⁷⁶ Dicky Wells, cited in Stanley Dance, *The World of Count Basie*, p. 92.

⁷⁷ Harry 'Sweets' Edison, cited in Stanley Dance, *The World of Count Basie*, p.103.

⁷⁸ Mark Tucker, 'Count Basie and the Piano That Swings the Band', *Popular Music* 5 (1985), pp. 53-54.

⁷⁹ Gene Ramey, cited in Stanley Dance, *The World of Count Basie*, p. 264.

⁸⁰ The Blanton-Webster Band, RCA B000003EO4 (1990).

⁸¹ It was not the first recorded bass solo, though perhaps the most renowned. See David Chevan, *The Double Bass as a Solo Instrument in Early Jazz*. <http://www.jstor.org/pss/1214744> for a more detailed account (accessed 20 January 2011).

bass. By adapting the prevailing jazz vocabulary to his instrument, he delivered solos of such sophistication that they rivaled those of the great horn players of his era. They featured unprecedented rhythmic variety, extensive use of syncopation and exploited an extended range.⁸² Although he performed on gut strings with no amplification, Blanton produced long, connected notes and fluid melodic lines in comparison to the shorter ‘thump’ of his peers. Thanks to the sparse, duet format of the Ellington arrangements and electrical recording’s ability to transcribe them with sufficient sonic accuracy, the bassist could finally feel confident in asserting his artistic personality in a more conducive medium. These discs and others that took advantage of much improved fidelity helped increase awareness of the bass by presenting it in a more prominent role. Quality of home playback equipment had been improved by the introduction during the 1930s of Victor’s electrically powered record players that plugged into a special receptacle on the back of Victor radios. This innovation permitted the record player to take advantage of the radio’s amplification and loudspeaker to deliver significantly more volume and fidelity than the older purely mechanical phonographs.⁸³ Recording technology was pivotal in establishing the string bass as a solo instrument and as its specifications gradually improved, so too would the practicality of employing the instrument in more sophisticated contexts.

The fact that Ellington chose a piano duo setting for this recording is symptomatic of the persistent problems, which up until then had been associated with performing anything other than an accompanying role on the acoustic bass. In most ensembles the inclusion of a bass solo required that other musicians had to cease playing in order for all but the most vulgar articulations of the bass to be appreciated. Recording technology granted Blanton the opportunity to indulge his artistry in a way that was less practical under live engagement conditions. Through the medium of recording a new rhythm section relationship was explored, one predicated on a more expansive interaction between members, an emancipation of the bass and greater sense of support, indeed occasional deference, from the pianist. Bassist Milt Hinton recalled the scale of Blanton’s influence and Ellington’s part in providing him with appropriate musical settings:

⁸² John Goldsby, *The Jazz Bass Book, Technique and Tradition* (San Francisco: Backbeat Books, 2002), p. 49.

⁸³ See David L. Morton, *Sound Recording: A Life Story of a Technology* (Baltimore: John Hopkins University Press, 2004), p. 66 for further details.

[Blanton] was amazing. He revolutionized bass playing, and Duke was just the man to know how to use his talent. Nobody had ever showed off a bass player before. Bass players just sat back and supported. But Duke came up with 'Plucked Again' and 'Pitter Panther Patter' and spotlighted him on the band numbers and so on.⁸⁴

The environment of the electrical recording studio in which Ellington and Blanton produced these recordings was important for another reason – something it removed from their customary performance surroundings – noise. In any environment there are at least two ways to render sounds more perceptible. Play them louder – or produce them in quieter surroundings. For Blanton, the first strategy would involve playing more forcefully, bringing with it an alteration of the timbre of the instrument, which limited its expressive range. The latter strategy, reducing ambient noise, is particularly effective for improving the perception of the easily masked string bass. The rarified acoustic space embodied in the electrical recording studio allowed the bassist to exploit a downwardly expanded dynamic range. The artist was no longer addressing a noisy, easily distracted crowd but the targeted ear of the microphone, pressed up close to the instrument. The electrical recording studio had done away with most of the inconveniences of the acoustic recording space, which required an uncomfortably warm temperature to keep the disc wax soft and many noisy mechanical contrivances such as the disc cutter connected directly to the recording horn nearby.⁸⁵ The technologically advanced Western Electric recording system allowed equipment to be transferred from the performance space and operated remotely out of earshot of the instrumentalists and microphones. This new system produced an environment that was configured in such a way that the requirements of the musician and those of the engineer conveniently coincided. It delivered a darker backdrop on which to paint more brightly contrasting musical pictures.

Ellington's fastidiousness in the recording studio also encouraged other seminal bassists. Brown, for example, acknowledged its influence on his career:

Ellington was one of the few people who really went out of his way to record the bass – you could hear it good on his records. And I think that's why I took the instrument up in the first place – on account of Ellington, his bass players, his recording style and the way he featured the bass.⁸⁶

⁸⁴ Milt Hinton, cited in Ira Gitler, *Swing to Bop: An Oral History of the Transition in Jazz in the 1940s* (New York: Oxford University Press, 1987), p. 44.

⁸⁵ See Roland Gelatt, *The Fabulous Phonograph*, p. 180 for a description of the difficulties involved in a typical acoustic recording session.

⁸⁶ Ray Brown, cited in Les Tomkins, 'Interview with Ray Brown' (1980)

The enthusiasm for the efforts of Blanton and his contemporaries was not universal, however. Panassié, in a passage addressing the bass as a vehicle for soloing, remained unconvinced: ‘String bass is really not a solo instrument; in fact, most bass solos are quite boring, for even if the musician has interesting ideas, they do not come out in an attractive way on a bass fiddle’.⁸⁷ Panassié’s dismissal suggests that although great strides had been achieved in drawing the bass closer to the level of sophistication of the great soloists like Louis Armstrong, there was still some considerable distance to go before the ‘bull fiddle’ would achieve parity. The application of emerging technologies to the instrument itself and extrinsically to the process of its capture and reproduction on recordings would gradually make the presentation of the bass more attractive, significantly altering its role within the ensemble.

More frequent opportunities and increasing experience performing in the recording studio allowed artists such as Basie and Ellington to continually reassess their music. According to engineer Bruce Swedien who worked with both, ‘these guys were in love with the recording process’.⁸⁸ Each recording venture was informed by the last as musicians developed ways of more effectively presenting their work within the studio environment. This was particularly true after the introduction of acetate discs in 1934, a technology developed by the Presto Recording Corporation in Brooklyn, New York. These discs, comprising an aluminum base covered with a layer of plastic to receive the stylus inscriptions, could be played immediately after recording and were an ideal method of auditioning the effectiveness of recording balances.⁸⁹ This reflexivity influenced their music’s development to an extent not possible in live performance alone. As Harvey Cohen revealed: ‘H. Robert Udkoff, who attended sessions as early as 1933 ... reported that Ellington paid closer attention to recording playbacks than other artists and bandleaders of the time’.⁹⁰ The final recorded balances, often impossible to achieve without strategically placed microphones, no doubt inspired attempts to replicate those

http://www.jazzprofessional.com/interviews/Ray%20Brown_3.htm (accessed 20 January 2011).

⁸⁷ Hugues Panassié, *The Real Jazz*, p. 171.

⁸⁸ Bruce Swedien, cited in Bobby Owsinski, *The Mixing Engineer’s Handbook* (Vallejo, CA: MixBooks, 1999), p. 199.

⁸⁹ See David L. Morton, *Sound Recording*, p. 96 for further details.

⁹⁰ Harvey G. Cohen, *Duke Ellington’s America* (Chicago: University of Chicago Press, 2010), p. 68.

same balances on the concert stage, encouraging the development of technologies with which to amplify the bass in particular.

In the studios of the 1930s, the seeds were being sown from which a new role for the studio technician would germinate, the first inklings of what was to become a more comprehensive, co-operative relationship between artist and engineer. Initially, within the domain of acoustic recording, the engineer's role had been that of a facilitator who ensured the technical requirements and challenges were addressed. With the advent of electrical recording the role gradually became more pivotal as the choice, disposition and mixing of multiple microphones placed at least some of the responsibility for the final musical balance in the engineer's hands. Records gradually became less documentarian in conception, eventually developing into an autonomous art form. They established an alternative domain for artistic endeavor, one oblivious to the demands of the gallery. In that domain musicians were prepared to sacrifice the immediacy of audience reaction for an environment that permitted a more introspective and intimate connection with the other musicians. The engineer, in replacing the mass audience, became an engaged third party as opposed to a passive spectator, actively contributing to the process of artistic expression through his or her own unique talents. And the bass, the most disadvantaged instrument within the recording realm, commanded a significant portion of the engineer's attention. As veteran Basie engineer Don Hahn remarked: 'The bass is always first. Everybody relates to the bass ... just let me get the bass and I'll balance the whole thing and it'll come out okay'.⁹¹ The current study will examine this development in more detail in a later chapter.

To recap, the development of electrical recording technology assisted the bassist in the following ways:

- 1) By extending recording's frequency and dynamic ranges, the sound of the bass could be captured more successfully.

- 2) By removing machinery and the large acoustic horn from the immediate proximity of the musicians and reducing the ambient studio temperature, the process of recording was made more congenial. Electrical recording provided the bassist with a more comfortable and artistically conducive environment in which to create.

⁹¹ Don Hahn, cited in Bobby Owsinski, *The Mixing Engineer's Handbook*, p. 128.

3) The reduction in background noise allowed the bass to exploit greater dynamic range, as its softer articulations now fell above the noise floor of the studio environment.

4) The targeted disposition of microphones enabled the bass to be balanced with other instruments in ways that were not possible by purely acoustic means. Through the use of a microphone the engineer was now able to assist bassists in projecting their artistry. The collaboration permitted bass players to concentrate on more important musical matters than simply trying to achieve sufficient volume.

5) Electrical recording rendered those artistic compromises that resulted from the bass being replaced by instruments more compatible with the acoustic recording method, no longer necessary.

6) It stimulated the development of a playback system that reproduced the bass more accurately and more loudly, which in turn raised the instrument's profile with the listening public.

- Live Performance

The size and disposition of the audience can have an appreciable effect on the way a jazz ensemble negotiates its performance. Musicians have adapted to the changes in music venues over the years through the mediation of technology. The various ways in which bassists in particular have had to struggle against less than ideal performance conditions have also had corollary effects on the language and style of the music. As early as the 1930s the plight of the struggling bass player was beginning to gain widespread acknowledgement and a significant number of instrument manufacturers offered designs addressing the problem.⁹² Amplification, the intent of which was to improve the transmission of the bassist's efforts, later proved pivotal, as bass player Peter Ind confirmed:

I remember, before amplifiers, I'd be working like mad to try to get an idea across – and you realized that it wouldn't mean anything. Nowadays, if you've got the gain just right ... all of a sudden, you can put something in there, and they react to it. It gives you a whole feeling of expansion – which I didn't know in my first years of playing, because

⁹² Jim Roberts, *How the Fender Bass Changed the World*, p. 27.

acoustically it was impossible.⁹³

Jazz in its earliest incarnation was performed by comparatively small ensembles. Although it was not unusual for these groups to perform outside for marches and funerals, the bulk of their engagements were indoors in various bars, bordellos and other less than savory establishments.⁹⁴ These bands could undoubtedly generate a level of excitement when called upon to do so but, being totally unamplified, would have found themselves easily drowned out by boisterous revelers. In the 1930s, as radio and recordings helped rescue jazz from these environments and delivered it into the gentility of the public's parlor, new touring circuits were established enabling fans to experience jazz under more congenial circumstances.⁹⁵ Bandleaders and agents soon discovered the financial benefits of organizing a limited number of concerts in larger venues as opposed to a multitude of small club appearances.⁹⁶ Jazz music was gaining respectability thanks to its appropriation by white artists such as Paul Whiteman and Benny Goodman who, through their media exposure, attracted huge crowds to their appearances. These expanding audiences required accommodation in larger and larger venues with ample room for dancing. Joel Dinerstein confirms the scope of Swing music's popularity in the USA and the size of its performance spaces:

When I started researching swing as a historian, I was astounded by the number and variety of big bands playing every night in every town of more than fifty thousand. I tried to imagine an average Wednesday night in Salina, Kansas, in 1931 when Lester Young played with Art Bronson and the Bostonians for fifteen hundred dancing couples at the armory – the kind of statistic that only makes sense before television, when entertainment was to be found largely outside the home.⁹⁷

The Swing era had arrived and with it the need for bigger, louder bands that could deliver a more dynamic and exciting dance music. Not all larger ensembles were as musically

⁹³ Peter Ind, cited in Les Tomkins, 'Peter Ind Speaks His Mind.' 1980.

<http://www.jazzprofessional.com/interviews/Peter%20Ind.htm> (accessed 18 September 2011).

⁹⁴ Alan Lomax, *Mister Jelly Roll*, pp. 32-33 contains a colorful description of early performance environments.

⁹⁵ Robert G. O'Meally, *The Jazz Cadence of American Culture* (New York: Columbia University Press, 1998), p. 279 contains a description of the 'Round the World' theater circuit and its significance.

⁹⁶ Tom Stoddard, *The Autobiography of Pops Foster*, p. 16 contains Foster's account of early venues.

⁹⁷ Joel Dinerstein, *Swinging the Machine: Modernity, Technology, and African American Culture between the World Wars* (Amherst, MA: University of Massachusetts Press, 2003), p. 138.

sophisticated as the Basie or Ellington orchestras when it came to managing dynamic balance. Jelly Roll Morton himself, inveighed against the practices of many ensembles that utilized their extended instrumental resources simply to dominate their audiences:

New York's idea of jazz was taken from the dictionary's definition – loud, blary, noise. Music is supposed to be soothing, not unbearable—which was a specialty with most of them. Very often you could hear the New York jazz bands with 12-to-15 men. They would blaze away with all the volume that they had. Sometimes customers would have to hold their ears ... Later in the same tune, without notification, you could hear only drums and trumpet. Piano and guitar would be going but not heard.⁹⁸

From his invective a sense of the issues facing the various members in the band can be derived, most notably the discrepancy between the powerful brass and percussion instruments on one hand, and the softer stringed instruments on the other. Since the requirements of collective improvisation had been abandoned, replaced with a new style of arranged music which pitted brass and reed sections against each other, the rhythm section had been obliged to provide a more forceful underpinning. Encouraged by network radio broadcasts emanating from huge theaters, this change in ensemble size impacted on the ability of the bassist to provide adequate musical support.

The recording of Benny Goodman's famous 1938 concert at Carnegie Hall is instructive because it provides evidence of the kind of circumstances under which bassists labored. Unintended as a commercial recording or radio broadcast, it was serendipitously captured to transcription discs using one microphone suspended above the stage and another onstage for announcements and vocals. Transcription discs of the 1930s were either pressed on vinyl, or were one-off recordings cut in acetate lacquer on an aluminum base. At their best, they had a frequency and dynamic range approaching that of 1950s mono LPs.⁹⁹ Unlike a studio recording in which musicians were customarily arranged in a position most advantageous to the recording apparatus, Goodman's band was instead set up in its usual concert array. The balance achieved with this microphone configuration, one that closely reflects what a listener in the front rows would have experienced, reveals a stark difference when compared to Goodman's studio recordings. As the recording equipment struggles to cope with the band's wide dynamic range, the

⁹⁸ Letter from Jelly Roll Morton to M. Ripley entitled 'I created jazz in 1902, not W. C. Handy [1938]', reprinted in *DownBeat: 60 years of Jazz* (Milwaukee: Hal Leonard, 1995), p. 35.

⁹⁹ According to Robert Auld (former Chairman of the New York Section of the Audio Engineering Society), personal correspondence with author, 27 January 2011.

brass section and drums are most prominently featured. Whilst one is conscious at times of the bass' presence, it is largely inaudible. This recording is compelling evidence of the difficulties the string bassist endured in larger, noisier environments. Schuller acknowledged the tendency of the drums to obliterate the less assertive instrument on this occasion: 'A drum is a powerful instrument, and Krupa's drums dominate, his overuse of the bass drum often completely obscuring Page's bass'.¹⁰⁰

The bass player's problem was not limited to larger ensembles, however. Even small groups demanded considerable effort on the part of the bassist as musical styles became more impassioned. Perhaps one of the best examples is the live recording of Charlie Christian's small group at Minton's in New York City, captured on a portable disc recorder in 1941.¹⁰¹ The unprofessional nature of the recording, using one microphone from a table in the audience, precluded any adjustments as the disc was cut. What can be heard, notwithstanding the sonic degradation caused by the limitations of the equipment, is more or less a fair presentation from the audience's perspective of the instrumental balance. Kenny Clarke's drums are still providing much of the four-to-the-bar pulse, while Nick Fenton's bass is perceivable as a faint thump of generally indeterminate pitch. A similar circumstance prevailed during the recording of other seminal live recordings from the period, including Charlie Mingus' performance on *Jazz at Massey Hall*, featuring Charlie Parker and Dizzy Gillespie.¹⁰² The bass was so poorly captured that Mingus felt it necessary to overdub a new part later – a practice that certainly contravened the interactive principles of this style of music. Peter Westbrook recalls his disappointment at a Miles Davis concert as late as 1958 caused by the difficulty in hearing the bass:

The truth is that jazz has a dirty little secret – mostly it's too loud. Once you have re-introduced the drum into Western music other instruments need amplification in order to be heard. The result is an essential imbalance ... when I saw Miles Davis in 1958 it was great to see Paul Chambers but with Philly Joe Jones on drums I sure didn't hear him!¹⁰³

It is hard to imagine how these circumstances would have had anything but a

¹⁰⁰ Gunther Schuller, *The Swing Era*, p. 241.

¹⁰¹ Charlie Christian, *After Hours*, Esoteric 548 (1941).

¹⁰² The Quintet, *Jazz at Massey Hall*, Debut Records OJC044DEB124 (1975).

¹⁰³ Peter Westbrook, 'Ali Ryerson and Gene Bertoni in Connecticut', *Jazz Review* (21 October, 2006) <http://www.jazzreview.com/article/print-5108.html> (accessed 24 March 2011).

detrimental effect on the musical aspirations of sensitive string bassists. Even in the recording studio bass players, without the benefit of modern monitoring techniques described later, would have had great difficulty hearing themselves during performance. This is compounded by the fact that their standing position places their ears at some distance from the clearest source of sound near the bridge. Bill Crow explained: ‘Before amplification, I used to try to stand on or near a live surface, trying to bounce the sound of the bass to my ears’.¹⁰⁴ The above anecdotes would suggest that the bass player’s contribution in most jazz ensembles in this period, from the perspective of the audience at least, was subordinate to the other musicians. The wallflower of the jazz ensemble, capable of commanding less attention, it was only a matter of time before a sufficiently large number of more assertive players desired to step out of the shadows and project their contributions more fully. Technology was implemented in an effort to enable bassists to showcase their full potential. It did so by diverting some of their attention from volume production toward more musical pursuits.

- Strategies for Addressing Increases in Size and Noise of Venues

The problem of string bass projection was addressed in the days before electricity by the only expedient available – by using more of them. This is probably best illustrated by Hector Berlioz’s utilization of large bass sections in his orchestral works.¹⁰⁵ In a later jazz context Lionel Hampton also entertained this multiple bass idea, and for a short time in 1947 his big band featured two basses. According to jazz critic Gene Santoro this gave Hampton’s band ‘a defining heavy beat’.¹⁰⁶ This practice, which necessarily precluded improvisation, proved unduly restrictive and was soon abandoned. As the popularity of jazz blossomed in the 1930s, the noisier and larger urban venues led other bandleaders to question the viability of the sole, unamplified string bass and consideration was given to technologies introduced in the film industry to address the problem. Since the advent of talking pictures, theaters had been obliged to utilize sound systems in order to reproduce

¹⁰⁴ Bill Crow, personal email correspondence with the author. 17 July 2010.

¹⁰⁵ Hector Berlioz, *Grande Messe des Morts*, Opus 5 (1837). In this work he used 18 basses.

¹⁰⁶ Gene Santoro, *Myself When I Am Real: The Life and Music of Charles Mingus* (New York: Oxford University Press, 2000), p. 75.

movie soundtracks. Vocalists had been the first performers to adapt to the use of the microphone, developing a style of vocalizing called ‘crooning’ which took advantage of amplification’s ability to render the most intimate vocal inflections audible.¹⁰⁷ As the size of jazz ensembles ballooned to include big band aggregations of more than twenty players, interest in the development of targeted amplification strategies for the bass became more acute.¹⁰⁸ Techniques, discussed below, were sought which would enable the bass to be heard under conditions of rising dynamic levels and permit the bassist to energize the rhythm section more effectively.¹⁰⁹ In the meantime, many bass players welcomed the implementation of the ‘crooner’s’ microphone to their own instruments, where one was available. Amplification assisted in two ways. First, it rendered the bass more audible, although the early amplifier/speaker combinations delivered something less than high fidelity sound. Second, it permitted bassists to engage with the music in an emotionally more appropriate way. No longer obliged to play ballads as aggressively as before, subtle expressive nuances could be communicated to the audience. On the benefits of using an amplifier, Ind noted: ‘It’s nice to be able to play real soft, but you get it across, and, at a given point, you want a strong accent; so you just lay it in there, and people get it’.¹¹⁰ Bassist Richard Davis held a similar view on the virtues of amplification:

[Amplification] brings out the things that were once only subtle. It makes those subtleties more prominent. You can play more things on the upright that just didn’t come off before. The finger techniques you weren’t even able to try can now be heard.¹¹¹

In short, amplification technology gave bass players an increased dynamic and emotional range and with that, more control over their expressive capabilities. Until the 1960s, the quality of public address microphones customarily available at venues was passable for speech, but inadequate for reproducing the lower frequencies of the bass with any

¹⁰⁷ Patrick Campbell and Adrian Kear, eds. *Psychoanalysis and Performance* (London: Routledge, 2001) p. 82.

¹⁰⁸ Jim Roberts, *How the Fender Bass Changed the World*, pp. 24-30, discusses the early bass amplification experiments.

¹⁰⁹ Paul Berliner, *Thinking in Jazz: The Infinite Art of Improvisation* (Chicago: University of Chicago Press, 1994), p. 316.

¹¹⁰ Peter Ind, cited in Les Tomkins, ‘Peter Ind Speaks His Mind’ (1980) <http://www.jazzprofessional.com/interviews/Peter%20In'd.htm> (accessed 25 January 2012).

¹¹¹ Richard Davis, cited in Arnold Jay Smith, ‘Bass Lines’, p. 14.

accuracy. The Shure model M-55 Unidyne, for example, was introduced in the late 1930s and can be seen in iconic photographs featuring such celebrities as Elvis Presley, John F. Kennedy and Billie Holiday. Still in production today as a re-issue, it featured a rather severe bass roll-off starting at 150Hz and dropping by 10db to 40Hz.¹¹² This affected at least the lower two octaves of the string bass. Specific technologies designed to deliver a faithful, amplified representation of the natural sound of the bass were required. This was, and continues to be, much harder than one would initially imagine. Amongst the problems examined in the following section are:

- 1) The diffuse sound-radiating pattern of the acoustic bass itself.
- 2) The low signal to noise ratio of sound arriving at a microphone in the vicinity of a bass in performance.
- 3) The difficulty in producing a convincingly natural sound using contact microphones and piezo electric pickups.¹¹³
- 4) Overcoming the inherent engineering problems involved in efficiently reproducing low frequencies.

- Amplifying the String Bass

The 1930s saw the first attempts at producing a louder, electronically assisted bass. The most straightforward method was to use an amplifier and microphone combination in the hope of reinforcing the sound already being produced by the string bass. This strategy was not without its complications. The string bass is a big instrument with a substantial vibrating surface responsible for producing its tone. Unlike a trumpet, which produces the bulk of its sound in a directional, tightly concentrated beam emitting from the front of its bell, the physical structure of the bass does not focus the sound into an area into which a microphone can be efficiently placed. Compounded by its low sonic output, its radiating pattern is quite diffuse.¹¹⁴ In an effort to more tightly focus the sound of the instrument

¹¹² See <http://www.shure.com/americas/Corporate/CompanyOverview/History/index.htm> for full details.

¹¹³ A pickup device acts as a transducer that captures mechanical vibrations, and converts them to an electrical signal, which can then be amplified.

¹¹⁴ Thomas D. Rossing, *The Science of Sound* (Boston: Addison-Wesley, 2001), p. 602.

the ‘Stroh’ String bass shown below dispensed with the traditional wood body and substituted a long metal horn



Figure 2.1 Advertisement for the Stroh Bass¹¹⁵

The large body of the string bass also tends to serve as a resonator for sounds arriving from nearby. As a result, it is quite difficult to avoid a microphone placed in its proximity picking up sounds emanating from other sources. Without physically isolating the instrument, it is very difficult to achieve an acceptable signal to noise ratio. Consider the two coincident traces below.

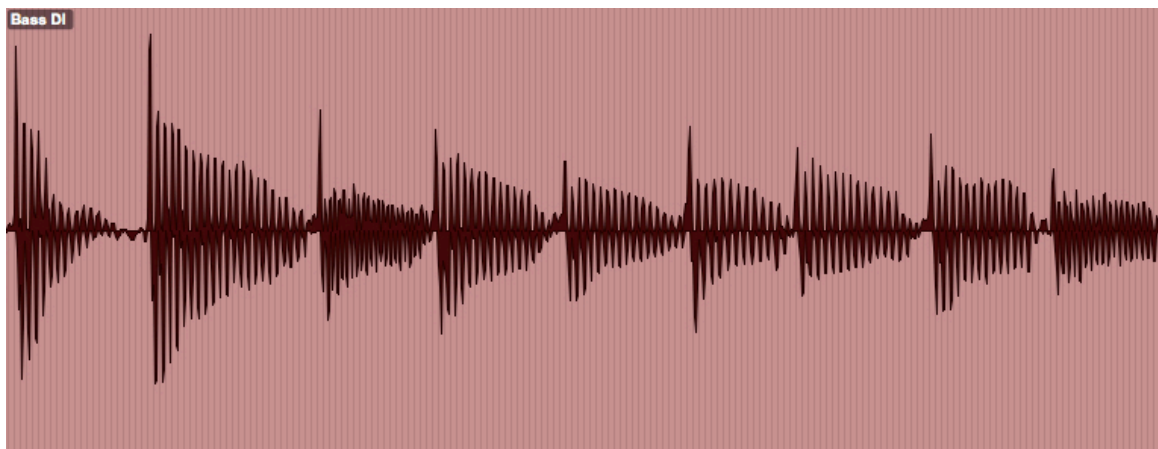


Figure 2.2 Audio output from a pick-up (Realist brand) attached to a string bass, showing nine separate, easily discernable notes and a high signal to noise ratio.

¹¹⁵ A Stroh Bass Flier from Mikael Jansson, *Totally Weird Basses*. <http://dvoi.com/proj/eubdb/defined/eub>. (accessed January 25 2012).

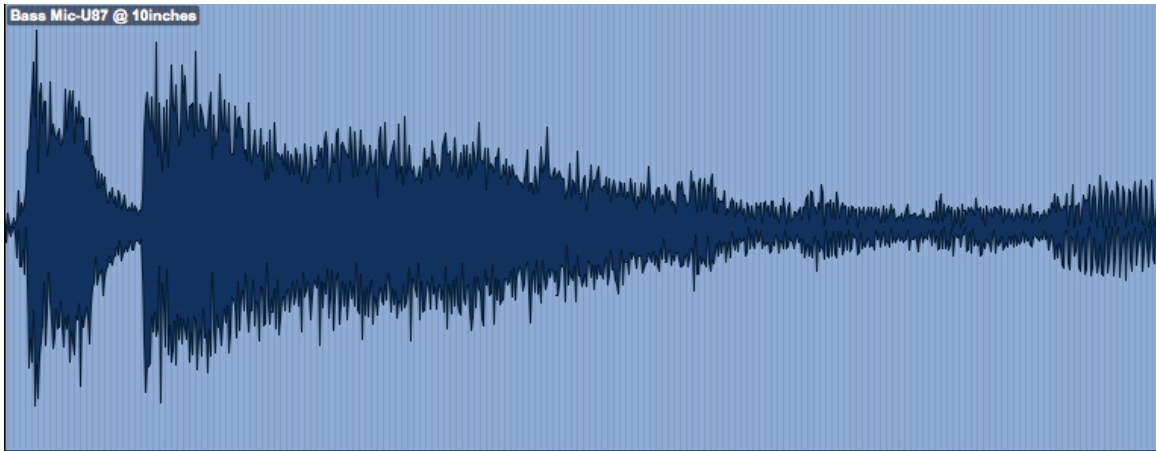


Figure 2.3 Coincident audio output from a microphone (Neumann U-87) positioned 10 inches from the bridge of the bass showing an excessive amount of noise obscuring individual bass notes. This trace represents a very low signal to noise ratio.

Figures 2.2 and 2.3 demonstrate the problems inherent in using a microphone to capture the sound of an acoustic bass in a noisy environment. The diagrams are derived from a large ensemble recording in a medium sized recording studio.¹¹⁶ The four-second musical excerpt presented in the figures is a loud, full-ensemble downbeat followed by a downward horn-glissando accompanied by a walking bass line. Figure 2.2 shows the output from the Realist pick up.¹¹⁷ Note the clear differentiation between consecutive notes, which indicates that a high signal to noise ratio has been achieved. Figure 2.3 represents the output of a Neumann U-87 microphone placed 10 inches from the bridge of the bass. In the latter the waveform of the acoustic bass, which should resemble the simultaneously recorded trace in Figure 2.2, is barely discernible because the spill from the five saxophones, four trumpets and four trombones, piano and drums is so overpowering.

The development of piezo-electric pickups did much to increase the signal to noise ratio. But unfortunately these produce a hybrid electro-acoustic sonority quite dissimilar from the natural tone of the unamplified bass.¹¹⁸ Though considerable improvements have been made in these transducers over the years, most players are still far from completely

¹¹⁶ EMU Studio 1 at the University of Adelaide. See <http://music.adelaide.edu.au/emu/facilities/#top>.

¹¹⁷ Details of which can be found at the manufacturer's website. <http://www.realistacoustic.com> (accessed 24 January 2011).

¹¹⁸ Arnold Jay Smith, 'Bass Lines', p. 16. In the article Eddie Gomez and Dave Holland express their discontent.

satisfied. The history of the development of string bass amplification is also fraught with other technical challenges. The question of designing a piston type driver and enclosure combination with modest physical dimensions, capable of moving a sufficient volume of air, is a problem that has plagued audio engineers since the earliest days of amplification. This follows the general axiom that the lower the frequency, the larger the required speaker enclosure for efficient reproduction.¹¹⁹ Primitive electronics, poor speakers and inefficient manufacturing processes conspired to produce many less than satisfactory devices. As seminal producer/engineer Phil Ramone commented:

It's only in recent years that they finally have a way to make the mic and the pick-up on an acoustic bass sound like a bass. Otherwise, it always sounded like some thin piece of rubber being stretched between two tin cans.¹²⁰

A brief survey will illuminate the issues that arguably persuaded some inventors to eventually focus their efforts on the development of the electric bass.

The Ampeg, short for amplified peg, was a specially designed microphone attached to a bass endpin and placed into the interior of the bass.¹²¹ Introduced in 1946 in combination with the 'Bassamp' a specially voiced bass amplifier, it represented one of the first commercial products aimed specifically at satisfying the need for amplifying the string bass. (Figure 2.4) Although the microphone placement afforded some degree of isolation from unwanted extraneous sound pick up, it was a less than ideal location for sonic clarity. Some components of the instruments' distinctive sound, like string slap and finger noise for instance, would have been undetectable from inside the body of the bass. Analogous to placing a microphone inside a singer's mouth, this style of amplification had one purpose – to make the bass louder – fidelity was clearly not the primary objective. Crow details his experience with this early transducer:

Everett Hull's Ampeg pickup was too boomy, and Everett worked on amp design to try to improve the sound. He made a good bass amp just as the Fender bass began to come into use, but his bass pickup was never any good.¹²²

¹¹⁹ Don Davis, Carolyn Davis, *Sound System Engineering* (Oxford: Howard W. Sams, 1987), p. 307.

¹²⁰ Phil Ramone, cited in Howard Massey, *Behind the Glass: Top Producers Tell How They Craft the Hits* (San Francisco: Miller Freeman, 2000), p. 52.

¹²¹ Gregg Hopkins and Bill Moore, *Ampeg: The Story Behind the Sound* (Milwaukee: Hal Leonard, 1999), p. 36.

¹²² Bill Crow. Personal correspondence with the author. 17 July 2010.

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Figure 2.4 Ampeg and Bassamp combination. Note the small microphone on top of the endpin assembly (the ‘peg’) in front of the amplifier. It has been removed from the bass for display. Courtesy Tommy Wilson of St. Louis Music.

An alternative approach was to tackle the ergonomic impracticality of the large string bass and devise a system replacing it with some sort of ‘stick’ substitute. Relieved of the necessity for a large resonating cavity, these slender ‘electric uprights’ relied exclusively on their associated amplifiers for their sound. These instruments, although tuned the same as a standard acoustic bass and played in a similar manner, could scarcely be expected to deliver a very realistic tone. The large wooden body, responsible for much of the complexity and nuance of the string bass’ sonority, had been completely removed. By 1936, various advertisements for these amplified instruments appeared in the jazz press, including one for the Vega electric upright/amp combination.¹²³ The Rickenbacker Company in 1936 also marketed ‘a slender, paddle-shaped electric upright bass and small bass amplifier, little more than a radio receiver without the tuner’.¹²⁴

¹²³ Jim Roberts, *How the Fender Bass Changed the World*, p. 27 features an advertisement for the Vega.

¹²⁴ Gregg Hopkins and Bill Moore, *Ampeg*, p. 40.



Figure 2.5 Howard Rumsey (center) playing a Rickenbacker electric upright in the Stan Kenton Band, 1941.

Howard Rumsey was less than enthusiastic about the Rickenbacker:

The Rickenbacker guitar company built an electric [upright] bass and gave one to me and one to Moses Allen who was in Jimmie Lunceford's band. It was not a fun instrument. I played it for a year.¹²⁵

Neither was it received very well in the recording studio when Rumsey arrived for a recording session: 'When I walked into Decca with it [Decca Records president] Dave Kapp was standing there and said to me, "Don't you know that we've never recorded one of these things successfully?"'

Attempts to enlarge other, standard instruments to provide bass function were also tried. The Regal Bassoguitar, for example, was essentially a five-foot tall, giant acoustic guitar and was endorsed by Israel Crosby in the Fletcher Henderson Orchestra in the early 1930s.¹²⁶ It also proved commercially unsuccessful.¹²⁷ (Figure 2.6).

¹²⁵ Howard Rumsey, cited in Stephen Fratallone, 'Howard Rumsey: Super Salesman', *Jazz Connection Magazine* (May 2005)

http://www.jazzconnectionmag.com/howard_rumsey_article.htm (accessed 14 December 2011).

¹²⁶ Jim Roberts, *How the Fender Bass Changed the World*, p. 22.

¹²⁷ See also Gibson's 'Mando-bass' a large mandolin, illustrated in Jim Roberts, *How the Fender Bass Changed the World*, p. 21.



Figure 2.6 Regal Basso-Guitar (left) alongside a double bass.¹²⁸

1936 saw the development by Seattle inventor Paul Tutmarc of a small solid body electric bass played in a horizontal fashion like a guitar – the Audiovox Model 736 Electronic Bass.¹²⁹ This instrument, of which about 100 were made, never went into full production but can be considered the precursor to the more successful Fender Precision electric bass introduced in 1951, addressed in a later chapter.

¹²⁸ <http://www.talkbass.com/forum/showthread.php?t=563480> (accessed 25 January 2011).

¹²⁹ Jim Roberts, *How the Fender Bass Changed the World*, p. 29.



Figure 2.7 Paul Tutmarc and Audiovox Model 736 Electronic Bass pictured in the center.

The foregoing examples represent a number of different approaches to the problems associated with increasing the sonic output of the bass. One attempted to increase the volume of a conventional instrument by employing technological means (electricity) to reinforce sound that was already present. Another tried augmenting the size of a conventional instrument in order to adapt it to use in a lower register with all the ergonomic infelicities associated with this procedure. Yet another chose to sacrifice the authentic sound of the string bass and develop an instrument, the electric bass guitar, which had a functionally similar if not sonically identical profile, and at the same time solve most of the ergonomic issues in a revolutionary way. As has been shown, the history of the jazz bass is full of examples, especially in the early acoustic recording era of 1917-1924, in which other instruments were commissioned to deliver the bass part owing to shortcomings in the prevailing recording technology. By the mid 1940s the situation was being reversed and technological solutions were being investigated in order to service the musical requirements of the bassist.

CHAPTER THREE

The Spoils of War and the Jazz Bass: Tape Recorders and Editing (1945-1960)

The previous chapter traced the ways in which technology was introduced to the jazz bassist's performance as the need to achieve greater sonic presence became more acute. The current chapter examines the changes affecting the bass player as the products of wartime technological expansion infiltrated music production. Better and more flexible recording options were transforming the role of the bassist in the studio. Meanwhile revolutionary bass styles involving more soloing responsibilities were evolving, undermining confidence that the high-actioned, unamplified string bass could satisfactorily present them. The string bass, which had remained largely unchanged since the 16th century was, by 1960, no longer impervious to technology's mediation. Bassists also began considering other instruments on which they might achieve their artistic ambitions, despite the protestations of critics and more conservative jazz advocates.

- String Technology

One intrinsic aspect of the bass improved by technology was its strings. Traditional gut strings were made by hand and as a result suffered inconsistencies in density and circumference. While the sound they produced was excellent when played with a bow, their characteristics were not always ideal for the jazz bassist who preferred to play pizzicato. Gene Ramey described the sheer effort involved in underpinning the jazz ensemble and revealed the level of stress bass players placed upon gut strings:

I had to do whatever I could to compete with the drummer, like raising my strings about an inch. The higher you set your strings the more volume you can get out of the bass, but you have to be very careful of getting out of tune. You also have to pull the strings as if they were ropes ... anything to get loud enough.¹³⁰

Percy Heath related his similar experience: 'I've got a picture of me with Charlie Parker and Miles Davis and one string is pulled way back over on the other string. I'm pulling

¹³⁰ Gene Ramey, cited in Richard J. Laun, 'Conversations with Gene Ramey', *IAJE Jazz Research Proceedings Yearbook* (Austin: University of Texas, January 1997), p. 97.

that hard. I used to get blisters'.¹³¹ Until the late 1950s the traditional jazz bass setup consisted of a high bridge supporting gut strings. It required considerable strength to overcome the resistance of a string suspended up to an inch above the fingerboard. Still more effort was necessary to produce a long, full tone once contact with the fingerboard had been made. Due to gut's elasticity and inconsistent density, the extra pressure required to clamp the string down made it difficult to achieve reliable tuning. Resistance caused by this high action tended to reduce the duration of notes, rendering them more detached as the fingers were repositioned. Thumb position for these early bass players was particularly awkward. Here the string action is at its highest and without the assistance of the thumb at the back of the neck providing leverage, the bassist's excursions into the upper range of the instrument required a great deal of brute force to produce an acceptable tone. As jazz evolved, its growing complexity and refinement, together with the unrelenting increase in dynamic levels, would have left these bassists feeling much like the hyperventilating tuba players whom they had so convincingly displaced twenty years earlier.

Until the late 1600s, strings for the double bass were made exclusively of sheep intestines. According to Stephen Bonta:

The number of gut threads twisted together to form a string was a function of the pitch-level of the string; the lower the pitch, the larger the number. Bachmann gives the number of threads in a contrabass D string as up to eighty-five. Mersenne discovered that the frequency of a string varied inversely with its length, directly as the square root of its tension, and inversely as the square root of its linear density, or mass per unit length, as follows:

$$F = \frac{1}{2L} \sqrt{\frac{T}{D}}$$

Where **F** = frequency, **T** = tension, **L** = length, and **D** = density or mass per unit length.¹³²

¹³¹ Percy Heath, cited in R.J. Deluke. *A Remembrance of Percy Heath, Part 2-2*.

<http://www.allaboutjazz.com/php/article.php?id=17730&pg=1> (accessed 17 March 2011).

¹³² Stephen Bonta, *From Violone to Violoncello: A Question of Strings?*

<http://earlybass.com/articles-bibliographies/from-violone-to-violoncello-a-question-of-strings-3/>

(accessed 26 January 2012). Bachmann's description of the D string can be found in Alberto Bachmann, *An Encyclopedia of the Violin*, trans. Frederick Martens (London, 1925), p. 148.

Mersenne's equation is described in Marin Mersenne, *Harmonie Universelle, part II* (Paris, 1637), p. 185.

Since it is advantageous to the player to keep the strings of the bass all the same length and at a similar tension, their mass per unit length varies greatly from string to string. Attempting to satisfy the requirements of the above equation by adding more and more strands of gut resulted in a low E string of unmanageable thickness and inflexibility. Indeed, this was such a problem that the issue was avoided altogether on many older basses, as Roberts explained: ‘A three string acoustic upright tuned A, D, G seems odd to us today, but it was popular in the eighteenth century because the E strings of the time were so bad’.¹³³ The solution was to increase the mass per unit length by using a heavier material. Consequently, in the second half of the 1600s, string makers discovered that if they wound silver wire around a core of gut, they could increase the density of the lower strings without significantly adding to their diameter or stiffness. The winding enabled the string to produce the same pitch as its unwound predecessor, while significantly reducing its diameter. The string’s higher density also permitted the construction of smaller basses without sacrificing volume, which made negotiating the instrument considerably easier.

The introduction of steel strings contributed significantly to the evolution of jazz bass style in the late 1950s. Their lighter gauge and consistent thickness delivered more reliable intonation, increased volume with reduced effort and less string breakage. In combination with new precision bridge adjusters, this substitution led to a general lowering of string height and significantly improved facility. Jazz bassists also found that steel strings produced a superior tone when performing in the higher registers on lower courses. They effectively increased the range of the bass and opened up new possibilities for the adventurous player. Bill Crow explains how this new technology improved his playing experience:

When I began to play the bass in 1950, everyone was still using gut strings, unamplified. There were a few attempts to improve the strings by wrapping them in plastic, and by making them entirely of plastic, but the big improvement was steel. The first steel strings were like piano wire, very hard to play. Then they began spinning them like cables, and they became much more flexible. I eventually changed over to steel strings, hoping to get more volume from the instrument, and found that I could play with the strings much closer to the fingerboard, making faster articulation possible.¹³⁴

¹³³ Jim Roberts, *How the Fender Bass Changed the World*, p. 89.

¹³⁴ Bill Crow. Personal email to author (17 July 2010).

The extreme resistance and high action of gut strings may also partly explain a stylistic peculiarity. Many bass parts from the 1930s and 1940s contain repeated notes that reduce the frequency of positional changes. While this kind of line is harmonically unambiguous, it does lack horizontal momentum when compared with a more contemporary contour. For example, Curley Russell's performance on the 1945 recording of 'Cherokee' provides an effective four-to-the-bar rhythmic pulse.¹³⁵ (Figure 3.1). Melodically, however, the repeated notes fail to generate much forward propulsion. (See Appendix A, CD track 7).

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Figure 3.1 Excerpt from Curley Russell's bass performance on 'Cherokee' in 1945. [CD Track 7]. In comparison, the more melodically active bass line performed 40 years later by Robert Hurst in the same tune employs a greater number of non-diatonic passing tones (Figure 3.2).¹³⁶ Considerably more position shifts are required to execute these passages, which have been facilitated by lower action and the adoption of steel strings in the intervening years. As a result of these intrinsic technological changes, the increased directionality of the modern bass line lends the music greater forward motion and interest. (See Appendix A, CD track 8).

¹³⁵ Charlie Parker, 'Cherokee', *Bird: The Savoy Recordings*, Vol. 1. ZDS 4402 (1976).

¹³⁶ Wynton Marsalis, 'Cherokee', *Marsalis Standard Time*, Vol.1. CBS CK 40461 (1987).

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Figure 3.2 Excerpt from Robert Hurst’s bass performance on ‘Cherokee’ (II) in 1987. [CD Track 8].

In this way, improved strings not only brought greater facility, they also influenced the development of jazz bass language by encouraging more sophisticated bass parts.

- The Bass and the Tape Recorder

The tape recorder, introduced into recording studios during the late 1940s, revolutionized the recording and broadcast industry. According to David Morton: ‘Within a decade, the use of tape had utterly transformed the making of original recordings in nearly every context’.¹³⁷ Tape recording delivered technological improvements in terms of audio specifications and introduced unprecedented temporal and spatial flexibility. It also brought the first significant challenge to the documentarian aesthetic of music recording, increasing the involvement of technicians in the actual realization of music performance, not just its representation. Chanan described the way in which the tape recorder transformed the politics of the recording studio:

¹³⁷ David L. Morton, *Sound Recording: the Life Story of a Technology* (Baltimore: John Hopkins University Press, 2004), p. 127.

The new medium (editable tape) brought a clash between musician and producer over control of the recorded sound image. The biggest problem for the performer was not just being deprived of an audience, but the altered status of interpretation, especially in a situation where performance becomes fragmented (edit pieces). In a single act the performance is removed from an audience and from time, and expression and the impression of spontaneity becomes the objects of technique and control.¹³⁸

While tape recording involved an extra mediating step between the performance and the final commercial product, the advantages it offered were compelling. It delivered significantly improved low frequency extension and dynamic range giving recordings a deeper, more realistic sonic dimension. The added heft in the lower frequencies afforded a greater sonic impact, and as a consequence bass players in particular enjoyed the benefit of a more robust presence. Since the mechanical tracking errors associated with the direct to disc recording stylus were conveniently sidestepped, tape recordings could now be confidently underpinned by vigorous bass performances.¹³⁹ Tape also delivered greatly extended recording time and most importantly, expanded the extent to which editing could be performed, facilitating a whole new level of post-production interventions. Freedom from the tyranny of the three and a half minute recording time limit, as described earlier, solved two problems. First, it allowed arrangements to be played unabridged and at tempi not hostage to the physical limitations of a disc. The second involved the removal of issues associated with the disc cutting process. Previously, in order to maximize recording time in the direct to disc method, groove width had to be minimized and groove density increased. This involved a reduction in the volume of the recording and the amount of low frequencies present, both of which had a detrimental effect on the perception of the string bass. Former bassist and seminal recording engineer Tom Dowd explained:

In 1947 ... state of the art was to employ a 16-inch table with a lead screw of fixed pitch moving a magnetically motivated needle across a disc that you were cutting directly into. [For a two-minute song] it was 88 lines per inch. If it was a three-minute song, you had to make it 112 lines, which meant lower volume, a higher likelihood that the record would skip, and so forth. There were major problems with this system.¹⁴⁰

¹³⁸ Michael Chanan, *Repeated Takes: A Short History of Recording and its Effects on Music* (New York: Verso, 1995), pp. 116-136.

¹³⁹ David M. Huber and Robert E. Runstein, *Modern Recording Techniques* (Carmel: SAMS, 1992), p. 101.

¹⁴⁰ Tom Dowd, cited in David Simons, *Studio Stories* (San Francisco: Backbeat Books, 2004), p. 49.

Tape recording introduced another important benefit for all musicians. It facilitated the immediate playback of the recorded performance, and hence a degree of reflexivity was afforded the players during the session. No longer reliant solely on the discretion of the producer or bandleader, musicians could now be allowed the opportunity to be self-critical, to develop a ‘gramophone’ ear. They could assess their performance and adjust subsequent takes accordingly. In 1958, Red Mitchell described the importance of studio session experiences in advancing the general level of his bass playing:

Since I started to play the instrument [in the studio], the level of musicianship by bass players has taken a great step forward. Eleven years ago, a guy could get away thumping the bass without paying any attention to musical values. Now, you can’t do that – there are too many people listening to you. And not just musicians either. As critical standards have risen, so has the quality of playing.¹⁴¹

Unlike shellac discs, tape editing permitted the creation of recordings that were constructed in parts rather than performed in their entirety. In this way, recording’s documentary ideology became imbued with a certain degree of sleight of hand. For the musicians involved in record production, this feature alleviated some of the stress associated with the direct to disc method in which every take had to be complete and error free. The composer/pianist Ferruccio Busoni’s remark, after a recording session using the older technology, drew attention to the pressures that the tape recorder helped ameliorate:

Not letting oneself go for fear of inaccuracies and being conscious the whole time that every note was going to be there for eternity; how can there be any question of inspiration, freedom, swing or poetry?¹⁴²

In the 1950s, popular music was considered ephemeral in nature.¹⁴³ Its producers were generally concerned with the broad-brush strokes of a recording not the microscopic details. The correction of every mistake was neither feasible, nor necessarily desirable. Bassist and producer Willie Dixon stressed the value of what was then a less critical attitude toward imperfections:

¹⁴¹ Red Mitchell, cited in Dom Cerulli, ‘The Mitchell Brothers: Whitey and Red’, *Downbeat* (29 May 1958), p. 18.

¹⁴² Ferruccio Busoni, cited in Joseph Horowitz, *Understanding Toscanini* (New York: Alfred A. Knopf, 1987), pp. 415-416.

¹⁴³ See *International Conference on the Role and Place of Music in the Education of Youth and Adults: Music in Education* (Paris: UNESCO, 1955), p. 190, in which popular music is so defined.

If it was what you considered a perfect record, it never sold. But if it had a good feeling and good time ... it would be better to go with that than one that's so perfect the people don't enjoy it.¹⁴⁴

Professional bass players, their skills in peak form due to the abundance of live work, were expected to perform flawlessly. The bass, however, was still predominantly felt rather than heard on reproducing equipment of the time. Errors were often overlooked as the short duration and indistinct pitch of many gut stringed basses meant that inaccuracies would likely go unnoticed. This insouciance is evident in many examples contained within the classic recorded jazz canon. For example, on Miles Davis' 1956 recording of 'Surrey with the Fringe on Top' the bass and piano are at harmonic odds in their accompaniment to the melody.¹⁴⁵ Whilst the pianist's left hand plays 10ths moving diatonically up the Bb major scale, the bass, in the same register, plays an ascending chromatic line that places its low B natural against the C of the piano. Rather than being an unfortunate slip up – the passage is repeated with slight variations throughout the 32 bar form at the start and end of the piece. Clearly, the resultant dissonance was deemed insufficient reason to re-cut the nine-minute track, even though its sparse orchestration does nothing to obscure it. Future developments, however, would eventually discourage this laissez faire attitude toward performance accuracy. As the technology of recording and playback equipment improved, these mistakes in the bass regions became more apparent. At the same time, however, more comprehensive editing capabilities made their rectification easier.

Another technological development allowed the increased bass captured on tape to be transferred safely to disc. As Robert Auld commented: 'With the LP system producers and engineers must carefully control what happens in the deep bass (below 100Hz) as failure to do so can result in an unplayable or bad sounding disc'.¹⁴⁶ The development of the RIAA EQ curve as a worldwide phonograph convention, implemented in 1955, did much to increase the amount of bass possible to achieve on a vinyl record before inducing tracking problems. Using complementary equalization processes for record cutting and subsequent playback, it involved reducing the strength of bass frequencies

¹⁴⁴ Willie Dixon, cited in Steve Waksman, *Instruments of Desire: The Electric Guitar and the Shaping of Musical Experience* (Cambridge Mass: Harvard University Press, 1999), p. 141.

¹⁴⁵ Miles Davis, *Steamin' with the Miles Davis Quintet*, Prestige OJCCD-391-2 (1989).

¹⁴⁶ Robert Auld, personal email to the author (8 August 2011).

pressed onto the physical disc and then increasing them again by the same amount electronically on playback. As a result, bass became more distinct and robust on jazz and pop records, and its contribution to the rhythmic underpinning of the music became more apparent.¹⁴⁷

- The Session Bassist

After World War Two, the emerging medium of television diverted the interest of the major US broadcasting networks away from radio, with the result that the amount of work available for the average touring bassist decreased as the number of live broadcasts from ballrooms all over the country gradually diminished.¹⁴⁸ The reduction in major network hegemony encouraged a multitude of independent regional radio stations to emerge. These stations found the playing of records to be a much more economical form of broadcasting than live productions, and one that proved very attractive to advertisers. The increased demand for discs destined for radio play encouraged record companies to seek out specialist groups of musicians sufficiently familiar with the exigencies of the recording process to be able to produce commercial product efficiently and at an exceptionally high standard. These ‘studio musicians’ were expected to possess outstanding music reading skills, stamina, extraordinary musical memory and the ability to duplicate performances on demand. Above all encyclopedic versatility was required as a result of the diversity of recording work that confronted them. Film scores, orchestral dates and soundtracks, as well as the more traditional jazz big band and small ensemble performances, demanded the kind of flexibility beyond the scope of most journeyman bass players. Bassist Ray Brown was one such player, schooled in both classical bass playing techniques and the jazz vernacular. Brown described a typical day in the Los Angeles studios:

In the studios, during your average all day movie or television call, you start out with a big string orchestra in the morning generally, and then after lunch you break down to maybe

¹⁴⁷ Keith Howard, ‘Cut and Thrust: RIAA LP Equalization’, *Stereophile* (March 2009) http://www.stereophile.com/features/cut_and_thrust_riaa_lp_equalization/index.html (accessed 26 December 2011).

¹⁴⁸ Tom Genova, *Television History: The First 75 Years* <http://www.tvhistory.tv/1946-1949.htm> (9 April 2001) (accessed 26 January 2012).

fifteen or eighteen pieces, and wind up in the late afternoon with a quartet. It's almost like that every day; this is part of the business.¹⁴⁹

By the mid 1950s, 'swing' music, which had been so ubiquitous in the previous decade, had faded in popularity. In its place musical genres that relied more heavily on smaller ensembles, such as rhythm and blues and rock and roll, were in their ascendancy. Increasingly jazz bass players found themselves hired to contribute their services to the production of non-jazz recordings. In these settings, string bassists were often overwhelmed by the presence of amplified guitars and aggressively played drums. Gillett described the characteristics of the emerging styles that proved problematic:

The vocal styles were harsh, the songs explicit, the dominant instruments – saxophone, piano, guitar, and drums – were played loudly and with an emphatic dance rhythm, the production of the record was crude. The prevailing emotion was excitement.¹⁵⁰

As Dixon explained previously, it was the successful transference of this excitement onto tape that was the goal of technicians at iconic independent facilities, such as Chess in Chicago and Sun in Memphis. In order to do so, it was considered imperative to recreate the physical configuration of a live engagement, in hopes of energizing the musicians. David Simons, describing the studio spaces of the 1950s related that 'studios were designed to actually enhance the concept of live performance'.¹⁵¹ The same volume problems that plagued the string bassist in live engagements were also present in these recording facilities. Engineers were faced with serious technical issues that had a considerable effect on the quality of their productions. The amount of noise generated by the other players entering the microphone aimed at the bass was so excessive that any volume adjustment applied to the bass affected the quality of the entire mix. Leakage introduced time delay and phasing issues compromising the sound of the rhythm section. Chuck Berry's recording of 'Maybelline' featuring Dixon on string bass is a typical example.¹⁵² As the level of the bass microphone is increased at 1:06 to underpin the guitar solo, the detrimental effect it has on the presentation of the drums is clearly apparent.

Producers were left with three options. Either put up with the inadequate bass

¹⁴⁹ Ray Brown, cited in Les Tomkins, 'Ray Brown: Fusions and Phases in Jazz' http://www.jazzprofessional.com/interviews/Ray%20Brown_3.htm (accessed 4 May 2011).

¹⁵⁰ Charlie Gillett, *The Sound of the City* (London: Souvenir Press, 1971), p. 12.

¹⁵¹ David Simons, *Studio Stories* (San Francisco: Backbeat Books, 2004), p. 15.

¹⁵² Chuck Berry, 'Maybelline', Chess 1604 (1955).

underpinning and the mix issues it precipitated, isolate the string bass to achieve greater clarity and compromise the ensemble spirit, or consider an alternative bass instrument. Clearly, all impacted negatively on the bassist, and many string bass players found themselves temperamentally ill-suited for this work and the artistic compromises it often entailed, despite the financial rewards. For those bass players who chose a more artistically motivated path, however, the technological changes occurring in the commercial music world would soon begin to exert an influence in their own more rarified sphere of endeavor. In order to better understand how these influences affected the bassist, it is necessary to establish a context for performance standards of the early 1950s, prior to the introduction of the electric bass.

- Acoustic bass playing in the 1950s-early 1960s: Case studies

By the early 1950s the traditional harmonic and time keeping functions of the acoustic bass had been firmly established. In conventional jazz, the primary contribution of the bass was referred to as the ‘walking bass line’, described by Ed Friedland as creating ‘a feeling of regular quarter note movement, akin to the regular alteration of feet while walking’.¹⁵³ Implicit in the name are two features; steady duple rhythm comprising four notes to the bar and pitch successions that are highly directional, conveying intended harmonic targets. These bass lines employ a mixture of arpeggios, scale tones, and passing notes to delineate chords. The melodic shape of the line generally rises and falls in pitch over several bars and often moves in stepwise motion between successive chord roots, further intensifying the walking illusion and creating the impression of purposeful ambulation. The ability of string bass players to provide this style of harmonic underpinning discreetly, yet with a robust sound and unflagging sense of time, was at various times lauded in the pages of *DownBeat*:

Blakey dug in deep and was unobtrusively supported by bassist Merritt.¹⁵⁴

(Drummer Louis) Hayes and (bassist Sam) Jones are exemplary in their rhythm role.¹⁵⁵

¹⁵³ Ed Friedland, *Building Walking Bass Lines* (Milwaukee: Hal Leonard, 1995), p. 4.

¹⁵⁴ John Tynan, ‘Jazz Messengers: Caught In The Act’, *DownBeat* (2 March 1961), p. 45.

¹⁵⁵ Pete Welding, ‘Review of *Cannonball Adderley Quintet Plus*’, *DownBeat* (15 March 1962), p. 28.

Larry Ridley ... is a steady, hardworking player who knows the bassist's primary function.¹⁵⁶

The following transcription of a 1955 performance by Oscar Pettiford is typical of this approach. (Figure 3.3). (See Appendix A, CD track 9).

¹⁵⁶ Ira Gitler, 'Barry Harris at Minton's Playhouse: Caught In The Act', *DownBeat* (25 April 1963), p. 36.

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Figure 3.3 Oscar Pettiford's bass line in Thelonius Monk, 'It Don't Mean A Thing If It Ain't Got That Swing', *Thelonius Monk Plays Duke Ellington*, Riverside REP-111 (1955). [CD Track 9].

In this recording, Pettiford delivers a traditional walking line. Pickup and grace notes are not featured extensively and, with the exception of the cross-rhythmical unison lines during the exposition of the melody, the bassist plays mainly quarter notes. Pettiford traverses the harmonic minor scale in highly predictable patterns, albeit with impeccable swing feel. Notes are short and percussive and although the pointed sonority suggests the strings are struck quite forcefully there is no appreciable fretboard rattle, except for an open low E. His solo is confined to the lower octaves, avoiding thumb position (the highest note is a G open harmonic). As he occasionally strays below C on the A string, the tone and pitch become less well defined. Pitch placement is essentially pure with very few slides or microtonal gestures. All of these features are typical of the high-actioned, gut stringed bass played forcefully by a consummate artist in the 1950s. The stark nature of the piano trio recording also displays an ascetic recording technique. Once recording levels were set, they do not appear to have been adjusted for the duration of the performance. The engineer apparently did not feel it necessary to highlight the bass solo by increasing the microphone gain or interfering in any way. Internal dynamics appear to be solely at the discretion of the players, which is in line with the documentarian philosophy of traditional jazz recordings.

The 1950s saw the small group genres gradually replace ‘swing’ as the predominant jazz style. Jazz reverted from large performance spaces to smaller, more intimate clubs such as those on 52nd Street in New York City, where dance floors were removed and a policy of strict silence during performances enforced, and the pianist Randy Weston recalled of the owner of the NYC jazz club the Bohemia:

Garofalo would not tolerate noise from the patrons. He was an old-school Village bartender-proprietor and a real jazz fan. If a customer had a bad attitude, he might jump over the bar and attack them.¹⁵⁷

The concomitant rise of a listening as opposed to a dancing audience impacted on the development of the jazz bass. The need to provide an uninterrupted pulse had been essential during the swing era in order to encourage dancing. Now that this function was no longer required, the bassist’s musical line began to attract attention. The freedoms inherent in small ensemble jazz encouraged bass players to become more interactive and

¹⁵⁷ Randy Weston, cited in Ted Panken, ‘When Giants Walked the Village’, *DownBeat* (June 2005), p. 56.

experimental. It fostered the desire to be heard, to have their contributions more clearly appreciated – in short, to make their artistry discernible. However, emerging styles of drumming eventually threatened to increase the dynamic range of performances again, with the result that bass players could never feel completely assured that their instruments, now set up for maximum fluency and expression at the expense of volume, would not be overpowered. Their low sonic profile appears to have had another, more subtle effect, in that it caused the bass player to remain in the background of public perception. Compared with the other members of the ensemble, bassists were the subjects of far less discourse in jazz publications. For example, *DownBeat* magazine features just one article specifically focused on the bass player (the Mitchell brothers) in the four years from 1957 to 1960 inclusive.¹⁵⁸

As an indicator of the expanding role and expectations of the bassist in the mid 1950s, a transcription of Paul Chambers' bass solo on the Miles Davis recording 'The Theme' is presented below (Figure 3.4). (See Appendix A, CD track 10). Chambers had already established himself as a major talent on the New York jazz scene by the time he recorded this selection. Much admired as a traditional accompanist, he also developed a soloing style that exploited the language of bebop. Like Pettiford in the previous example, Chambers on 'The Theme' generally avoids the extreme upper register of his bass. Characteristically, in this instance Chambers prefers to remain mostly within the confines of the instrument's lower two octaves, although he ventures step-wise into thumb position on two occasions (up to Bb at 2.37 and 5.11). His use of pitch slides and bends adds a distinctly blues flavored, vocal quality to select phrases. Once again the gut strings and his firm pizzicato touch prohibit the development of a truly legato sound. In common with most bass features of the period, Chambers' solo is accompanied with very sparse, light piano interjections and unobtrusive drums, an arranging device effective in accommodating the string bass. Whilst the jazz arranger's options for supporting other instrumental soloists, such as saxophone and trumpet, could extend over the entire range of dynamics, textural and timbral density, the string bass soloist presented limited possibilities. Arguably the most distinctive feature of Chambers' solo style is the refined sense of time he displays, the nuances of which are impossible to convey in conventional

¹⁵⁸ Dom Cerulli, 'The Mitchell Brothers: Whitey and Red', *DownBeat* (29 May 1958), p. 18.

notation, but which recording technology captures to good effect. Although Chambers maintains a strong rhythmic pulse when accompanying, his solo flight takes on a freer, more expressive quality than those of his predecessors. In terms of recording technique, the work of the engineer is more conspicuous than in the previous example. On two occasions (2:21 and 3:00) Davis' trumpet is suddenly awash in reverberation as the engineer places it temporarily in a sonic environment not shared by the other instrumentalists. The recording bears witness to a gradual transition to a more creative and intrusive approach that the arrival of multi-tracking in the 1960s further accelerated.

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Figure 3.4 Paul Chambers' bass line on Miles Davis, 'The Theme', *Workin' with the Miles Davis Quintet*, Prestige OJCCD-296-2 (1987), abridged by the author from a transcription by Jim Stinnett.¹⁵⁹ [CD Track 10].

¹⁵⁹ Jim Stinnett, *The Music Of Paul Chambers* (Boston: Stinnett Music, 1984), p. 17.

Of particular interest on this recording is the sound Chambers draws from his instrument. The bass has a warm, organic tone characterized by a rather rapid decay. Significantly, its sonority features a strong resonance between 112 and 116 hertz, a function of the large acoustic cavity of the instrument. At pitches corresponding to this frequency range, this resonance is excited and rings for a considerable duration, much like an undamped drum, obscuring the notes that immediately follow. By applying a high Q filter in Pro Tools (Figure 3.5) this resonance can be removed, greatly improving the instrument's articulation.¹⁶⁰ (See Appendix A, CD track 11). In the mid 1950s these digital tools were unavailable, and only wide band equalizers incapable of this level of surgical precision could have been applied. This example demonstrates how modern technology provides tools that can be employed to improve historic recordings, isolating and rectifying problems that escaped the attentions of original technicians.

¹⁶⁰ A notch filter is an audio signal processor that passes most frequencies unaltered, but attenuates only those in a very narrow selectable range. The narrower the band of rejected frequencies, the higher the Q factor.

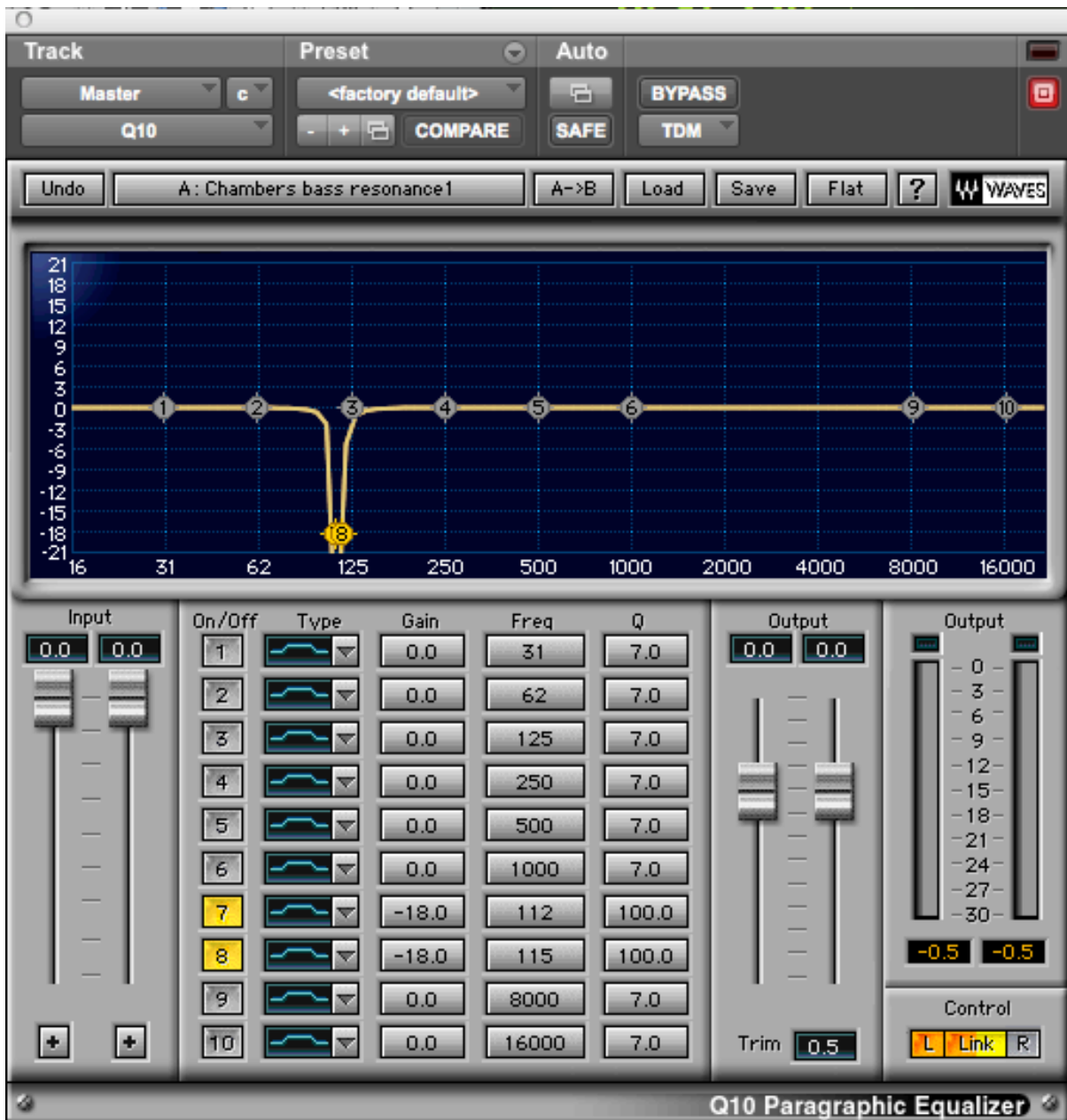


Figure 3.5 Sharp, deep filter (Q of 100) used to remove specific pitched resonances.

One of the most influential string bass players to emerge in the late 1950s was Scott LaFaro, famously associated with the Bill Evans Trio. LaFaro revolutionized the role of the bass within the jazz ensemble by embracing a more sophisticated, less literal approach to rhythmic pulse. Coupled with a thorough mastery of jazz language and a fertile imagination, LaFaro demonstrated the potential of the string bassist to contribute as an equal voice, rather than simply fulfilling its more traditional role as an accompanist.

LaFaro, along with Mitchell and Chambers, popularized the concept of the emancipated bassist before his untimely death on 6 July 1961. In bassist Bob Magnusson's assessment:

While keeping the integrity of the basic function of the bass, [LaFaro] moved the bass to a completely new level. The concepts that he developed and his virtuosic technique continue to be a great influence and a mainstay of jazz bass playing today.¹⁶¹

In order to ascertain the degree to which LaFaro's innovations influenced technological developments, it is useful to examine the transcription of his performance on 'Solar'. It identifies his most important contributions and reflects the broad scope of his creativity. (See Appendix A, CD track 12).

¹⁶¹ Bob Magnusson, cited in Helene LaFaro-Fernandez, *Jade Visions: The Life and Music of Scott LaFaro* (Denton: University of North Texas Press, 2009), p. 173.

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Figure 3.6 The Bill Evans Trio, 'Solar' featuring Scott LaFaro on bass (1961)¹⁶² abridged by the author from a transcription by Phil Palombi.¹⁶³ [CD Track 12].

¹⁶² Bill Evans Trio, *Sunday at the Village Vanguard*, Riverside RLP 9376 (1987).

¹⁶³ Phil Palombi, *Scott LaFaro* (New York: Palombi Music, 2003), p. 22.

The above transcription illustrates, in its complexity and contrasts, the extent to which the traditional concept of the behind-the-scenes bass player was challenged in the early 1960s. In his performances with the Bill Evans Trio, LaFaro largely abandoned the conventional walking bass line and opted for a rhythmically highly differentiated style involving multiple meters, such as is apparent in the above. By implying, rather than explicitly stating the quarter note pulse, and by using countermelodies and melodic interjections not necessarily tethered to the bar line, LaFaro encouraged an increase in ensemble interactivity. Exploiting his prodigious technical fluency on the bass, LaFaro achieved a sophisticated balance between melodic invention and harmonic delineation, blurring the distinction between soloist and accompanist. Marc Johnson, who in 1978 replaced LaFaro in the pianist's last trio, commented on the sound and innovations of his predecessor:

Scotty's sound was unique and natural – so real and fluid sounding. He never used a pickup, and you never heard any clicks or metal string noise, because he used gut strings. The things he did in between piano phrases and across the time were phenomenal ... he served as a melodic counter voice to everything else that was happening. He wasn't walking all the time in 4/4, yet he had a real groove with Bill and Paul Motian. He played with ideas that went over the bar line and obfuscated the one.¹⁶⁴

LaFaro's ambition to interact more fully within the ensemble, and to employ a more sophisticated jazz vocabulary while doing so, required that he alter the set up of his bass. The extreme technical demands of his playing style necessitated the adjustment of his instrument's string height to an unprecedented low level. The resulting reduction in maximum string excursion naturally limited its volume. As Brown conceded, LaFaro 'wasn't really a power bassist. He had something different going, something of his own'.¹⁶⁵

Eyewitness accounts confirm that LaFaro was cognizant of the difficulty involved in projecting his soloistic style. For example, bassist Steve Swallow described LaFaro's efforts to improve its reception:

¹⁶⁴ Marc Johnson, cited in Anil Prasad, 'Marc Johnson's Homage to Bill Evans & Scott LaFaro.' <http://www.bassplayer.com/article/marc-johnsons-homage/mar-08/34331> (accessed 17 March 2011).

¹⁶⁵ Ray Brown, cited in Keith Shadwick, *Bill Evans-Everything Happens To Me: A Musical Biography* (San Francisco: Backbeat Books, 2002), p. 91.

Players like Scott were making use of microphones, and some of us began to wrap a mic in a cloth napkin and wedge it below the bridge between the tailpiece and the body of the instrument.¹⁶⁶

According to John Goldsby, LaFaro often reverted to an age-old theatrical technique to increase his presence both visually and audibly: ‘Many eyewitnesses to LaFaro’s live performances report that to be better heard, he would sometimes step forward with his bass just before taking a solo and step back afterward’.¹⁶⁷ By popularizing a highly sophisticated style of bass playing within a dynamically subdued piano trio format, LaFaro drew attention to the need for more effective bass amplification strategies. Only through amplification could his performance concepts be applied universally in more volatile settings. The enthusiasm with which his innovations were received prompted other string bass players to adapt their instruments in order to accommodate the demands of a more contemporary soloistic approach. Other issues persisted however which were beyond their control, including the rather primitive public address systems still prevalent at most venues. Ind recalled the problems associated with early microphone use: ‘In the old days, you put a mike in front of the bass, and all the speakers in the club rattled; all the people got was a big booming noise’.¹⁶⁸ LaFaro’s reluctance to use a bass amplifier and pickup undoubtedly reflects the poor quality of these products at that time, rather than a conceptual antipathy toward electronics. Crow recalled the ineffectiveness of this early technology:

The first bass pickup I remember was the DeArmond, which looked like a travel iron. It attached to the top of the bass and worked fine on Latin bands where the bass was like a tunable drum. But with four-four walking lines, the DeArmond sounded boomy and muddy.¹⁶⁹

In the absence of amplification, other than the occasional public address microphone, the projection of LaFaro’s increasingly nuanced bass playing demanded extreme sensitivity from the other members of the ensemble and, indeed, its audiences. The lack of sound reinforcement however did impact on the trio’s repertoire choices as some material was

¹⁶⁶ Steve Swallow, cited in John Goldsby, ‘Game Changer: How Scott LaFaro Rewrote the Rules Of Jazz Bass.’ *Bassplayer*, online at <http://www.bassplayer.com/article.aspx?id=105411> (accessed 21 May 2011).

¹⁶⁷ John Goldsby, ‘Game Changer’.

¹⁶⁸ Peter Ind, cited in ‘Peter Ind Speaks His Mind.’

<http://www.jazzprofessional.com/interviews/Peter%20Ind.htm> (accessed 6 May 2011).

¹⁶⁹ Bill Crow. Personal email to author (17 July 2010).

simply avoided because it would not be heard properly. As Bill Evans complained: ‘It’s very rare to be able to play ballads on a Saturday night, for example. In New York it’s so noisy that we have to stick more or less to the swinging things’.¹⁷⁰ By extension, the dynamic range of all of their performances was hostage to the ambient noise in the concert environment. Even the efforts of recording engineers to capture the trio at one of the world’s premier jazz showcases – the Village Vanguard – could not guarantee a satisfactory outcome. According to Shadwick, LaFaro’s own composition ‘Jade Visions’ featured on the LP *Waltz For Debby* was ‘marred by a noisy crowd’.¹⁷¹ Clearly these artistic compromises were unacceptable to jazz artists, encouraging efforts to improve the presentation of jazz music through technological means.

As the 1960s progressed, other rhythm section members came to embrace technology more enthusiastically. Changes included the substitution of electric piano, solid body electric guitar and amplified drums in place of acoustic instruments. Unlike the Bill Evan’s Trio, other musicians were not always prepared to treat the unamplified string bass so sympathetically. It is interesting to speculate whether LaFaro would have eventually employed a pickup had he lived, as so many other bassists did in the ensuing years – including those who had previously established their reputation with an organic, traditional gut stringed tone, such as Charlie Haden and Ray Brown. Even Bill Evans himself eventually performed on an electric piano and condoned his subsequent bassist Eddie Gomez’s use of a pickup. By embracing technology, Gomez ensured that his playing could be as sophisticated as he wished, without fear that his contributions would not be heard. Unfortunately, his pickup use forced him to sacrifice the natural sonority of his bass. Once the influence of commercial music began to infiltrate the upper strata of jazz artists, performance dynamics escalated and the unamplified bass, so beloved by LaFaro, became increasingly impractical.

LaFaro’s revolutionary bass playing was disseminated primarily through recordings, particularly the new high fidelity (hi-fi) stereo recordings that had become very popular by the early 1960s.¹⁷² The extent of the public’s growing hi-fi awareness is

¹⁷⁰ Bill Evans, cited in Peter Pettinger, *Bill Evans: How My Heart Sings* (New Haven: Yale University Press, 1998), p. 161.

¹⁷¹ Keith Shadwick, *Bill Evans-Everything Happens To Me*, p. 90.

¹⁷² David L. Morton, *Sound Recording*, p. 130.

reflected in the pages of *DownBeat* in which new regular sections devoted to it were introduced. A jazz magazine previously confining its subjects to interviews and personal appearance critiques, was now offering advice on the world of hi-fi, stereo equipment and home tape recording, often soliciting recommendations from musicians themselves. A curious advertisement for the Crown tape machine even appeared in which bassist Red Mitchell related the use of its VU meters to more accurately adjust the sound post of his bass – a strangely esoteric application for a newly marketed product obviously struggling to find a niche.¹⁷³ Little wonder that in an environment so suffused with the passion for new speaker, amplifier and stylus technology, attention should soon be turned toward its application to the bass. It was the instrument the subtleties of which, for many, were being revealed for the first time through high-fidelity audio.

Jazz critics often appeared ambivalent as to LaFaro's approach. *DownBeat's* Gene Lees, for example, remarked:

As much as I respected LaFaro's talent, he never struck me as the complete bassist. He used to set his bridge low in order to get that guitarlike speed and facility. But lowering the bridge of a bass lightens the tone, and LaFaro had insufficient power for my taste.¹⁷⁴

The traditional supporting role of the bass player still held currency, and many authorities displayed reservations about the suitability of the string bass as a vehicle for a more extensive jazz contribution. The reduction in power caused by LaFaro's soloistic style precipitated a scathing indictment from jazz pianist and composer Cecil Taylor. Taylor's remarks also reflected an awareness of the increasing mediation of engineers in the production of jazz recordings. He opined:

The weaker musicians have always benefitted from the technical things engineers do ... this is particularly clear with bass players. Take Scott LaFaro. He was thought to have a fantastic technique, but my definition of technique is not only the ability to play fast, but the ability to be heard – to have a fat sound. LaFaro, however, had a minute sound. By contrast, Charlie Haden really had something going. But engineers made LaFaro sound big.¹⁷⁵

LaFaro's approach to bass playing in the final analysis was technologically neutral. He chose to adapt the intrinsic qualities of his instrument to facilitate the achievement of

¹⁷³ See *DownBeat* (6 March 1958), p. 35.

¹⁷⁴ Gene Lees, 'Bill Evans at the Vanguard: Caught in the Act', *DownBeat* (25 October 1962), p. 40.

¹⁷⁵ Cecil Taylor, cited in Nat Hentoff, 'The Persistent Challenge of Cecil Taylor', *DownBeat* (25 February 1965), p. 17.

his artistic goals and, like Walter Page before him, changed the nature of the rhythm section in order to accommodate those adaptations, making it softer and less aggressive. As drummer Roy Haynes remembered: ‘He [LaFaro] never liked drummers to play loud ... that I know ... that’s when I started to get away from that. He was very fussy’.¹⁷⁶ LaFaro’s predicament was not an isolated phenomenon. The following section investigates to what extent the antipathy harbored by many jazz critics in the early 1960s toward the efforts of more adventurous bass players is attributable to technological inadequacies in their presentation. It examines the disparity between the aspirations of bass players and the lack of technological means at their disposal with which to achieve them.

- Jazz Criticism and the Bass

Performance and record reviews in music periodicals published during the late 1950s and early 1960s betray an interesting anomaly. Generally, the discourse concerning the performance quality of bass players in *DownBeat* for example, seems to have been informed by far less critical standards than that applied to other instrumentalists. This is not to imply there were no extraordinary bass players doing remarkable things on the instrument – just that they tended to be considered in a more sympathetic light. Allowances were apparently made due to the fact that bassists were generally believed to be unable to attain the standards set by soloists such as Charlie Parker and Dizzy Gillespie. As the study has demonstrated previously, as long as bassists were engaged in an accompanying role, their work was usually acknowledged in a positive, if rather cursory fashion. It was, after all, what was traditionally expected of them. Their attempts to join the front line soloists and contribute more sophisticated statements, however, often attracted caustic remarks from critics. For example, in a less than enthusiastic review, Philip Larkin asserted:

And let’s have no more bass solos. I don’t mean the bass break, when for a few seconds a whole band such as Luis Russell’s cuts out to expose Pop Foster’s bronze painted fiddle beating away like the engine of a liner. I mean these arid stretches of 32 or even 64 bars when some fervent bassist, aware that his instrument was ‘set free’ by the late Jimmy

¹⁷⁶ Roy Haynes, cited in Helene LaFaro-Fernandez, *Jade Visions*, p. 222.

Blanton, demonstrates its half-audible limitations while the rest of the band rest their lips. Why? The bass is not an elephantine guitar; to make it sound like one is to use the foundation stone for the cornice. Bassists are great quoters, too. Both these nuisances break the emotional flow between players and audience, the first by its frivolity, the second by its tedium.¹⁷⁷

The implication within this passage is that the string bass, ‘the foundation stone’, is entirely unsuitable for soloing, in terms of its intrinsic volume and technical challenges ‘its half-audible limitations’. In the thirty years since Panassié had expressed a similar opinion, bass players had apparently done little to change attitudes about the wisdom of expanding their role. Bassists themselves were often critical of the general musicality of bass solos. For example in 1958, L.A. studio bassist Whitey Mitchell suggested:

If you took an average bass solo and played it on a horn, everyone would just laugh ... Bass players seem to be about twenty years behind times. The bass is the most difficult instrument to play an intelligent jazz solo on.¹⁷⁸

If their solos were generally so poor why did bass players feel obliged, if not compelled, to attempt them during performances in which they would scarcely be heard, and commit them to recordings where they could be so mercilessly scrutinized? Intrinsic technological advances mentioned above, such as lighter steel strings and adjustable bridges, had delivered a dramatic improvement in facility. As a result new vistas of possible expression were suggesting themselves to the creative bass player. Technology, however, had yet to reach the level of sophistication necessary to provide bass players with the tools to realize their ambitions fully.

Not all critics however were as scathing in their assessments. Some in fact were curiously enthusiastic in the face of what were obviously inferior aspects of performance. Soloing efforts have often been praised unreservedly for their musicality in spite of glaring shortcomings. For example, Blanton in the aforementioned duet recordings with Ellington was lionized for his efforts. They were, of course, a remarkable achievement in comparison to the general standard demonstrated by the vast majority of jazz bass players of his day. But they did more to suggest the potential of the bass than to substantiate it. His arco solos, when compared with classical virtuosos, suffered from questionable

¹⁷⁷ Cited in Philip Larkin, *All What Jazz: A Record Diary 1961-68* (London: Faber and Faber, 1970), p. 139.

¹⁷⁸ Whitey Mitchell, cited in Dom Cerulli, ‘The Mitchell Brothers: Whitey and Red’, *DownBeat* (29 May 1958), p. 18.

intonation and an unflattering tone. Yet they were applauded in the same manner as the great horn soloists he often accompanied. The arco work of Chambers in the late 1950s invited the same glorification. The often squeaky, out of tune scratchings were commended out of all proportion to their musical effectiveness. Two examples of many occur on Coltrane's CD *Blue Train*; at 6:34 during 'Moment's Notice', and at 5:16 during 'Lazy Bird'.¹⁷⁹ In spite of these Berendt opined that Chambers 'was also a master of bowed bass, and plays arco with intonation and phrasing reminiscent of Sonny Rollins' tenor sax'.¹⁸⁰ Undoubtedly Chamber's swing phrasing stands comparison with Rollins', but his intonation and sound in these arco passages scarcely rate as masterful.

Critical comments like these perhaps explain why bass players continued to solo regardless of the success of the presentation of their efforts. The fact that bass players could produce musically sophisticated statements in spite of their instrument appeared in many cases to be praiseworthy in itself. Consider these reviews by Leonard Feather and Frank Kofsky:

[Gary Peacock] is one of the most amazing bassists I have heard ... his only faults are a tendency at times to get too busy during Fischer's solos instead of just playing straight time, and an occasional intonation lapse in the higher register.¹⁸¹

Bassist Larry Ridley has a tendency to play flat in solo; otherwise, the album is flawless.¹⁸²

[Ray] Brown plays more nearly in-tune than other bassists-turned-cellists in jazz, but even he tends to flatness.¹⁸³

While these criticisms perhaps say more about the critics than the bass players to whom they are directed, they do provide evidence of just how entrenched the concept of a traditional time-keeping, accompanying bass player was until the mid 1960s. And to what extent less than perfect pitch accuracy on the bass was regarded as acceptable.

¹⁷⁹ John Coltrane, *Blue Train*, Blue Note CDP7 46095 2 (1957).

¹⁸⁰ Joachim Berendt, *The Jazz Book*, p. 281.

¹⁸¹ Leonard Feather, 'Review of Clare Fischer, *First Time Out*', *DownBeat* (13 September 1962), p. 30.

¹⁸² Frank Kofsky, 'Review of Red Garland, *The Nearness of You*', *DownBeat* (5 July 1962), p. 24.

¹⁸³ Don DeMichael, 'Review of Ray Brown, *Ray Brown with the All-Star Big Band*', *DownBeat* (5 July 1962), p. 24.

DeMichael's review above refers to an interesting development during the period when many bass players adopted an alternative soloing instrument.¹⁸⁴ A March 1961 issue of *DownBeat* featured an advertisement for the Kay Musical Instrument Company's new Jazz Cello, which gushed:

Ray Brown Jazz Cello ... a startling NEW solo medium! – that's what it is ... a jazz cello, easier to play, easier to tune. Designed for jazzmen – but wonderful for any string player. But listen to Ray: 'Now soloing is easy for all bassists, for the solo range of the bass is easily accessible. Fingerboard and tuning make it a joy to play – and as you'll hear from my new Verve records, the sound is magnificent.'¹⁸⁵

The adoption of the cello implies that there was considerable dissatisfaction with the string bass as a vehicle for jazz solos among bass players themselves. In an effort to circumvent its inherent difficulties, some of the era's most respected bassists were discarding the string bass altogether and hoping to achieve a more effective solo voice on a completely different instrument. The 'jazz cello' exhibited many of the virtues of the electric bass. It was smaller than the string bass, requiring a shorter reach. It was easier to play due to its lower action, and also had the advantage that its tonal quality was more easily distinguishable on record. One might be forgiven for wondering why these bass players chose the jazz cello rather than simply adopting the electric bass. Examination of the available recordings suggests that the most obvious advantage of the cello, the fact that it could be played with a bow, was not a factor. Neither Doug Watkin's album *Soulnik* nor Brown's *Jazz Cello* features the use of a bow.¹⁸⁶ Both artists chose to approach the cello as they would a small bass pitched an octave higher than normal, even to the extent of tuning the strings in fourths as opposed to traditional cello tuning in fifths. Granted, its tone is significantly richer than the conventional electric bass sound of the time (to be discussed in Chapter Four), and its fretless nature provided the potential for greater expressivity over a range considerably wider than the 2 and 11/12 octaves available on the Fender Precision bass. The pizzicato jazz cello, however, suffered the same lack of a true legato articulation that plagued the gut-stringed, high-action string bass. It produced a rather unattractive sound despite Brown's assertion that he found the

¹⁸⁴ For example see Sam Jones, *The Chant*, Riverside 358 (1961); Doug Watkins, *Soulnik*, Prestige/New Jazz 8238 (1960); Ray Brown, *Jazz Cello*, Verve 68390 (1960) and Ron Carter on Mal Waldron, *The Quest*, New Jazz NJLP 8269 (1961).

¹⁸⁵ See *DownBeat*, (30 March 1961), p. 4.

¹⁸⁶ Ray Brown, *Jazz Cello*, Verve 68390 (1960).

cello ‘such a nice, easy and clear means of expression’.¹⁸⁷

The above demonstrates how technological shortcomings, ergonomic difficulties, registral and timbral issues, and the lack of enthusiasm for their efforts among critics conspired to generate an atmosphere that might have discouraged many bassists from attempting to push the boundaries of string bass playing. The more innovative players refused to be dissuaded, however. They persisted in directing the bass toward a more emancipated role under the gaze of an audience that had come to entertain high art pretensions. As Wolfgang Sandner claims:

In the history of jazz ... there is to be seen an almost obsessive pressure from the ‘subculture’ towards high art music. This pressure can be seen as the result of an increasing degree of self-reflection within certain kinds of more radical popular music. Increasingly this music draws on sources within twentieth-century art music and develops a critical orientation.¹⁸⁸

This ‘critical orientation’ led to an increase in audience scrutiny and connoisseurship. As Robert Witkin observed: ‘[Jazz’s] devotees invested its best examples with the kind of serious respect due to an avant-garde music, which they saw as opposing the stuffy conventionality of the bourgeois order’.¹⁸⁹ Accordingly, the jazz community developed heightened expectations of the bassist within the bosom of what Paul Lopes described as a ‘Jazz Art World’. Their crusade for cultural legitimacy also extended to the musicians themselves, creating contempt for all aspects of popular music. This anti-commercialism fostered an attitude that was unsympathetic to the intrusion of the electric bass, a tool of the popular music establishment, when it was first introduced into jazz performance. As Lopes explained:

Led by ‘hip’ black beboppers like Dizzy Gillespie, both black and white young professional musicians adopted a high art ideology. [They] adopted contempt for commercial music, and a view of jazz as an unappreciated art.¹⁹⁰

This development is significant in terms of the current study because it generated an environment in which jazz artists, in particular bass players, could perform with minimal

¹⁸⁷ Ray Brown, cited in Chris White, ‘Jazz Cello’ available at <http://www.jazzhalo.be/artikels/cello.html> (accessed 24 March 2011).

¹⁸⁸ Wolfgang Sandner, cited in Max Paddison, *Adorno, Modernism and Mass Culture: Essays on Critical Theory and Music* (London: Kahn and Averill, 1996), p. 100.

¹⁸⁹ Robert Witkin, *Adorno On Music* (London: Routledge, 1998), p. 160.

¹⁹⁰ Paul Lopes, *The Rise of a Jazz Art World* (Cambridge: Cambridge University Press, 2002), p. 204.

technological assistance. The work of LaFaro in this context represented the pinnacle of artistic achievement, and it was into this 'high art' milieu that the electric bass was first introduced. In the chapters following, consideration will be given to the arrival of a new breed of bassist. It will emerge that these bass players, having been inspired in no small measure by their exposure to the electric instrument, were intent on challenging traditional ideas about the role of the bass within the jazz ensemble.

Having established the context within which the wider application of technology had been introduced to jazz, the study has crystallized the many streams of influence that resulted from wartime investment in electrical amplification, tape recording and broadcast technology and their impact on the bassist. In particular it has considered how these advances enriched the public's perception of the bass and brought a deeper sense of artistic fulfillment to bass players through the facilitation of their efforts. It suggested that the establishment of a 'Jazz Art World' and its listening audience played into the desire of many bassists for a more sophisticated and emancipated role within the rhythm section by making the need for technological mediation less essential, at least in the short term. This was the lull before the electric storm precipitated by the birth of rock'n'roll.

CHAPTER FOUR

The Electrification of the Bass: Behold the Illegitimate Cousin (1954-1970)

The period 1954-1970 saw emerging technologies generate an expansion in the role of the bass in jazz. As was noted in the previous chapter, the increasing sophistication of recording technology enabled the bass to be captured more effectively, while developments in consumer electronics improved its reproduction in the domestic environment. The desire for superior playback in the home was fueled by a blossoming hi-fi interest that was serviced in the pages of *DownBeat* and other publications targeting audio enthusiasts.¹⁹¹ The expanding role of the string bass in the jazz ensemble was manifest in the highly interactive performances of players such as LaFaro, Red Mitchell and Charles Mingus. Their works were rendered in increasingly audiophile quality on studio recordings and enjoyed in the more urbane concert settings patronized by Lopes' evolving 'Jazz Art World'.

Concurrently, as the popularity of big band swing continued to decline, new forms of dance music began to emerge involving smaller ensembles. These more streamlined outfits were determined to provide an equally dynamic presentation in spite of their limited instrumental resources. Electricity was the empowering factor. Gradually the electric bass began to make its presence felt as it joined the electric guitar in blues and r&b outfits across the USA. By the end of the 1950s, it started to cast threatening shadows upon string bass players, who found their primacy in the studio and on stage challenged increasingly. Concerning the impact of the electric bass, Marcus Miller declared, 'the bass guitar was the instrument that let you know the '50s were over and music was going to some new places'.¹⁹²

The end of the 1950s saw the electric bass recognized as a driving force in the evolution of popular music. In order to determine its wider impact, the current chapter traces the organology of the instrument and the circumstances that led to its incorporation

¹⁹¹ See for example Charles Graham, 'Stereo Destined to Become Part of Everyday Life', *DownBeat* (16 October 1958), p. 21. The article that also features a ten page buying guide and hi-fi recommendations by jazz artists.

¹⁹² Marcus Miller, cited in Jim Roberts, *How the Fender Bass Changed the World*, p. 12.

into the jazz milieu. A clear evolutionary path will emerge, from its beginnings as an ersatz string bass to its eventual legitimization as a unique and valid contributor to the jazz legacy. Having examined factors intrinsic to the instrument itself, the role of technology in the emerging multi-track studio is assessed in order to illustrate the increasing influence of the engineer on the work of the bass player. Finally, the impact of the massive public interest in rock and soul music on the aspirations of the jazz bassist is examined, an interest that was generated in large measure by the very same electrification and amplification technologies with which more conservative, older jazz musicians had been reluctant to engage. Before examining the electric bass itself, the study considers the circumstances in which it was introduced and the reactions it generated.

The first commercially successful electric bass appeared in 1951, the Fender Precision Bass. Overwhelmingly, jazz musicians and critics dismissed it as incapable of producing either the requisite sound or swing feel necessary for superior jazz performance. The comments of Monk Montgomery underscore the disdain with which it was rejected: ‘The electric bass was considered a bastard instrument. Conventional players despised it. It was new and a threat to what they knew’.¹⁹³ Bassist Chuck Rainey also recalled this dismissive attitude and the questionable motives of those who embraced the new instrument:

In the early 1960s, the jazz musicians didn’t really accept the electric bass. The only people in jazz that accepted it were leaders, because they were always looking for gimmicks, trying to get over with different things.¹⁹⁴

The electric bass was certainly capable of delivering greater volume and foundational support than its acoustic counterpart. As attractive to string bassists as this advantage was, however, most were unwilling to sacrifice the sonic bloom and expressive capabilities of the acoustic instrument. As the 1950s came to an end, jazz bassists continued to snub the electric bass in spite of its increasing popularity in other genres. Steve Swallow’s self confessed prejudice was typical: ‘I resisted the electric bass on

¹⁹³ Monk Montgomery, cited in Mike Newman, ‘Monk Montgomery’, *Guitar Player* (September 1977), p. 26.

¹⁹⁴ Chuck Rainey, cited in Tom Mulhern, ‘Chuck Rainey by Dan Forte’, *Bass Heroes* (San Francisco: Miller Freeman, 1993), p. 164.

principle for years. I refused to touch one. I had the usual jazz musician's attitude toward electric instruments and rock and roll'.¹⁹⁵

The ease with which the electric bassist could rise above the dynamic level of any ensemble also strengthened the backlash among critics. They felt the reduction in physical effort required in playing the electric bass in comparison with its acoustic cousin, had a detrimental effect on the bassist's engagement with the music. Ironically, amplification technology had provided singers with the tool – the microphone – through which strenuous vocal exertions were replaced by a more satisfyingly nuanced and effortless vocal delivery. Yet when the electric bass and amplifier afforded the bass player the same luxury, it was roundly lambasted for undermining the rhythm section. This is clear in a 1960 live album review in which Montgomery was criticized:

Drummer Barth and bassist-leader Monk, however, never seem to unite as a team. Monk ... never seems to get in tune with the drummer. This inadequacy could be due to the physical factors involved in performing on a Fender bass; because it is played as a guitar is played, it is possible that the basic rhythmic element of 'digging in' eludes the instrumentalist.¹⁹⁶

A more explicit criticism is evident from a review of Montgomery's subsequent album, where he reverted, albeit temporarily, to the string bass:

One of the things that make this a 'different' Mastersound's album is Monk's use of a regular bass in place of the electric he used previously. I, for one, don't miss that electronic sound one whit. The widely held belief that the electric bass does not have the guts of an upright bass would seem to be borne out on this album. Monk *and* the beat sound firmer and more solid.¹⁹⁷

The electric bass was comprehensively spurned, rather than just ignored by jazz bassists, and as the Fender became a fixture on stage and in the recording studios, the venom and recalcitrance toward this progeny of rock'n'roll increased. Considering the years of hard work most string bassists devoted to mastering their instrument, the unsophisticated level of electric bass performance that passed for acceptable in other music fields may have generated resentment. Unlike its acoustic cousin, the electric bass afforded the fledgling musician a faster and easier way to achieve technical proficiency and possible

¹⁹⁵ Steve Swallow, cited in Fred Jung, 'A Fireside Chat with Steve Swallow' <http://www.jazzweekly.com/interviews/swallow.htm> (accessed 27 May 2011).

¹⁹⁶ John Tynan, 'Review of *The Mastersounds In Concert*', *DownBeat* (4 February 1960), p. 28.

¹⁹⁷ Don DeMichael, 'Review of *Swinging with the Mastersounds*', *DownBeat* (16 February 1961), p. 32.

professional status. Jack Bruce, for example, recalled his initial reaction to the electric bass: ‘Wow, this is easy and it’s *loud*’.¹⁹⁸ The electric bass posed a threat by encouraging increases in rhythm section dynamic levels at a time when string bassists had already seriously compromised their volume in order to achieve maximum facility. Already, in the early 1960s, jazz drummers had been tempering their playing styles and modifying drum sets to accommodate the stylistic changes occurring in the string bass. As bandleader Don Ellis remarked:

Bass lines are becoming more and more complicated and at the same time more important to the whole musical effect; if the drummer obscures what the bass is doing, much of value will be lost ... As the bass became more melodic, it was felt that the standard 26 inch bass drum had to be modified. Now, of course, everyone seems to have switched to the 20 inch size.¹⁹⁹

Even Fender’s own efforts to provoke sales interest by introducing a new model enticingly called ‘the Jazz Bass’ in 1960 failed to impress. As a Fender historian recalled:

‘Jazz Bass’ was an interesting name choice given that 1958’s Jazzmaster guitar, with which the new bass shared part of its name, did not win over the ‘serious’ jazz musicians it was intended for. As with the Jazzmaster, the Jazz Bass was released and promptly ignored by jazz musicians – at first. In due time it would find favor with those players, spectacularly so in some cases.²⁰⁰

The path to jazz acceptance of the electric bass was long and contested. Conflicts and open hostility were common, with accusations of commercial pandering, musical heresy and debasement of the genre on one hand and charges of reactionism, elitism and traditionalism on the other.²⁰¹ Swallow related the professional consequences of his eventual switch to bass guitar in the late 1960s. According to Swallow, the substitution of electric bass for string bass ‘was considered downright rude at the time. I lost some good friends, but I made some others’.²⁰² Indeed it took a full quarter of a century before sufficient numbers of gifted jazz bassists could successfully dispel the stigma associated with the electric bass. By then, the electric bass was part of a more comprehensive

¹⁹⁸ Jack Bruce, cited in Jim Roberts, *How the Fender Bass Changed the World*, p. 104.

¹⁹⁹ Don Ellis, ‘New Drums – New Directions’, *DownBeat* (28 March 1963), p. 15.

²⁰⁰ Anon, *The Jazz Bass Guitar: A History and Appreciation*

http://www.fender.com/news/index.php?display_article=503 (accessed 25 May 2011).

²⁰¹ See, for example, Jim Ferguson, ‘The One & Only Anthony Jackson’, *Guitar Player* (January 1986), p. 40 for details of the heated conflict between electric bassist Jackson and string bassist Ron Carter.

²⁰² Steve Swallow, cited in Jim Roberts, ‘Steve Swallow’, *Guitar Player* (November 1987), p. 45.

electrification of jazz instruments and electronic technology could no longer be denied.

Having established the environment into which the electric bass was introduced, the chapter now turns to the instrument itself and its intrinsic qualities. The genesis of the electric bass will be addressed briefly in order to ascertain the extent of its design philosophy's indebtedness to the string bass. In a similar fashion, its guitar ancestry will be examined in view of the expertise of its designer, Leo Fender. The physical and sonic attributes that distinguished the electric bass from its acoustic counterpart are analyzed with the aid of waveform diagrams. This comparison establishes an empirical basis for the jazz community's reticence to embrace it. The initial applications of the electric bass in the broader musical environment are assessed, illustrating the means by which it gradually attained a foothold. The chapter then moves on to examine factors contributing to the popularity of the electric bass in the commercial music industry. This clarifies the reasons why eventually the jazz establishment could no longer ignore it. Finally, the early attempts to legitimize the electric bass as a jazz instrument will be assessed in order to provide an understanding of the context within which revolutionary developments in electric bass style and performance subsequently flowered in the mid 1970s.

Credit for the first application of electricity to the bass customarily goes to Lloyd Loar who, in 1924 when working for the Gibson Company, developed an electro-static pickup for use with a small upright bass.²⁰³ Unfortunately Loar's primitive electrostatic contrivance was susceptible to all kinds of extraneous noises and due to the lack of amplifiers and speakers capable of efficiently reproducing low frequencies it never went into production. The title of inventor of the first electric bass guitar, in a form recognizable to modern players, belongs to Paul Tutmarc, introduced in the last chapter.²⁰⁴ Notwithstanding the valuable contributions of these and other developers, the first commercially successful electric bass guitar was the Fender Precision bass of 1951.²⁰⁵ A combination of space age looks, functional ergonomics and effortless volume, it was the brainchild of Leo Fender, a Los Angeles based radio repairman. Such was this

²⁰³ A. R. Duchossoir, *Gibson Electrics: The Classic Years* (Milwaukee: Hal Leonard, 1994), p. 9.

²⁰⁴ Anon, 'Jurassic Basses', *Bass Player* (January 2000)

<http://www.bassplayer.com/article/jurassic-basses/Jan-00/12030> (accessed 17 March 2011).

²⁰⁵ Tony Bacon, *The Bass Book* (San Francisco: Miller Freeman, 1995) contains a comprehensive description of the electric bass' history.

particular instrument's impact that the American Federation of Musicians instigated a specific category for Fender, a term it used synonymously with electric bass for years. It is hardly an exaggeration to say that the electric bass changed the course of popular music. Keith Richards of the Rolling Stones described the affect the new instrument had on the commercial music world:

It suddenly changed in '58, '59, '60, until it was all over in the early '60s. The drummers were starting to play eight to the bar, and I thought at first maybe they were just going for more power. Then I realized that, no, it was because of the *bass*, the advent of reliable electric bass guitar ... once you had an actual electric bass, it was much louder than an acoustic pumping eight to the bar. And the natural inclination of the drummer is then to pick up on what the new bass is doing, because that's what you've got to follow.²⁰⁶

According to Richards, the electrification of the bass brought about a re-prioritization within the commercial music ensemble. The drummer was now following the bass in what was clearly a reversal of the roles established in the dance bands of the 1940s. In order to understand how this shift transpired, it is necessary to investigate the factors that impelled the development of the electric bass and to consider how the adaptation of a well-established, guitar-centric technique to its function as the foundation of the ensemble, changed bass playing.

The electric bass guitar was initially just that – an electric bass *guitar*. It was designed so that guitarists could easily switch to performing the bass function with a minimum of adaptation. The reasons for this will be addressed later. The electric bass' guitar derivation is confirmed by the early preponderance of short scale instruments; their reduced size intended to simplify this transition from guitar to bass by sacrificing the more robust tone produced by longer strings.²⁰⁷ Popular models featured scale lengths of from 30 to 34 inches, considerably shorter than the 49-inch scale of a standard acoustic bass. They also sported a number of other idiosyncrasies one would expect to find on a guitar. For example, pick guards intended to protect the finish from the impact of a plectrum; strategically placed pickup covers to allow for more comfortable right hand positioning; and a lateral playing orientation facilitated by the use of a guitar strap. According to Fender historian Richard R. Smith:

²⁰⁶ Keith Richards, cited in Tom Wheeler, 'Keith Richards: Not Fade Away', *Guitar Player* (December 1989), p. 58.

²⁰⁷ 'Short scale' refers to the length of the vibrating part of the string.

Leo designed it [the original Precision bass] in the image of the Telecaster [guitar], the bass' flowing curves followed the function of the cutaways just as swept wings resulted from the aerodynamics of a jet fighter.²⁰⁸

While the guitar and electric bass shared many physical similarities, it is interesting to note the different marketing strategies Fender used in promoting basses in comparison with his already popular guitars. His six string instruments carried exotic, cutting edge names such as Telecaster and Stratocaster, implying space age products that reflected the tenor of the age, particularly 1957 and the International Geophysical Year. On the other hand he chose to name his basses far more conservatively. Both the Precision and Jazz Bass names arguably reflect an overt attempt to curry acceptance. 'Precision Bass' by emphasizing a shortcoming of the acoustic bass, namely the difficulty in achieving precise intonation, and 'Jazz Bass' by implying suitability, as yet un-established, for playing in his targeted musical genre.

The envelope of a note produced on a solid body electric bass differs significantly from that of an acoustic bass, largely due to the absence of a resonating cavity. In particular, its smoother decay characteristic tends to make its notes ring for considerably longer (see Figures 4.1 and 4.2). This quality prompted manufacturers to add felt or rubber dampers near the bridge to deaden the strings' vibrations. Once placed in contact with the strings, they helped to produce a sound that more closely emulated the shorter decay of a gut-stringed acoustic bass.

²⁰⁸ Richard R. Smith, *Fender: The Sound Heard 'Round the World* (Fullerton, CA: Garfish Publishing, 1995), p. 104.

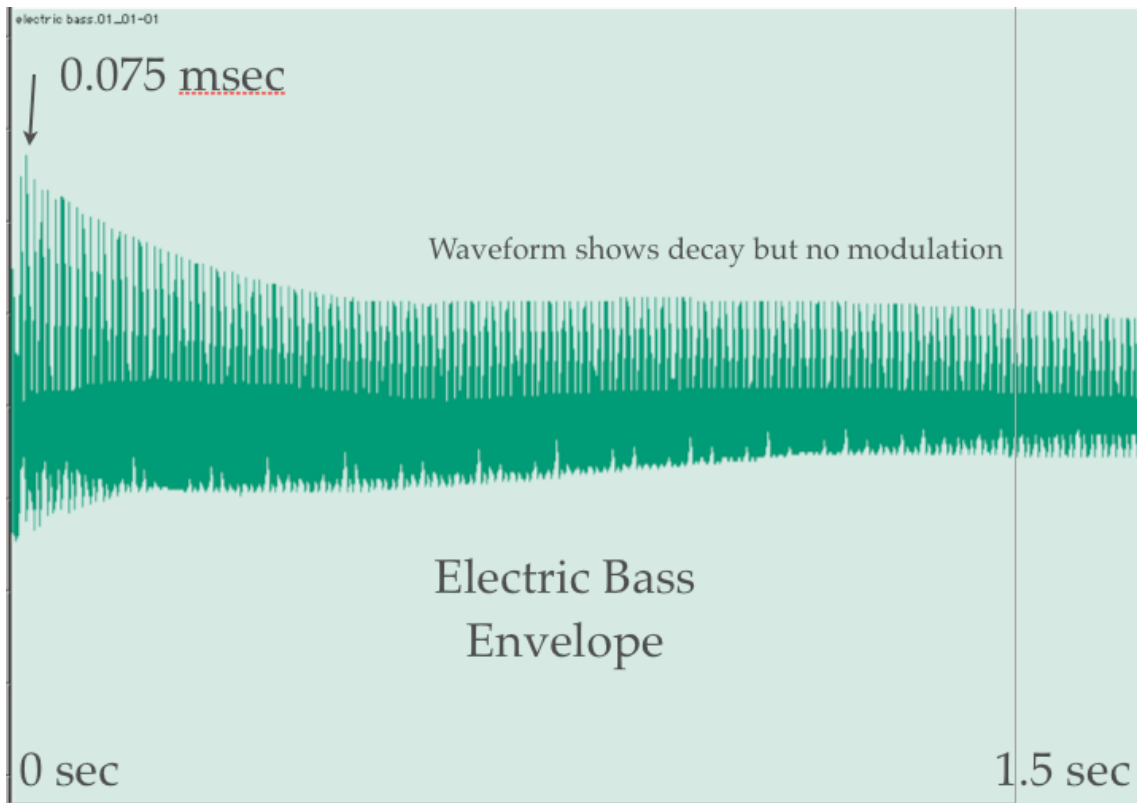


Figure 4.1 A waveform illustrating the characteristics of the electric bass' sonic envelope. Pitch is C2 65.41Hz. X-axis is time, Y-axis is amplitude.

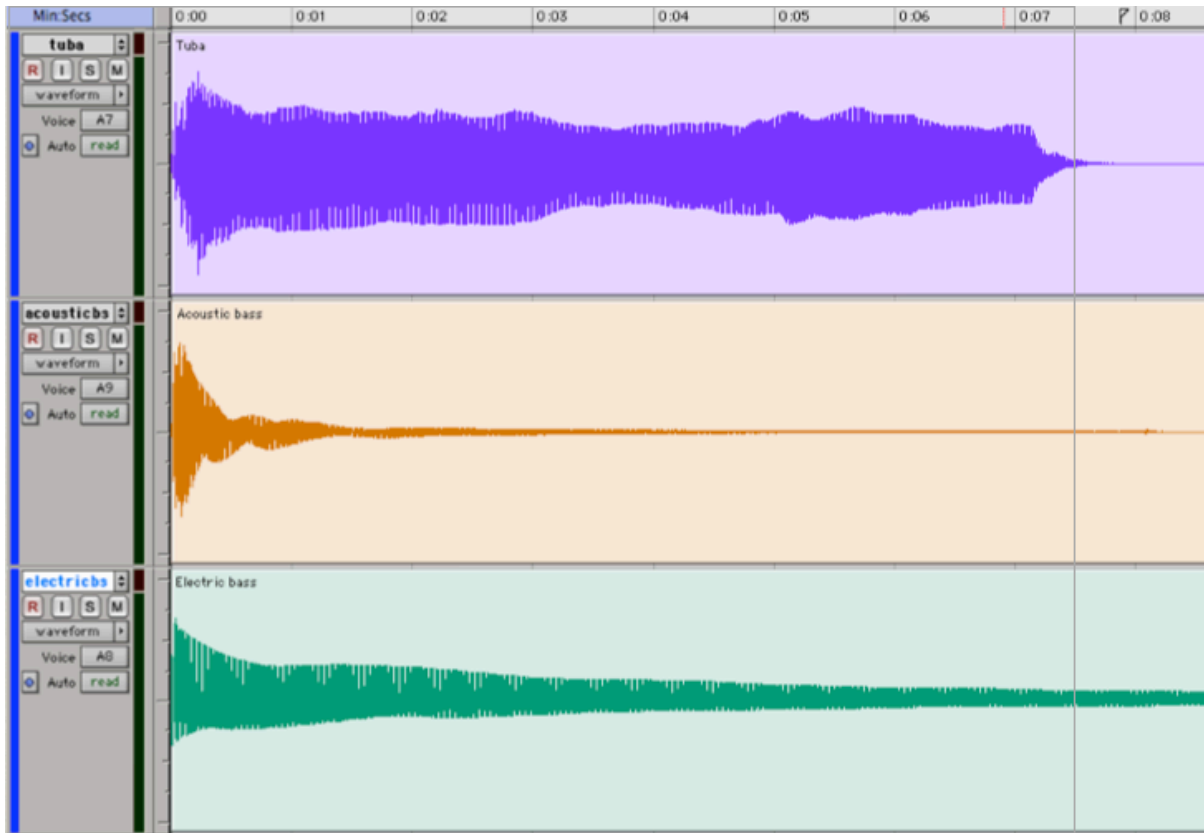


Figure 4.2 A comparison of the waveform characteristics of the tuba, acoustic and electric bass. Pitch is C2 65.41Hz. X- axis is time. Y-axis is amplitude.

Whilst the fretted Fender conveniently avoided the intonation issues that plagued less talented string bass players, its frets significantly reduced the range of pitch expressivity possible on the instrument. This was a sacrifice most players were willing to endure since in their role as accompanists, they were rarely encouraged to solo. All of these features privileged ease of playability, increased sonic presence and precision intonation at the expense of those characteristics of the string bass that were deemed to be less important. This suggests that the electric bass was conceived as a more ergonomic substitute for the acoustic bass, rather than as a new instrument in its own right. Its capacity to deliver its own unique contributions was not immediately exploited or indeed recognized.

For many string bass players, their first introduction to the electric bass occurred off the bandstand.²⁰⁹ According to renowned Hollywood session bassist Carol Kaye, as

²⁰⁹ See Jim Roberts, *How the Fender Bass Changed the World*, p. 60.

the 1950s drew to a close the rising popularity of rock 'n' roll caused the closure of many jazz venues, obliging professional musicians to seek work elsewhere. One of the more profitable areas where their specific talents could be exchanged was in the recording studios. Kaye described the extent of this migration in Los Angeles and elsewhere:

The bulk of us working jazz musicians just moved on over into studio work when we had the chance – in the late 1950s, we saw the rock styles taking over our former jazz clubs one by one and by the early 1960s, jazz was essentially almost dead in our city and suburbs.²¹⁰

Unlike the inexperienced rock musicians, jazz bassists were particularly adept at studio work. When called upon to do so, they were quite comfortable improvising parts, thus simplifying the workload of the arranger, and making sessions more productive, shorter and less expensive. By the early 1960s, however, producers began specifying instrumentations that limited this creativity. Increasingly, string bassists would find two other musicians sitting next to them reading the same written out bass part and playing along in unison.

The string bass had long been established as the de facto bass instrument in the recording studio. Such was its primacy that record producers staunchly resisted its replacement by the electric bass even as its ability to provide an adequate underpinning grew less assured. Evolving musical styles soon demanded a more robust bass presence, yet rather than substitute a more suitable instrument, producers were more inclined to bolster the string bass' impact. In this way an alliance of sorts between the acoustic and electric bass was forged. The string bass part was doubled with a 'tic-tac bass' or what amounted to a baritone guitar played in a muted fashion with a pick.²¹¹ When mixed together, the unison 'tic-tac bass' contributed the pitch determination and a more radio-friendly, brighter attack. As 1960s session players such as Kaye began to use a pick exclusively on the deeper sounding Fender Bass, the 'tic-tac' doubling was felt to be superfluous and the acoustic bass and baritone guitar were discarded.²¹² The reinstatement of a solitary bass player on recordings encouraged the reintroduction of a more

²¹⁰ Carol Kaye, cited in Charles H. Chapman, 'Jazz Guitarist', *Just Jazz Guitar* (November 1999), n.p.

²¹¹ The Danelectro 6 String 'Baritone' Guitar was often the instrument of choice in this application.

²¹² According to Kaye, she put many upright players and 'Dano' players out of business due to the many sounds she was capable of producing with just one instrument. www.rodgoelz.com/electricbasshistory.htm (accessed 4 May 2011).

improvisatory approach to bass playing, culminating in the work of artists such as James Jamerson of Motown fame.²¹³ The unique sonic characteristics of the electric bass came to be more fully appreciated as it gradually found its way into the hands of inventive musicians across all fields of commercial music. These bass players developed sophisticated styles of performance specifically tailored to the electric bass that were sufficiently innovative to eventually attract interest from the jazz community. In this way the technologies involved in record production and radio broadcasting encouraged the establishment of a smoother, more robust bass presence on records, which drew attention to the power of the bass to provide a more exciting musical experience over the airwaves.

Turning now to the factors contributing to the popularity of the electric bass in the commercial music world, it is vital to acknowledge the powerful social and musical forces that shook the 1960s. Beatlemania and the subsequent expansion of the entertainment business saw music assume a heightened resonance in everyday life compared to the 1950s. The worldwide surge in popularity of pop music and the concomitant amateurization of music making at the hands of smaller beat combos brought the electric bass and bass playing to the attention of a great many potential musicians. This was primarily through association with performers such as Paul McCartney, whose fame served to increase the visibility of the bass and its role in the ensemble. It follows from this that a considerable number of electric bass players eventually found themselves attracted to jazz in the 1970s after their initial experience in rock and pop music in the 1960s.²¹⁴ Unlike their predecessors in the 1950s, who had come to musical maturity under the mentoring system of big bands and small ensemble jam sessions, many of the younger generation approached jazz with an entirely different set of experiences and influences gleaned from the popular music world. By not being associated with the classical repertoire and aligning with the electric guitar family, the electric bass attained a fresh, contemporary status with younger musicians. Since it was a relatively new instrument with no ‘history’, it placed novices at the cutting edge of performance conventions, regardless of their orthodox musical skills. In terms of its on-

²¹³ Jamerson’s story and that of Motown records is described in Dr. Licks, *Standing In The Shadows Of Motown: The Life and Music of Legendary Bassist James Jamerson* (Milwaukee: Hal Leonard, 1989).

²¹⁴ These included Dave Holland, Jeff Berlin and Jaco Pastorius, among many others.

stage use, the electric bass allowed considerable freedom of movement and blended convincingly with the increasingly prevalent modern instruments such as electric pianos and amplified guitars.

Leo Fender himself confirms that the design philosophy of the electric bass was intended to produce a more ergonomic substitute for the string bass. In his words, he wanted to ‘free the bass player from the big doghouse’.²¹⁵ It comes as no surprise therefore that initially the bass lines fashioned on the electric bass were similar to those previously played on the acoustic instrument. Rather than sporting any revolutionary stylistic features in their bass parts, many of the seminal rock ‘n’ roll tunes of the early 1960s, share similar underpinnings to those in the ‘Jump Blues’ repertoire of fifteen years earlier. The electric bass simply gave them a more dramatic presentation. An illustrative example is The Beatles’ ‘All My Loving’, the bass line of which negotiates standard ii-V-I jazz chord changes using walking scalar lines over a rudimentary drum rhythm in swing style (see below Figure 4.3). Although it could quite easily have been performed on the string bass, the electric bass provides a smoother, more sustained delivery with considerably more weight than its string bass-driven precedents. It is in the electric bassist’s influence on the other members of the rhythm section that these early performances reflect their most profound contribution. In contrast to the 1940s swing rhythm section, drummer Ringo Starr’s performance places a strong emphasis on the downbeat of every bar. This alteration reflects a change in rhythmic orientation from the previous undifferentiated four-to-the-bar pulse, an adaption arguably encouraged by the more authoritative electric bass. (See Appendix A, CD track 13).

²¹⁵ ‘Doghouse’ is a colloquialism for string bass. Leo Fender, cited in Richard R. Smith, *Fender*, p. 100.

NOTE:

This figure/table/image has been removed to comply with copyright regulations. It is included in the print copy of the thesis held by the University of Adelaide Library.

Figure 4.3 McCartney's bass part to 'All My Loving', *With The Beatles*, Parlophone PCS3045 (1963). [CD Track 13].

Having established the electric bass' provenance, it is important to grasp the circumstances under which it was adopted. A consideration of the motives that led players to embrace it leads to a clearer understanding of the ways in which the electric bass gradually shed its undistinguished reputation and developed as a jazz instrument in its own right. The bulk of early electric bass players can be divided into five categories, as follows: First, other instrumentalists such as the guitarists mentioned above, who were attracted to its ease of playability in the face of decreasing job opportunities on their chosen instrument. Second, those temporary experimenters who failed to come to terms with the idiosyncrasies of the electric bass and reverted to the more orthodox string bass. Third, those who welcomed the advantages of the electric bass and substituted it for the traditional acoustic instrument. Fourth, those seeking to differentiate themselves from other bass players by adopting the less conventional voice of the electric bass. The fifth group includes bassists who felt disinclined to choose between the two and performed on both.

Increasingly, as touring big bands were replaced by much smaller ensembles, a considerable number of musicians found themselves out of work. Bass players were a mainstay in these streamlined outfits and the position offered significant employment opportunities. As the Fender bass was introduced, it serviced the need for an instrument that allowed musicians to enjoy the economic benefit of being a bassist, without the inconvenience of extensive retraining. As Fender himself explained:

Many of the musicians, in order to work, had to play bass, but most of them couldn't. So we made the Fender Bass ... a guitar player can easily 'double' on bass and he becomes more valuable and can get a job more often.²¹⁶

Changing musical styles and performance demands had gradually increased the requirement for a strong and supportive bass in groups of all sizes. Charlie Haden recalled that 'because of the rock movement, I was forced into making myself more audible ... so I bought a Fender'.²¹⁷

This requirement secured for the electric bassist a considerable advantage. The importance of the bass in an ensemble was not always commensurate with the level of expertise required to satisfy the musical demands of many popular styles. This made it the perfect doubling instrument. Up until the early 1960s electric bass players were not generally recognized for their sophistication and few expectations were held concerning the extent of their musicianship. Relegated to the background, their contributions were scarcely noticeable to the audience. McCartney confirmed this attitude when he remarked:

None of us wanted to be the bass player. In our minds, it was the fat guy in the group who nearly always played the bass, and he stood at the back. None of us wanted that; we wanted to be up front singing, looking good, to pull the birds.²¹⁸

Stanley Clarke, who later developed into a jazz virtuoso on both electric and string basses, was also initially unimpressed:

My understanding of the bass was basically like Bill Wyman in the Rolling Stones – the guy that was just there in the back smiling. The bass player was just the guy holding down the beat, not doing anything special.²¹⁹

²¹⁶ Klaus Blasquiz, *The Fender Bass* (Milwaukee: Hal Leonard, 1990), p. 4.

²¹⁷ Charlie Haden, cited in Arnold Jay Smith, '1977 Bass Lines', p. 15.

²¹⁸ Paul McCartney, cited in Tony Bacon, 'Paul McCartney: Meet the Beatle', *Bass Player* (July/August 1995), p. 34.

²¹⁹ Helene LaFaro-Fernandez, *Jade Visions*, p. 213.

This group of players, the doubling guitarists, would be of limited interest except for the fact that their large numbers helped establish the electric bass.

The second, more important group comprised the many established acoustic players who, in the 1960s, experimented with the electric bass, found it failed to satisfy their artistic requirements and subsequently abandoned it. These included seasoned bassists who would use the electric in studio situations that generally called for a less creative approach – advertising jingles or television recording dates, for example – but would prefer the acoustic bass when a more creative engagement was called for. The acoustic bass had long proven itself artistically, and it satisfied the more discerning musician's sense of legitimacy in the jazz tradition. The sight of an acoustic bass in a jazz ensemble brought with it a weighty historical significance due to its distinguished place in the jazz narrative. Seminal jazz record company Impulse Records, for example, chose a photograph consisting of a close up of a jazz bassist's fingers plucking his bass as a suitably iconic image to advertise their entire jazz catalogue.²²⁰ On the other hand, performing jazz on an electric bass engendered a different set of associations, invoking another vast song repertory, that of rock and soul music. In the mid 1960s, as jazz experienced its first flirtations with rock underpinnings, many bass players felt obliged to embrace the electric bass. Three musicians who did so were Haden, Ron Carter and Dave Holland. Though they all used the electric instrument for a short period, none felt compelled to pursue it in a jazz context and they reverted to the acoustic bass exclusively. Carter explained his reasons:

Well, an electric bassist playing jazz parts doesn't really work for me. The sound is not broadly percussive enough; the notes are so long it seems difficult for those guys to articulate the real pulse that an upright gives.²²¹

For some bassists the reasons for abandoning the electric bass took on more ideological overtones. Haden, for example, was unable to disassociate the electric bass from what he saw as its artistically corrosive commercial roots:

You have to do the jingles and the studio dates on electric. I had to quit that because I was aiding and abetting those very people who were destroying creative music. I sold my

²²⁰ The Impulse records advertisement appears in *DownBeat* (13 April 1961), p. 7.

²²¹ Ron Carter, cited in Brigid Bergin, *Ron Carter & The Importance Of Playing Music With A Big 'M'*.

Fender bass and never picked it up again.²²²

Economic pressures also encouraged string bass players to invest in the electric instrument. In the early 1960s, the jazz bass player's dependence on a growing number of technologically inspired media, such as films, records and advertising, to provide employment opportunities caused a diversification of their ambitions. The exclusively jazz-orientated performance career their predecessors had enjoyed became increasingly more difficult to sustain and other more lucrative options began to appear, involving the servicing of the public's demand for domestic entertainment. Entertainment industries required considerable amounts of pre-recorded music and the work they generated encouraged bass players to adopt a more profitable, inclusive musical approach involving more than live performance of traditional jazz. As Kaye revealed 'I'm really a jazz musician, most of the recording musicians on those rock hits of the late 50s, 60s and 70s were fine jazz musicians, very few "rockers" on rock records'.²²³

Freelance bassists, such as Kaye, serviced the industry as highly paid crafts-people, drawing on their wide experience to deliver exactly the bass contribution required of any musical situation. The list of prerequisites prioritizing spontaneity and inventiveness corresponds to those features that are also indispensable in most jazz performances. According to Kaye:

You had to create your parts spontaneously – it was mostly head arrangements made up on the spot. You had to read well to do any film-score and TV recording dates yes, but on bass, you still had to be able to invent great spontaneous lines even on top of some simple part that (later) was written on any chart – it was your job to make it all swing, and bass was the key to many a hit recording.²²⁴

An examination of the pages of *DownBeat* in the years following the introduction of the electric bass reveals that the marketing strategy adopted by Fender exploited those musicians employed in the Hollywood movie music studios, commercial TV and radio music recording facilities.²²⁵ The full-page advertisements were rife with images of anonymous studio musicians using their products as opposed to concertizing artists. In

²²² Charlie Haden, cited in Arnold Jay Smith, '1977 Bass Lines', p. 15.

²²³ Carol Kaye, interview at http://earcandy_mag.tripod.com/carolk.htm (accessed 30 December 2010).

²²⁴ Carol Kaye, 'Some Myths Exposed', www.carolkaye.com (accessed 31 December 2010).

²²⁵ *DownBeat* (12 June 1958), p. 3 features an advertisement for Fender guitar and bass depicting anonymous TV studio musicians. See also *DownBeat* (10 July 1958), p. 51.

this way the Fender Company capitalized on the allure of the technologically advanced recording studio environment to attract buyers where more traditional musical endorsements had failed. Between 1957 and 1959 only one jazz bassist, Monk Montgomery, is advertised by name as an endorsee of the Fender Bass, arguably as much for his association with his more famous brother Wes as for his adoption of the instrument.²²⁶ The Fender bass and associated amplifier were lauded for their reliability and adaptability, technological virtues, rather than their musical expressivity. As the musical landscape continued to evolve and the public's appetite for more commercial music increased, those bassists without sufficient artistic credentials and record company support were faced with the dilemma of adapting to an entertainment industry that required a certain degree of artistic compromise or risk insolvency. Little wonder that most professional bass players felt obliged to embrace both electric and acoustic instruments in an attempt to compete for the ever-dwindling opportunities. Haden described his typical situation revealing an attitude toward the electric bass that was clearly not artistically inspired: 'When my son was born, I was forced into thinking about how to make more money. So I bought an electric Fender.'²²⁷ Many of the established acoustic bassists of this period, such as Haden, temporarily flirted with the electric bass, but few expressed a preference for it. Charles Mingus, when asked whether electricity made a difference to performers retorted, 'Electricity has put music back.'²²⁸ This is despite his willingness to endorse Ampeg amplification products in the 1960s.²²⁹

The third group of musicians referred earlier includes those players who were sufficiently motivated to make the transition from acoustic to electric bass despite the disparagement of their peers. They weathered the loss of artistic prestige that befell them, yet ultimately did little to enhance the status of the electric bass by failing to revolutionize its role within a jazz context. Montgomery, Bob Cranshaw and others approached the electric in essentially the same way they had performed on the acoustic bass. They hoped to assimilate the electric instrument into the established conventions of

²²⁶ For example see his advertisement in *DownBeat* (31 October 1957), p. 22.

²²⁷ Charlie Haden, cited in Arnold Jay Smith, '1977 Bass Lines', p. 15.

²²⁸ Charles Mingus, cited in Arnold Jay Smith, '1977 Bass Lines', p. 15.

²²⁹ Mingus' endorsement appears in Gregg Hopkins and Bill Moore, *Ampeg: The Story Behind the Sound*, p. 102.

jazz rather than to redefine them. Saxophone legend Sonny Rollins extolled the talents of his electric bassist Cranshaw:

I know there are differences between the electric and the upright, but it's very much a matter of the individual. Bob Cranshaw is playing Fender bass, but he has an upright conception. If someone is grounded in playing upright bass and plays Fender, you can find a middle ground between the two, this is optimal for me.²³⁰

Steve Swallow, who unlike these bassists would subsequently go on to develop a highly individualistic electric bass style, originally shared similar aspirations:

I didn't take up the electric bass to effect a change in the idiom that I was playing. I had no desire to do that what so ever. I just wanted to bring the electric bass to the idiom that I always loved.²³¹

These players represent the initial wave of electric bass adopters who had already attained professional status through their work on the acoustic instrument. Montgomery, one of the first bassists to relinquish his acoustic bass for the electric model, took to it at the insistence of his bandleader Lionel Hampton in 1952. The travails of touring in a big band with a barely audible acoustic bass were considerable. Hampton felt its replacement by a much smaller, louder and more portable electric bass more than compensated for the loss of the authentic acoustic bass sound. The added sonic weight and robust underpinning this substitution delivered helped bring Hampton's loud, driving big band a more dynamic presentation. The electric bass added heft and weight, a 'surging undertow' and 'deep, booming quality' in the words of *Metronome* magazine's co-editor Leonard Feather.²³²

While Montgomery's technique on the new instrument was rather unorthodox (he used his thumb in a down stroke motion rather than his fingers) the same can hardly be said about the music he coaxed from his Fender. The transcription of his bass lines to the first three choruses of 'Billie's Bounce' from the 1958 album called *Fingerpickin'* illustrates an approach firmly anchored in the tradition of the walking acoustic bass

²³⁰ Sonny Rollins, cited in Bob Blumenthal, 'Sonny Rollins', *DownBeat* (May 1982), p. 17.

²³¹ Steve Swallow, cited in Fred Jung, 'A Fireside Chat with Steve Swallow'
<http://www.jazzweekly.com/interviews/swallow.htm> (accessed 23 January 2012).

²³² Leonard Feather, 'Hamp-lified Fiddle May Lighten Bassist's Burdens', *DownBeat* (30 July 1952), p. 35.

(Figure 4.4).²³³ Its continuous stream of quarter notes would have been equally effective on the acoustic bass, although it would have required more strength and stamina at this tempo (250 beats per minute). The fact that there are seven individual solos, including a set of fours traded with the drums, yet no bass solo, suggests the expectations of jazz musicians concerning the expressive potential of the electric bass were not high. It represents what Phil Larkin refers to as ‘an exhibition of artistic impotence’.²³⁴ (See Appendix A, CD track 14).

²³³ The album *Fingerpickin’* Pacific CDP 7243 8 37987 2 8 (1996) can be reviewed at <http://www.mp3panda.com/album1897406/?partner=6691> (accessed 23 January 2012).

²³⁴ Phil Larkin, cited in Howard Mandel, *Future Jazz* (New York: Oxford University Press, 1999), p. 43.

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Figure 4.4 The bass line to the first three choruses of 'Billie's Bounce', as played by Monk Montgomery on *Fingerpickin'* Pacific CDP 7243 8 37987 2 8 (1996). [CD Track 14].

Returning to the categorization of bass players, the fourth group consists of those who came to see the electric bass as a means of differentiating themselves from the majority of bassists and achieving originality. Principal among them was Swallow. He adopted the electric bass in 1969 after a long and fruitful engagement with the string bass and developed a highly individualized style and sound. His use of bright, round-wound strings and a metal plectrum evinced a sonority closer to that of the lower courses of a piano, rather than that produced by a more conventional bass guitar technique. Swallow felt he could more easily develop his own personal voice within the jazz context on the electric bass:

I found it liberating to devise my own style and my own tactics and to look for a voice on the instrument because there weren't really any that impacted strongly on me. One of the great things for me about the electric bass is that it has almost no history. When I played the acoustic bass, I did feel very strongly, the presence of everybody looking over my shoulder. That history just doesn't exist with the electric bass. I have had the sense that I am plowing forward into a country that I have never been in before.²³⁵

The final group consisted of bassists who represented the first generation of musicians to have grown to musical maturity in the bosom of the 1960s commercial music world. Clarke, one of the first bass players to gain a reputation as a leading exponent of both acoustic and electric basses, was perceived as something of a split personality, a distinction the marketing of his albums did little to discourage. He was a jazz performer on the acoustic and a slap and popping funkster on his electric bass. In a review of Chick Corea's ensemble of which he was a member, Joe Klee remarked of Clarke:

One of the bassists who has grasped that acoustic and electric bass are two different instruments, he has developed a separate, individual style for each and never uses one where the other would be better suited.²³⁶

Implied in this statement is the belief that an unbreachable stylistic barrier exists between the two basses. Klee's remarks suggest they are complementary rather than interchangeable. Clarke's musical development was influenced by his exposure to both James Jamerson and jazz icons such as Ron Carter and, as a result, he harbored none of the prejudices of the older generation of players. Comfortable on the acoustic bass and its

²³⁵ Steve Swallow, cited in Fred Jung, 'A Fireside Chat'.

²³⁶ Joe Klee, 'Chick Corea: Caught In The Act', *DownBeat* (21 June 1973), p. 28.

electric counterpart, Clarke did not feel compelled to choose between them. Consequently he forged a successful career as one of the pioneers of a new breed of jazz bass player, an exceptional innovator on both instruments. Clarke revealed that ‘personally, I enjoy playing Fender, mainly because I got used to it early on, when I first started playing. I feel equally at home on both acoustic and Fender. It doesn’t bother me.’²³⁷

From its rather humble beginnings, the electric bass gradually began to pique the interest of a select number of these jazz musicians. They started incorporating elements of rock style and language into their music, precipitating a cross fertilization of genres, referred to by the late 1960s as ‘jazz-rock’. It manifested elements of rock in its volume, stage presentation, lyrical content and straight eighth rhythmic underpinning, yet also featured more sophisticated jazz characteristics. These included displays of above average technique, expanded instrumentation featuring horns and keyboards, more advanced harmonic compositions and lengthy improvisatory passages. Jazz-rock ensembles included Blood Sweat and Tears, Chicago, and Chase, each of which featured bass players who possessed considerable ability. Jazz-rock’s heftier electric bass undertow encouraged a more aggressive, less cerebral style of music that traversed stylistic boundaries. The accessibility of the style helped attract a wide audience, generating considerably higher financial reward for its performers than traditional jazz.²³⁸

At the same time, highly amplified blues-rock ensembles were impressing jazz musicians with their dynamic, technologically empowered presentations and extended jazz-like extemporizations. Tony Williams, drummer with Davis’ seminal 1960s quintet, offered the following response when asked if there were any late 1960s bands that commanded his attention:

The two biggest groups, I thought, were Cream and Jimi Hendrix’s band. But before that I was in love with the Beatles. I was a real Beatle fanatic. And in 1965, I told Miles, ‘Miles, we oughtta do a tour with the Beatles; we oughtta open up for them.’²³⁹

²³⁷ Stanley Clarke, cited in Elliot Meadow, ‘Keep an Eye on Stanley Clarke’, *DownBeat* (15 February 1973), p. 13.

²³⁸ See Kevin Fellezs, *Birds of Fire Jazz, Rock, Funk, and the creation of Fusion* (London: Duke University Press, 2011).

²³⁹ Tony Williams, cited in John Ephland, ‘Tony Williams: Still, The Rhythm Magician’, *DownBeat* (May 1989), p. 22.

Chick Corea was also eager to acknowledge the pop music introduced to him by bassist Holland:

I've heard the Beatles' records, which I like, but there's one album that Dave (Holland) has, an in-concert record of Cream. The fact that it's in concert enables them to stretch out, put in a middle section where they improvise. They're really good musicians, and the tunes are extraordinary. It's a helluva record.²⁴⁰

As is apparent from the testimonies of these two seminal jazz artists, pop musicians in the 1960s exerted considerable influence on younger jazz players. The extent of pop music's technological dependency, the result of its reliance on amplified instruments, posed something of a dilemma for jazz bassists. As challenging as it had been to deliver a supportive, sufficiently loud underpinning in traditional jazz concerts using the string bass, these newer rock infused styles mandated a level of volume that effectively prohibited the use of the acoustic instrument. The electric bass had to be reconsidered.

- Pop and Blues Influences

The earliest examples of the electric bass committed to record occurred not in the jazz field, but in more commercial idioms. These entertainers were quick to appreciate the heightened level of energy and excitement the new instrument could deliver. As blues bassist Dave Myers reminisced:

The sound [of the Fender bass] was so deep and beautiful it was amazing. And it was twice as loud as an acoustic. On tour with guitarist Earl Hooker in Texas, we'd start on one tune, and they'd have to stop us from playing so the people would settle down. They would all be standing up on their chairs and going wild. That's when I knew I really had something going with that Fender bass.²⁴¹

Recordings attest to the ways in which this heightened energy was achieved. They constitute a link through which the commercial benefits of a more propulsive – and forceful – low frequency underpinning became apparent to jazz artists. It is helpful, then, to consider some of the more notable examples of pop bass performances that came to exert a considerable influence on the trajectory of the jazz bass. In doing so, the ways in

²⁴⁰ Chick Corea, cited in Larry Kart, 'Chick Corea: The Chick Corea File', *DownBeat* (3 April 1969), p. 21.

²⁴¹ Dave Myers, cited in Bill Milkowski, 'Blues Legend: Dave Myers', *Bass Player* (December 1998), p. 18.

which the more powerful electric bass changed the stylistic contours of bass lines will emerge. Once more assertive rhythm sections became established in the pop field and jazz musicians began to covet the impact they generated, string bassists were obliged to try and achieve a similar level of sonic weight through technological means.

A comparison of the electric bass driven recording of ‘Roll over Beethoven’²⁴² by the Beatles (July 1963) with Chuck Berry’s original version²⁴³ featuring Willie Dixon’s acoustic bass (February 1956), illustrates the degree to which the electric instrument could more effectively underpin increasingly aggressive rhythm sections. Berry’s original recording features a barely audible string bass that, whilst providing rhythmic support, largely ignores the harmonic changes. (See Appendix A, CD track 15). The entire piece is underpinned with an Eb pedal, over which the rhythm guitar provides the harmonic referent and the piano assists with polyrhythmic interjections. The fact that the bass is sonically so weak in comparison to the other instruments helps de-emphasize the harmonic clashes that occur particularly at the turnarounds. The four-to-the-bar bass drum provides the bulk of the foundational impulse. (Figure 4.5)

²⁴² The Beatles, ‘Roll over Beethoven’, *With the Beatles*, Parlophone CDP 7 46436 2, (1963).

²⁴³ Chuck Berry, *Chuck Berry - The Great Twenty-Eight*, Chess CHD 92500, (1984).

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Figure 4.5 Excerpt of Willie Dixon's string bass line on Chuck Berry, 'Roll over Beethoven',
Chuck Berry - The Great Twenty-Eight, Chess CHD 92500, (1984). [CD Track 15].

The Beatles' recording illustrates the ways in which the greater facility possible on the electric instrument influenced the development of the 12 bar blues bass line. (See Appendix A, CD track 16). The electric bass delivers a much stronger foundation than the string bass. It provides the bulk of the rhythmic impetus while its clearer pitch definition unambiguously delineates the chord progression (Figure 4.6). Its increased audibility ensured that the bassist's performance was more exposed, a consequence that discouraged the more cavalier approach to note choices taken by his predecessor. The faster responding electric bass allows McCartney to deliver a far busier part with greater forward momentum than the unwieldy acoustic. In comparison to the string bass' quarter note based foundation, McCartney's line provides a bubbling eighth note rhythmic undercurrent, a line that the slower speaking string bass would be less effective in delivering. Even though it is slower in pace than the Berry version, it nonetheless feels more energized. This recording also attests to a growing concern among rock rhythm sections to achieve a more integrated blend between the bass line and the bass drum. A conscious effort to match their rhythmic patterns became more evident in the early 1960s as recording technology began to achieve greater clarity in the lower octaves.

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Figure 4.6 Excerpt of Paul McCartney's electric bass line on The Beatles, 'Roll over Beethoven',
With the Beatles, Parlophone CDP 7 46436 2, (1963). [CD Track 16].

Arguably, the first bass player to encourage a more exploratory, jazz influenced approach on the electric bass was Britisher Jack Bruce in the mid 1960s. As a result of his association with the critically acclaimed and popular blues-rock trio Cream, Bruce's highly inventive playing style enjoyed global exposure. In contrast to many of his electric bass playing contemporaries in the pop music world, many of whom had previously been guitarists (Paul McCartney and Noel Redding, for example), Bruce's approach to the electric bass was informed by his work as a string bassist in London jazz clubs. Bruce transferred his forceful string bass technique to the much smaller electric bass he adopted in 1965. He explained:

Because I play acoustic bass, I play [the electric bass] very hard, the opposite of somebody like Duck Dunn, who turns the volume up very high but plays very lightly.²⁴⁴

In doing so, he brought the aggressive spirit of mid 1960s experimental jazz ensembles such as those of Coltrane and Coleman, to his music. Defying the trend toward simplistic, formulaic popular songs prevalent at the time, Bruce was keen to develop a new style of jazz inflected music that embraced more sophisticated techniques while hopefully, attracting commercial attention. Recalling his involvement with Cream, Bruce remarked:

I think what I've done throughout my career is bring the things I love into rock music. With Cream, we very much brought free jazz improvisation in, which was kind of a dirty word in those days. I wanted to emulate one of my great teachers, Charles Mingus.²⁴⁵

While acknowledging the schism between the artistic aspirations of jazz and the more commercial incentives that fuelled mid '60s popular music, Bruce was determined that Cream find a way, assisted through the employment of technology, to assimilate the more experimental impulses of jazz into the musical forms of pop. According to Bruce: 'Everybody had a different idea of what the band was. I thought of Cream as a sort of jazz band.'²⁴⁶

Bruce's jazz pedigree, while perhaps neither as sophisticated nor as celebrated as some of his American contemporaries such as LaFaro, was sufficient to inspire jazz

²⁴⁴ Jack Bruce, cited in Harry Shapiro, *Jack Bruce: Composing Himself* (London: Jawbone Press, 2010), p. 283.

²⁴⁵ Jack Bruce, cited in Dave Thompson, *Cream: How Eric Clapton Took the World by Storm* (London: Virgin Books, 2006), p. 99.

²⁴⁶ Jack Bruce, cited in Dave Thompson, *Cream*, p. 99.

bassists around the world to consider the advantages of the electric bass.²⁴⁷ His performances have been acknowledged by many jazz bass players, including Jaco Pastorius and Jeff Berlin, as inspirational in pointing the way to a freer approach to bass playing. Berlin remarked:

When I heard Jack Bruce playing with so much originality and freedom, it was a revelation. He opened my ears to improvisation and exploration, which changed my approach permanently. I wanted to find notes that other people didn't play, like Jack did.²⁴⁸

Thanks to Bruce, the transition from jazz bassist to rock bassist was thereafter not necessarily considered devolutionary. His playing incorporated considerable melodic and rhythmic sophistication while maintaining a strong harmonic foundation.

Bruce's electric bass lines were revolutionary in the way they reflected his exploitation of amplification technology. Another jazz veteran, James Jamerson, who used the Fender Precision bass and a small Ampeg B-15 bass amplifier, preferred to use well-worn strings and a bridge string mute in order to more closely emulate the distinctive pulse of the acoustic bass he sought to replace. Bruce, on the other hand, chose less conventional tools. He adopted an electronically modified, short scale Gibson EB3 bass in combination with excessive amplification to achieve an entirely new sonority; its long sustain and aggressive brassy timbre more closely resembled that of a tuba. According to Bruce's own website:

During the 1960s, Jack plugged his EB-3 into a stack of Marshall amps. His desire for greater volume induced him to crank up the volume control, unwittingly producing the heavy, distorted tone that became so popular in the ensuing years. Later, Jack had instrument technician Dan Armstrong install a diode into the EB-3's wiring to produce the same effect without overdriving his amplifiers.²⁴⁹

Unlike McCartney, whose early 1960s work demonstrated a strong rhythmic alliance with the drums, Bruce's lines were rhythmically freer, more melodically conceived. Like LaFaro, he appeared to be more concerned with group interaction than establishing a strong pulse using repetitive rhythmic patterns. In order to compensate for the lack of instrumental resources available in a trio of electric bass, guitar and drums, they turned to

²⁴⁷ In recognition of his efforts, Bruce subsequently received the Bass Player Lifetime Achievement Award from Ron Carter on 22 October 2005.

²⁴⁸ Jeff Berlin, cited in Jim Roberts, *How the Fender Bass Changed the World*, p. 160.

²⁴⁹ Anon, 'Jack Bruce: Equipment', <http://www.jackbruce.com/2008/Gear/gear.htm>, (accessed September 25, 2011).

Marshall Amplification, a company involved in the development of large, powerful instrument amplifiers. Cream used these monumental stacks of speakers to produce a formidable sonic assault, the loudness of which contributed its own influences to their style of playing. Both Clapton and Bruce took advantage of the regenerative effects of over-amplification to produce long sustaining tones from their instruments that seemed to defy natural string decay. This electrically produced feedback invited exploitation and was instrumental in the development of new melodic and rhythmic gestures that Bruce and Clapton incorporated into their improvisations.

A comparison of Howlin' Wolf's 1960 version of 'Spoonful'²⁵⁰ and Cream's 1966 arrangement²⁵¹ provides a more dramatic example of the transformation in style brought about by the substitution of the electric bass for its acoustic predecessor. The original version (Figure 4.7) features a very simple two beat acoustic bass part alternating root and fifth in this modally inspired tune based on one chord. The part holds no melodic or rhythmic interest, and is entirely subordinate to the rest of the ensemble. (See Appendix A, CD track 17).

²⁵⁰ Howlin' Wolf, 'Spoonful' *Howlin' Wolf: His Best*, Chess CDH9375 (1997).

²⁵¹ Cream, 'Spoonful' *Fresh Cream*, RSO 827 576-2 (1976).

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Figure 4.7 Excerpt of Willie Dixon's string bass line on Howlin' Wolf, 'Spoonful', *Howlin' Wolf: His Best*, Chess CDH9375 (1997). [CD Track 17].

Bruce's electric bass line recorded six years later is completely different in form and function (Figure 4.8). With its expressive string bends and slides, supple rhythmic displacements and adventurous melodicism, it is a far more sophisticated. The distorted timbre of his Gibson bass delivers an aggressive edge, complimenting the overdriven guitar an octave above. The timbral correspondence serves to emphasize the extent to which the development of the electric bass was indebted to the electric guitar. This relationship is further reinforced by Bruce's employment of the guitaristic techniques mentioned above, which add a level of expression previously considered unavailable on the fretted instrument. (See Appendix A, CD track 18). When asked about the origins of his approach to string bending, which occasionally traversed as much as a step and a half, Bruce replied:

That was from seeing the way Eric [Clapton] played. When I got the [Gibson] EB-3, my thinking was: Well it's a bass *guitar*. I wanted to emphasize the guitar aspect, which is why I put light-gauge La Bellas [strings] on it, for string bends. I was familiar with traditional forward-and-backward vibrato from playing cello and string bass.²⁵²

Through a marriage of technology and technique, Bruce brought the sophistication and interactive spirit of a seasoned jazz bassist to Cream's blues-rock repertoire. He used the short scale Gibson EB3 bass, light gauge La Bella strings and overdriven Marshall amplification to introduce the concept of the emancipated jazz bassist into the popular music arena.

²⁵² Jack Bruce, cited in Chris Jisi, 'Cream Rises: Jack Bruce', *Bass Player* (December 2005), p. 35.

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Figure 4.8 Excerpt of Jack Bruce's electric bass line on Cream, 'Spoonful', *Fresh Cream*, RSO 827 576-2 (1976). [CD Track 18].

The deafening volume of ensembles powered by massive stacks of amplifiers dramatically increased the impact of live performances. In order to successfully capture this thunderous presence on recordings, new studio procedures were mandated. For example, the loud electric bass necessitated a far closer mic'ing of the drums in order to achieve sufficient signal to noise ratios. Instead of arranging several microphones at some distance from the drum set, each playing surface was now captured via its own dedicated microphone at close proximity. The resulting dynamism was further intensified by new panoramic mixing techniques that were implemented with the advent of stereo LPs. Cream's producer, Tom Dowd, explained the challenge of capturing the drums against the sonic backwash of heavily amplified guitar and bass:

I'd had to protect Ginger [the drummer] from the electrified instruments, because Jack and Eric were using double stacks of Marshalls. So my problem was recording the drums; no matter where I put a microphone I had enough of the guitars.²⁵³

In this way the substitution of an amplified electric bass had important ramifications for the remainder of the rhythm section, particularly the drums. It allowed them to be played far more aggressively and necessitated new engineering practices that further enhanced their impact. The studio performance space itself underwent gradual transformation both acoustically and ergonomically as the needs of the engineer progressively assumed more importance under these conditions. The jazz ensemble and the bass player within it were not impervious to these changing studio configurations.

- The Bass in the 1960s Studio

Since the inception of electrical recording the recording studio had been simply a performance space tailored to the process of documenting a performance. With the advent of tape recording this performance became illusory as editing permitted the construction of a performance from its constituent parts. Within the control room, time became more and more plasticized through the use of increasingly sophisticated technology. The evolving recording studio practices outlined above introduced jazz bassists to many new procedures that influenced their performance. Previously,

²⁵³ Tom Dowd, cited in Gene Santoro, *Dancing In Your Head* (New York: Oxford University Press, 1994), p. 65.

techniques for recording jazz musicians were fairly straightforward. Save for the absence of a reactive audience, the procedure involved no significant alteration to the normal operation of the ensemble in a club or hall. In fact, the superior acoustics and lack of ambient noise no doubt had a salutary effect on their performance. Over the next twenty years this situation was to change dramatically as new procedures were initiated in order to satisfy the evolving requirements of the record industry.

Of significance were the expansion of the recording format to four-track tape, and the invention of an integrated play/record head that allowed tracks to be recorded as others were being monitored in perfect synchronization. This permitted the separation and optimization of recording and mixing strategies. The bass player was no longer obliged to play at the same time as the other musicians, an advantage of questionable usefulness on the surface, but one that heralded a new corrective as well as a creative capability. Mistakes could henceforth be repaired by ‘punching in’ short phrases on individual tracks rather than re-recording entire takes, while on the creative side, these new processes encouraged greater risk taking, as mistakes would not necessarily spoil the entire recording.²⁵⁴ Allocating each instrument its own individual track afforded the engineer full control over dynamic levels facilitating more flexible post-production operations. The responsibility for musical balance was effectively removed from the musician.

The success of the new corrective capability depended on the sound of each instrument being sufficiently isolated, so that if a mistake was made it did not spill significantly into the microphones of the remaining instruments. This necessity to achieve maximum signal to noise ratios resulted in a more comprehensive application of isolating strategies ensuring that individual instruments were kept acoustically, if not physically, separated. Studio photographs from the mid 1960s document the use of isolation screens, acoustic baffles and other partitions to help manage leakage.²⁵⁵ According to Ray Brown, these acoustic control procedures, while advantageous for the engineering staff, did

²⁵⁴ The term ‘punching in/out’ refers to a technique used in multi-track recording in which a portion of a performance is overdubbed onto a previously recorded tape track, overwriting any audio that had previously been on that particular segment.

²⁵⁵ Mark Cunningham, *Good Vibrations: A History of Record Production* (London: Sanctuary, 1998), p. 256.

nothing to improve the performance environment on the studio floor:

Separation ... is very difficult. We put up those barriers – but you feel like you're standing in a phone booth playing; you can't see the rest of the guys. This separation thing has brought about a lot of problems.²⁵⁶

Overdubbing to a pre-recorded tape also necessitated the development of techniques by which the already recorded performance could be monitored. By 1966 the use of headphones became standard.²⁵⁷ Crow commented:

I had to learn to play wearing headphones. It was often the only way the musicians could hear each other. It should go without saying that musicians need to hear well in order to play well, but it is surprising how far down the list that requirement can be in recording studios, as well as in many other places where musicians play.²⁵⁸

In this way bass players were subjected to a gradually accumulating series of procedures that effectively isolated their performance from those of their peers. First, physical separation through distance and the insertion of screens and acoustic baffles, then a temporal disconnection as overdubbing meant parts no longer had to be performed at the same time. Finally psychological distance was increased through a sensory isolation introduced by the employment of headphones. Efficiencies of production in the pop market at Motown in the mid 1960s had made routine a method wherein rhythm section recordings were made before any melody had been composed. This assembly-line approach allowed many tracks to be prepared efficiently for later completion. The harmonic structure, tempo and beat of pre-existing Top 40 hits were reused and variations recorded.²⁵⁹ Vocalists were then selected and the melody line determined after the rhythm section recordings had been completed. The bassist's concentration was focused on the production of an appropriately infectious rhythmic underpinning and the ability to deliver this 'groove' assumed paramount importance. In this context the technology of non-contemporaneous recording meant that bassists such as Motown's Jamerson were

²⁵⁶ Ray Brown, cited in 'Ray Brown: Fusions and Phases in Jazz' http://www.jazzprofessional.com/interviews/Ray%20Brown_3.htm (accessed 4 May 2011).

²⁵⁷ Carol Kaye, Record Collector Interview. www.carolkaye.com (accessed 28 December 2010). Kaye recalls that 'Phil Spector was the first to use earphones for musicians, and to use the thicker kinds of sound baffles, too'.

²⁵⁸ Bill Crow, *From Birdland to Broadway: Scenes from a Jazz Life* (New York: Oxford University Press, 1992), p. 191.

²⁵⁹ Richard Buskin, *Inside Tracks* (New York: Avon Books, 1999), p. 112 contains a description of this process by Lamont Dozier.

prevented from providing a bass part that had any interactive relationship to the melody. The relationship of top and bottom musical line, the correlation between the bass-line as counterpoint to the melody, pre-eminent since the time of J.S. Bach, was turned upside down for reasons of commercial expediency. Looked at another way, it also meant that the subsequent composition of a melody line was increasingly inspired by the rhythmic and melodic interest generated by the bass. Much in the same way as the string bass had influenced the soloing of Louis Armstrong thirty-five years earlier, Jamerson's increasingly autonomous and rhythmically adventurous bass lines influenced what was sung over the top.

Originally a string bass player, Jamerson brought the skill of a seasoned jazz professional to bear on the still relatively new electric bass.²⁶⁰ Many of Jamerson's bass lines were more melodic, syncopated and improvisational than had been heard before, and were considered an integral part of the 'Motown Sound'. He transcended the standard bass line and did much to increase public awareness of the bass and its function in popular music in the 1960s and 1970s. His style is arguably the first to display an electric bass provenance and an example of its innovative qualities can be seen in the following transcription. (See Figure 4.9 and Appendix A, CD track 19). Jamerson's 16th note phrases, whilst well defined and articulated on his Fender Precision Bass thanks to his remarkable evenness of tone, would have been more difficult to perform and less distinct on the larger string bass. They required the more rapid response of the electric bass in order to be delivered effectively.

²⁶⁰ Jamerson was a consummate string bassist before he adopted the Fender Precision Bass in 1961. He backed such jazz luminaries as Barry Harris, Kenny Burrell and Hank Jones while in Detroit. See Dr.Licks, *Standing In The Shadows Of Motown*, p. 9.

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Figure 4.9 Excerpt of James Jamerson's electric bass line on Marvin Gaye, 'What's Going On', Tamla Motown 5C5493203 (1971). [CD Track 19].

The current chapter has investigated the factors leading to the introduction of the electric bass into jazz, acknowledging the conflict created between commercial demands and artistic aspirations. Issues included, on the one hand, the generation of increased volume and stage presence, employment opportunities in the studio and changing public tastes, on the other the desire to retain the greater expressive potential of the string bass and the artistic integrity of the traditional jazz ensemble. As the 1960s ended, visionary jazz artists such as Charles Lloyd, Miles Davis and John McLaughlin sought to embrace technology in new ways to draw them into the more lucrative, less esoteric orbit of rock music. Their attempts were not always successful and were often roundly criticized in the jazz press. They did however initiate a new dependence on technology in all its manifestations, which slowly infiltrated many areas of jazz production and performance. The study now turns its attention to the development of these new jazz forms and the demands placed on the jazz bass player.

CHAPTER FIVE

The Jazz Bass, Multi-track Recording Technology and Fusion (1970s)

Chapter Four demonstrated the immense conceptual and musical strides made by electric bass players within commercial music genres during the 1960s. While acknowledging corresponding improvements made in both technical and artistic terms on the string bass, the study now considers the impact on bass players of the large-scale disaffection of the jazz audience, many of whom became infatuated with rock and soul music during the turbulent 1960s. It emerges that these more powerful, technologically driven styles, underpinned by the electric bass, attracted the attention of the public in a way that jazz had been unable to sustain. The efforts of many bassists in the 1970s to come to terms with both the artistic disparity and the pecuniary imbalances that existed between their works and those of more commercially motivated musicians are investigated. Rock music's popularity led many established jazz artists to embrace newly emerging technologies indiscriminately as they struggled to assume a more commercially leveraged position in the marketplace. Contemporaneous music reviews suggest that this repositioning often was achieved at the expense of their music. This chapter will examine the ramifications of this extraordinary period of artistic realignment, and clarify the role the increasing deployment of the electric bass played within it.

In terms of jazz recordings, two of the most influential from the late '60s, early '70s period were the Miles Davis albums *In a Silent Way* (1969) and *Bitches Brew* (1970).²⁶¹ These works helped to introduce a revolutionary aesthetic to recorded jazz, establishing concepts and studio protocols that gained widespread currency in the following decades. As the study will demonstrate, many of their innovations were dependent on the convergence of recording studio technology and the electric bass for their realization. A number of factors differentiated these recordings from more conservative jazz albums of the time. For example, they both displayed a tendency to undermine the illusion of real-time performance, both linearly, moment to moment, and in terms of successive musical

²⁶¹ Miles Davis, *In a Silent Way*, CBS 450982 2 (1969); Miles Davis, *Bitches Brew*, Columbia/Legacy GP-26 (1970).

layers. In the first instance, no attempt was made to hide the fact that edits had been done. In the second, the faint remnants from individual tracks that had been subsequently replaced, betrayed the fact that overdubs had been overlaid after the original performance. Another transformation involved the location of the performance – the studio. Davis adopted the methodology of the Beatles, who had set a precedent, three years earlier, of using the studio as a composition laboratory rather than a traditional performance space. Finally, Davis' recordings were commercially very successful, proving surprisingly popular with the rock audience he had been courting. This popularity encouraged a general stylistic re-assessment among other jazz artists, leading to an increased utilization of the electric bass. The current chapter now turns to the specific technologies that facilitated this new artistic paradigm.

With Davis' late 1960s work, extensive tape editing and electronic manipulation assumed an unprecedented role in determining the internal architecture of his compositions. What underpinned Davis' new musical direction was a rock-influenced re-conceptualization of the bassist's function, leading to an elasticizing of the music's formal organization. With *In a Silent Way*, Davis abandoned chord sequences as a method of delineating structure, avoiding conventional hierarchical devices such as 32-bar song form and 12-bar blues choruses completely. By dispensing with the gravitational pull of tonal harmonic progression, he also disengaged its power to organize the passage of time. This had the effect of lending immediacy to his new compositions. Conventional expectations were thwarted by the non-developmental harmonic and rhythmic nature of the music. The traditional responsibility of the bass player to outline chord changes, and consequently song form, was made redundant. A transformation of the bass part ensued, from a walking line to a much simpler contribution involving repeated loops, drones and ostinati, as displayed in the following examples. (See Appendix A, CD tracks 20-22).

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Figure 5.1 Three loops employed in Miles Davis' 'Shhh/Peaceful', *In a Silent Way*, CBS 450982 2 (1969). [CD Tracks 20-22].

Figure 5.1 above illustrates the type of loops used and the extent of their variation during the course of the tune 'Shhh/Peaceful'. The first loop is repeated for the initial 2:45 before being replaced by loop #2, which continues until 3:16. From 7:23 until 8:25 the bassist engages in one of the only passages that might be considered developmental when he provides a more improvisational underpinning through a series of interactions with the guitar soloist. During this section, Holland employs rhythmic and melodic variations of one bar duration before an edit reintroduces the first loop as the guitar solo concludes. This style of accompaniment re-appears from 9:42 until 10:43 during the soprano saxophone solo, before coming to another abrupt, pulse-disrupting end with an awkward splice. The metamorphosis in the bass part made the music more plastic by allowing edits to be made virtually anywhere without disturbing traditional structures based upon the inviolability of repeating chord sequences. In this way technologically inspired compositional procedures swept away clichés of form and harmonic function.

During the late 1960s larger format, multi-track tape recorders were being adopted in recording studios. This equipment brought to the engineers increased opportunities for post performance modification and as a result, albums came to be progressively more manufactured in nature, rather than simply recorded. Multi-track recording's capacity to store individual musical elements separately on their own tracks facilitated a process in

which the ensemble's original performance, as it had transpired live on the studio floor, could be reviewed in detail and reconfigured. Davis explained the procedure:

Sometimes, instead of just letting the tape run, I would tell Teo to back it up so I could hear what we had done. If I wanted something else in a certain spot, I would just bring the musician in, and we would just do it.²⁶²

Using the unrelenting bass loops as a foundation, layers could be added in much the same way as a painter would daub on a canvas. Conventional documentary procedures were replaced by those in which the artist, in collaboration with the recording engineer, could revisit and touch up unsatisfactory musical passages, altering tonal colors or replacing sections entirely as the composition was assembled.

Unconventional production techniques in the control room were not the only innovations in these recordings; they also extended to the other side of the glass – the performance space itself. In a reversal of the established approach to jazz productions in which a well-rehearsed ensemble recorded their live repertoire, Davis assembled his unrehearsed band in the studio and then presented them with the barest of melodic or chordal sketches. This was done in the hope of eliciting from the musicians their maximum collaborative energies. Freely improvising on these outlines, the music was developed in segments in the studio with no formal structure. The ensemble simply played individual fragments until they had exhausted their potential or got bored, at which point they stopped and moved on to another sketch. This procedure left the players in some confusion. Bassist Dave Holland reminisced:

If you'd asked me at the session what was going on, I would have told you that I didn't have a clue. We were all trying to figure out what was going on. Miles always gave the minimum amount of instructions. If we used any notation it was often a collage-type thing with a bass line and some chord movement, and maybe a melody related to that. But it was never something long or extended. It was always a fairly compact section, and then we'd move to another section. Often I didn't know whether we were rehearsing or recording, but Miles had a policy of recording everything.²⁶³

To add to the unorthodoxy, on compositions such as Joe Zawinul's harmonically sophisticated title tune, Davis instructed the bassist to ignore the harmonic progression entirely. Holland added: 'If there were many chords, he'd just have the bass play one note

²⁶² Miles Davis, cited in Robert Walser (ed.) *Keeping Time: Readings in Jazz History* (Oxford University Press: New York, 1999), p. 373.

²⁶³ Dave Holland, cited in Paul Tingen, 'Miles Beyond: The Making of *In a Silent Way & Bitches Brew*'. <http://www.miles-beyond.com/iaswbitchesbrew.htm> (accessed 23 January 2012).

underneath all the moving chords, so that you get a pedal point'.²⁶⁴ Holland frequently found himself performing a single note drone in support of the musicians above. This simplified bass part represented a marked departure from the contributions expected of previous bass players in Davis' group. For example, Holland's predecessor Ron Carter had provided highly sophisticated and interactive post-bop bass performances. Until these records, this had been the sine qua non of jazz bassists – to display their prowess in negotiating increasingly more complex harmonic sonorities. Davis' new music permitted the soloist the freedom to create and develop melodic ideas free from harmonic constraints over the bass player's tonic reference.

The 'compositional laboratory' approach to the recording studio adopted by Davis produced 40 reels of tape filled with musical fragments. His compulsion to record and keep everything rather than discarding unsuccessful takes suggests that, for him, the distinction between a good and bad take was immaterial. Immediate qualitative judgment was postponed – everything was potentially useful in his new compositional process. For Holland also, evaluation of his bass contribution became less critical as his part had been simplified to such an extent that every take was essentially the same. Once the creative process on the studio floor had been exhausted, Davis left it in the hands of his producer Teo Macero to construct compositions from the bits and pieces. The technical staff was free to manipulate the fragments in whatever manner they deemed appropriate. In this way Davis effectively abdicated his artistic sovereignty. Macero confirmed the reattribution of responsibility:

Miles would record his stuff, and then he'd just leave. He would sometimes say, 'I like this or that,' and then I'd say: 'I'll listen to it and I'll put it together. If you like it, fine, if not, we'll change it.' So I was the one with the vision. I was able to cut out the stuff that wasn't good, and piece something together from the rest.²⁶⁵

The inefficiencies of this process are reflected in the fact that the sessions produced only twenty-seven minutes (4.5%) of what Macero, rather than Davis, considered acceptable material. Too short for commercial release, Macero decided to loop copied sections of the tape in order to extend the playing time to an acceptable thirty-eight minutes. In this way

²⁶⁴ Dave Holland, cited in Paul Tingen, *Miles Beyond: the Electric Explorations of Miles Davis, 1967-1991* (New York: Billboard Books, 2001), p. 57.

²⁶⁵ Teo Macero, cited in Paul Tingen, *Miles Beyond*. <http://www.miles-beyond.com/iaswbitchesbrew.htm> (accessed 23 January 2012).

an exact duplication of approximately the first six minutes of each title was appended to its end, conferring a symmetrical musical form. Structure was therefore achieved by technical rather than musical means, artificially imposed by the physical requirements of the LP format. The form of the music, thanks to the simple repetitive bass lines, permitted this expedient to go largely unnoticed by the public. According to Macero ‘it was not done to deceive anyone. Considering the favorable responses we got on the record, certainly no one felt cheated.’²⁶⁶

Other musical parameters assumed formal roles on *In a Silent Way*. For example, in the eponymous tune, atmosphere serves as an important structural component. While the bass draws an arco low E pedal, the electric keyboards and guitar generate interest with a kaleidoscope of changing tonal hues. Sophisticated modal excursions often generated multilayered tonalities anchored by an immutable bass line. In some ways the music refers back to the early New Orleans improvisational style in which, in the words of Panassié, ‘a conscientiously simple bass part’ underpinned collective improvisation.²⁶⁷

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Figure 5.2 Various bass loops as employed in Miles Davis’ ‘In a Silent Way’, *In a Silent Way*, CBS 450982 2 (1969). [CD Track 23-25].

Figure 5.2 above illustrates the bass loops employed during the composition ‘In a Silent Way’. (See Appendix A, CD tracks 23-25). The first loop underpins the entire first four minutes of the tune, at which point it is replaced by a bass figure emphasizing the

²⁶⁶ Teo Macero, cited in Paul Tingen, *Miles Beyond: the Electric Explorations*, p. 62.

²⁶⁷ Hugues Panassié, *The Real Jazz* (New York: Barnes, 1960), p. 174.

flat 7th of an F7sus4 tonality. The two bar loop #3 enters at 8:23. This type of bass line was popular with many contemporaneous funk and soul artists, especially James Brown, and Sly and the Family Stone, and in view of Davis' infatuation with the genre, might have been appropriated from any number of sources.²⁶⁸ Compare, for example, the bass line to Sly and the Family Stone's 1968 hit 'Sing a Simple Song' and a bass part on Davis' 'Right Off', a track on his *Tribute to Jack Johnson* album released February 1971. (See Appendix A, CD tracks 26 and 27). While the latter has been rhythmically displaced by a quarter note, its derivation is undeniable and serves to emphasize the degree to which Davis' jazz work was being influenced by popular sources.

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Figure 5.3 Bass line to Sly and the Family Stone, 'Sing a Simple Song', Epic 510407 (1968) as performed by Larry Graham. [CD Track 26].

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Figure 5.4 Bass line (2nd section) to Miles Davis, 'Right Off', *A Tribute to Jack Johnson*, Columbia KC 30455 (1971) as performed by Michael Henderson on the Fender Bass. [CD Track 27].

These liberal borrowings from popular black styles enabled the bass to provide a key element of familiarity (a 'hook' in industry parlance) to those unaccustomed to more traditional jazz recordings, arguably contributing to its considerable crossover success. The traditional hierarchical relationship in which melody was more important than the accompanying bass, had undergone a reversal in Davis' new music. Zawinul remarked: 'Miles always liked my bass lines. Everything came from the bass. He would always say

²⁶⁸ Cornel West, 'On Afro-American Music: From Bebop to Rap', *The Cornel West Reader* (Basic Books: New York, 1999), pp. 474-484. See discussion of Davis' funk influences.

“Write me one of those bass lines”.²⁶⁹ The bass was now the basis for the generation of most of the other musical material.

With *Bitches Brew*, recorded six months later, Davis consolidated this new improvisatory style, and sanctioned further extension to the technological mediation of his compositions. Macero criticized the increasing fragmentary nature of the process: ‘The Bitches Brew sessions were a matter of continually stopping and starting. Jesus Christ, I don’t think they did one complete take.’²⁷⁰ On this album Davis employed a larger ensemble comprising up to twelve musicians, including as many as three keyboard players at once, and on some tracks utilized two drummers and two bass players simultaneously. The roles of the two bassists were highly differentiated. As Holland explained:

The idea of using two basses and two drummers was very interesting. The role division between Harvey and me depended on the piece, but as I remember it, Harvey was taking responsibility for laying down the main line on the electric bass, and I had a freer part embellishing things on the acoustic bass.²⁷¹

Harvey Brooks, arguably the least musically sophisticated member of the ensemble (Davis hated his solos according to engineer Ray Moore) was the bedrock upon which the pieces were built.²⁷² The often-bubbling cauldron of collective improvisation was held together by Brooks’ unrelenting, simple ostinati on the Fender bass. (See Appendix A, CD tracks 28 and 29).

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Figure 5.5 Bass line to Miles Davis, ‘Miles Runs the Voodoo Down’, *Bitches Brew*, Columbia/Legacy GP-26 (1970) as performed by Harvey Brooks on the Fender Bass. [CD Track 28].

²⁶⁹ Joe Zawinul, cited in *Miles Davis: The Complete Bitches Brew Sessions*, Columbia Legacy C4K 65570 (1998), liner notes p. 75.

²⁷⁰ Teo Macero, cited in Paul Tingen, <http://www.miles-beyond.com/iaswbitchesbrew.htm>.

²⁷¹ Dave Holland, cited in Paul Tingen, *Miles Beyond: the Electric Explorations*, p. 65.

²⁷² Ray Moore, cited in Paul Tingen, <http://www.miles-beyond.com/iaswbitchesbrew.htm>.

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Figure 5.6 Bass line to Miles Davis, 'Bitches Brew', *Bitches Brew*, Columbia/Legacy GP-26 (1970) as performed by Harvey Brooks on the Fender Bass. [CD Track 29].

In engaging a less sophisticated bassist, Davis might be accused of being dissatisfied with the emancipated bass role advanced by his contemporaries. Rather, he chose to differentiate between the twin functions that his previous bassists had successfully integrated. On *Bitches Brew*, the foundational and soloing roles were divided between two players simultaneously, using the technology of the studio to help present them effectively. Holland, freely extemporizing above Brooks' more formalized lines, had effectively joined the soloists, providing timbral interest rather than foundational support. Once again, as in the 1920s, bass player Brooks was subordinated to a harmonic, time-keeping role.

As with *In a Silent Way*, *Bitches Brew* was heavily dependent on the resources of the recording studio. Musical segments wholly conceived and fabricated, as opposed to modified in the control room were employed as raw material to build transitional pieces and interludes. These procedures reflected the changing function of producers. Increasingly they were imposing their own creative contributions, undermining the romantic conception of the work as the exclusive domain of the artist. As Frank Tirro confirmed:

This method of production radically altered the way musicians executed their music and the way listeners heard these sounds. The jazz aesthetic of live improvisation was seriously challenged here with studio-produced music. The creative responsibility for the end product was moving away from the musician and toward the audio engineer.²⁷³

Macero, himself an accomplished musician, was eminently qualified to fulfill this expanded role, but it was an interference that was not always welcomed and occasionally generated considerable resentment. Modern technology, coupled with the increased musical flexibility delivered through the bass, had given the producer the power to divest

²⁷³ Frank Tirro, *Jazz: A History* (New York: W. W. Norton, 1993), p. 397.

the composer of his due credit and royalties. Zawinul for his part lamented his disenfranchisement:

By the way, I also wrote the second part of 'It's About That Time'. I wrote the melodic bass line and the descending melody. I never got any credit for that in terms of money. The bass line is what made that tune. I blame Teo, because he always put things together so that it came out as if Miles had written it. But that's not correct.²⁷⁴

The uncredited status of Zawinul's bass line had arisen partly as a result of the cut and paste nature of the production. The way it was recorded – in segments – challenged traditional concepts of authorship. In the absence of a specified melody line, chord structure or designated form, questions arose as to what constituted a composition, and how the contributions of the ensemble members should be attributed, acknowledged or compensated.

The recording studio played an essential part in the development of Davis' new music. This is substantiated by the fact that the live repertoire of his ensemble retained its more conventional jazz standard fare for some time after he had established his new recording style. This would suggest that Davis felt the technology of the recording studio was essential to the effective presentation of his new compositions, and that without its resources, he was unable to satisfactorily interpret them on stage. From the above examination it can be seen that changes to the role and function of the bass, in conjunction with the technology of multi-track recording and tape editing, was responsible for challenging traditional ideas concerning musical structure, harmony, performance practice and authorship, in short, a host of established jazz conventions.

- The String Bass – Amplified

By the early 1970s, the electric bass was increasingly being utilized within jazz ensembles to provide a rock undercurrent as many artists underwent a process of stylistic diversification. String bass players in more traditional jazz contexts, however, were not immune to the attraction of electronics. Many sought to augment the sound they produced on the acoustic bass by attaching a pickup to their instrument and using an amplifier.

²⁷⁴ Joe Zawinul, cited in Paul Tingen, 'Miles Beyond' <http://www.miles-beyond.com/iaswbitchesbrew.htm>.

Despite the claims of manufacturers extolling their fidelity, most bassists were less than satisfied with the unnatural sound pickups delivered. Alphonso Johnson, for example, was unimpressed:

If you put a pickup on a string bass, you no longer hear what's coming out of the instrument. It's a different instrument as soon as the sound passes through that wire. I've tried most of them and none duplicates what the instrument sounds like.²⁷⁵

Dave Holland, also bemoaning the lack of fidelity afforded by the pickup/amplifier combination, expressed a similar sentiment:

With the pickup, the overtone sound of the string has changed because you actually are playing the speaker. [The speaker] is making the sound, so the overtone is greatly reduced from what it was meant to be, a large wooden chamber. You certainly aren't going to get the richness of sound from the speaker that you would from the bass itself.²⁷⁶

Miroslav Vitous argued that the influence of the pickup was even more profound, determining to some extent his choice of what to play on the bass:

I come home from a tour and the first thing I do is unpack my bass and play it without amplification. It is such a release for me to play this way, because I can hear things that would never sound right through an amp.²⁷⁷

Many of the older players were simply resentful. Percy Heath, for example, felt that the employment of electronics led to a lack of differentiation among players – bassists all sounded the same. He remarked:

After so many years of striving for the purest, fullest sound you can get, it seems rather ludicrous to me to run it through some distortion. It's really a waste of a lot of years. You can put anybody, somebody with no tone quality of sound, and run him through the machine and he sounds just like you. Gee, I'd feel like a fool if I would accept that. So as far as *my* instrument is concerned, I don't think I like the electronic aspect at all.²⁷⁸

In spite of these reservations the majority of bass players used the pickup and amplifier combination both on stage and in the studio. When asked his thoughts about those bassists who refused to do so, Ron Carter was pragmatic:

I think they are making a mistake. They want to sound like we did in the '50s, but I don't know any bassist who played back then who would want to go back to that setup. They had

²⁷⁵ Alphonso Johnson, cited in Arnold Jay Smith, 'Alphonso Johnson: Barometric Bump in Weather Report Grind', *DownBeat* (29 January 1976), p. 14.

²⁷⁶ Dave Holland, cited in Arnold Jay Smith, 'Bass Lines', p. 16.

²⁷⁷ Miroslav Vitous, cited in Dale Hardman, 'This "Report" Is Good', *DownBeat* (14 February 1974), p. 38.

²⁷⁸ Percy Heath, cited in Leonard Feather, 'The Heath Bros: Together Again for the First Time', *DownBeat* (23 October 1975), p. 20.

no chance to be heard – and 50 years later, bass players who prefer that setup still can't be heard. Once the drummer picks up some sticks, the bass player's sound is inaudible. How can that be acceptable to him? Or to the bandleader's manager, or to anyone who's concerned with the group's sound?²⁷⁹

Obviously the desire to be heard was more important to the younger players than the maintenance of classic conceptions of string bass tone favored by the old masters. An imperfect technology was better than none at all if it expanded the bassist's expressive potential. With the widespread adoption of electronics, the sound of their string basses underwent a considerable metamorphosis. For example, the sound that Carter produced in the early 1960s, changed dramatically in the following decade after he adopted the pickup. The most noticeable transition occurred between February 1968, when he performed on George Benson's *Giblet Gravy*,²⁸⁰ and October 1969 when his first album as a leader entitled *Uptown Conversation*, was recorded.²⁸¹ On the latter, the woody, organic tone of his unamplified instrument was replaced by a brighter, hybrid electro/acoustic sonority. By 1977 and his LP *Third Plane* the transformation was even more dramatic as Carter's bass had lost most of its natural character.²⁸² His notes were much smoother, with a faster transient, a longer decay and a distinctive growl. A plethora of albums produced during this era demonstrates the extent to which this new electronic sound permeated the upper echelons of jazz.

The increased volume delivered by the electronic transducer allowed strings to be lowered increasing bassists' facility. The easier action permitted a more legato articulation, which made the production of fluid solo lines much easier. The level of strength and stamina required of the bass was also significantly reduced. The sacrifice in tone however was unavoidable. The string bass pickups in customary use in the mid 1970s, namely those manufactured by the Barcus Berry, Polytone and Underwood companies, were attached to the bridge of the bass, a location that favored the vibrating properties of the strings. Their incapacity to deliver the sound generated by the interaction of the strings with the large resonating cavity – the sound usually captured by

²⁷⁹ Ron Carter, cited in Brigid Bergin, *Ron Carter & The Importance Of Playing Music With A Big 'M'*.

²⁸⁰ George Benson, *Giblet Gravy*, Verve V68749 (1968).

²⁸¹ Ron Carter, *Uptown Conversation*, Embryo Records SD 521 (1969).

²⁸² Ron Carter, *Third Plane*, Milestone Records M9105 (1977).

a microphone – meant the pickup functioned similarly in effect to the electric bass’ transducer. In place of an unobtrusive, gently throbbing presence was a hard-edged bark.²⁸³

From the vantage point of the late 1990s, this tone was felt to have seriously undermined the ability of the bass to generate swing. Ethan Iverson observed:

The simple fact is that at least 80% of the swinging acoustic jazz records made between 1970 and the advent of Wynton Marsalis [mid 1980s] have a godawful bass sound. In performance it was all amplified pick-up, and when recording the bass the engineers usually put that pick-up directly to tape. To compound the problem, often the strings of the bass were far closer to the fingerboard than in the 60s and 50s, making for a walking line that was heard but not felt. This 70s bass set-up did enable the player to ‘liberate the bass’ and perform melodies and take long solos more like a guitarist. But the ultimate aesthetic value of this liberation – at least in the context of straight-ahead jazz – was questionable.²⁸⁴

Clearly the 1970s presented string bass players with a dilemma. While the general consensus was that the unamplified sound of the string bass was aesthetically far superior to that produced by the pickup, bass players were unwilling to sacrifice the assertiveness and facility the technology brought them. The electronic pickup was felt by many to be a necessary evil. Gomez, while equivocal about its shortcomings, nevertheless conceded its utility in helping bass players communicate with their audiences. In 1977 he remarked:

As far as pickups are concerned, I don’t think the acoustic bass sounds better with one. It is hindered – that beautiful sound the bass gets without it – but it gets it out there for the masses. In that regard ... it’s extremely useful for the modern bass player.²⁸⁵

Again six years later he recalled the years he spent frustrated at his lack of volume before endorsing the pickup:

I do amplify my bass. For years I didn’t, till about 1968, so I played in a lot of groups where I just couldn’t hear myself. I played with Miles, when Tony Williams was in the band, with just a microphone in front of the bass, and I couldn’t hear a note. I didn’t think anyone else did either. I guess they felt it, or else they were just pleased I showed up.²⁸⁶

The extent of the transformation of sound can be ascertained by comparing the waveforms generated by a microphone and pickup. The following two figures were

²⁸³ For example, comparing Ron Carter’s sonority on Miles Davis, *Sorcerer* CBS 63097 (1967) and VSOP, *The Quintet* LP Columbia C34977AL34977 (1977) reveals a striking transformation.

²⁸⁴ Ethan Iverson, *Do The Math: Young Lion Jazz of the 1980s*
<http://dothemath.typepad.com/dtm/1-young-lion-jazz-of-the-1980s.html> (accessed 16 June 2011).

²⁸⁵ Eddie Gomez, cited in Arnold Jay Smith, ‘Bass Lines’, p. 16.

²⁸⁶ Eddie Gomez, cited in Howard Mandel, ‘Steps Ahead Interview: Brecker/Elias/Erskine/Gomez/Mainieri’, *DownBeat* (August 1983), p. 21.

captured concurrently in a digital audio program called AudioXplorer. They illustrate the dynamic envelope and frequency characteristics of a single plucked note (C2 at 65.41Hz) comparing the output of a Neumann TLM 103 microphone located at a distance of 10 inches directly in front of the bridge, with the simultaneous output of a pickup located under the foot of the bridge. The recording procedure used to produce the figures is typical of modern day practice in which engineers record the twin sources simultaneously to two independent tracks.

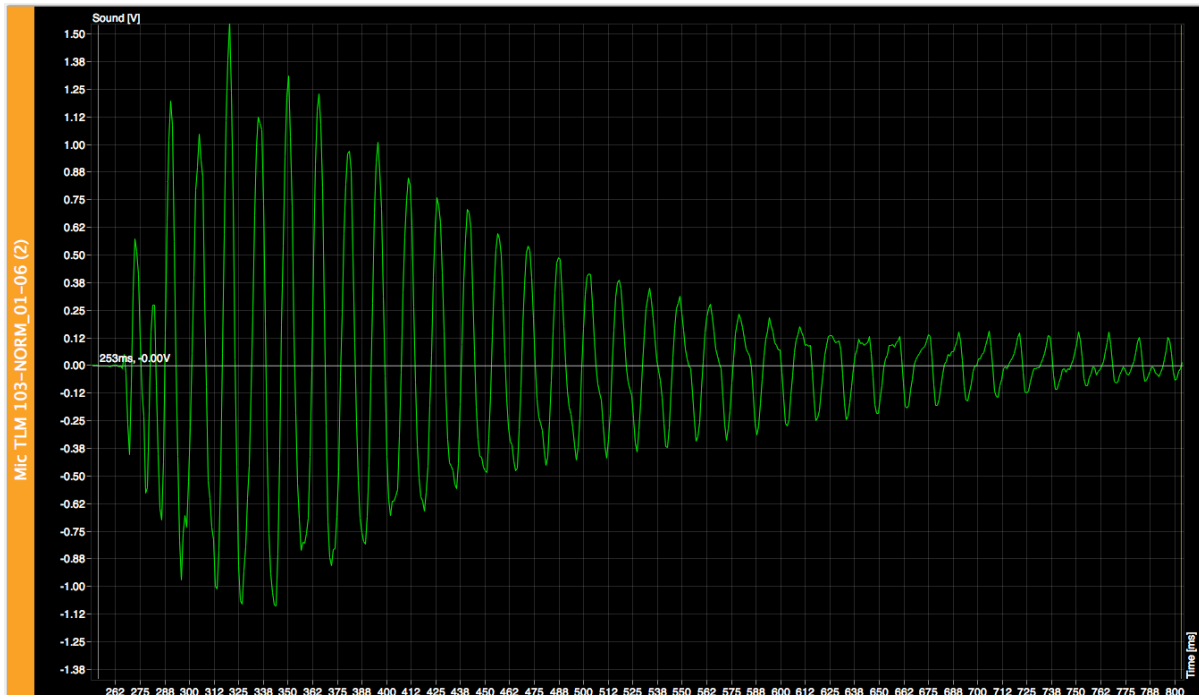


Figure 5.7 Waveform illustrating the characteristics of the string bass’ acoustic envelope captured by a Neumann TLM 103 at a distance of 10 inches from the bridge. The X axis represents the time domain in milliseconds, the Y axis the amplitude of the wave form.

Figure 5.7 above demonstrates the explosive nature of the attack of the string bass as captured by the microphone. From the first evidence of excitation the sound blooms to its peak amplitude, at which point it decays quite rapidly. The simple wave shape reveals a deficiency in upper harmonics, especially when compared to the waveform produced by the pickup below.

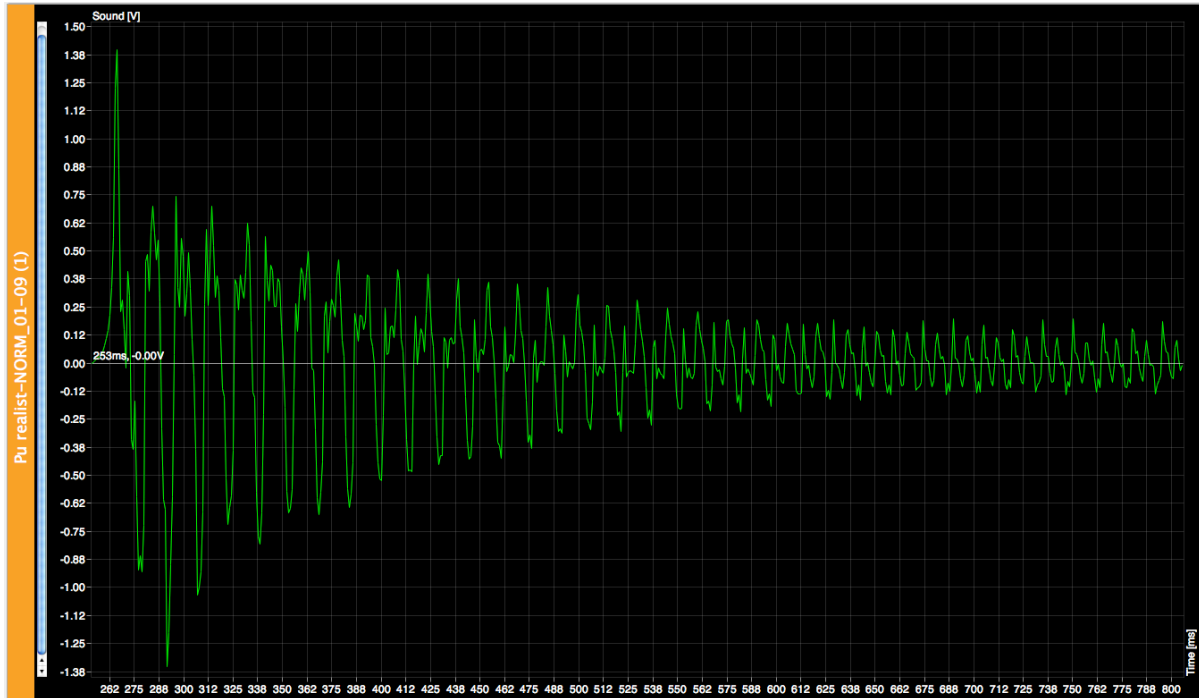


Figure 5.8 Waveform illustrating the characteristics of the string bass' envelope captured by a pickup placed under the foot of the bridge. The X axis represents the time domain in milliseconds, the Y axis the amplitude of the wave form.

Figure 5.8 above demonstrates the more complex harmonic nature of the string bass' tone as produced by a pickup. The sound attains its peak amplitude almost immediately after which it decays more gradually. The non-symmetrical wave shape indicates the tone is richer in upper harmonics than the waveform simultaneously produced by the microphone.

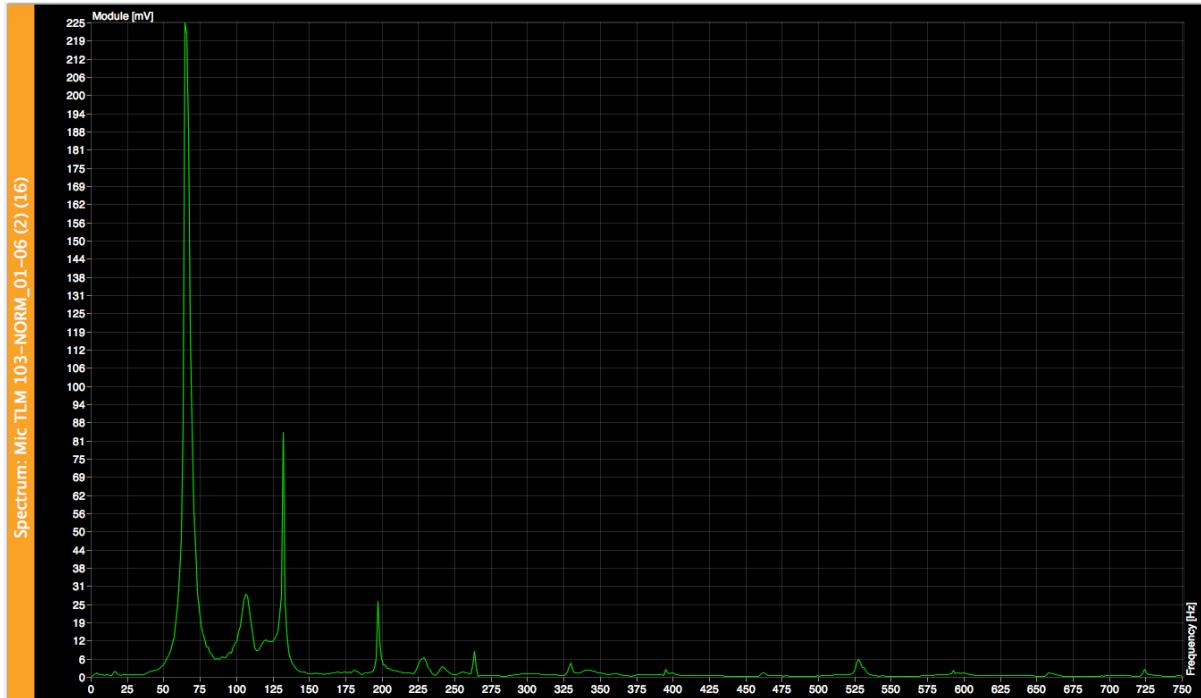


Figure 5.9 A diagram illustrating the characteristics of the string bass' acoustic spectrum captured by a Neumann TLM 103 at a distance of 10 inches from the bridge. The X axis represents the frequency domain in hertz, the Y axis the amplitude of the wave form in millivolts.

The relative strengths of the harmonics shown in Figure 5.9 (the microphone trace) above are displayed in the table below.

- 65Hz = 221mV
- 132Hz = 84mV
- 198Hz = 26mV
- 264Hz = 9mV

Clearly the third harmonic is practically inaudible, the first harmonic is a full 62% lower than the fundamental. Compare this with the following trace from the pick-up in which the harmonics are considerably more numerous and much stronger.

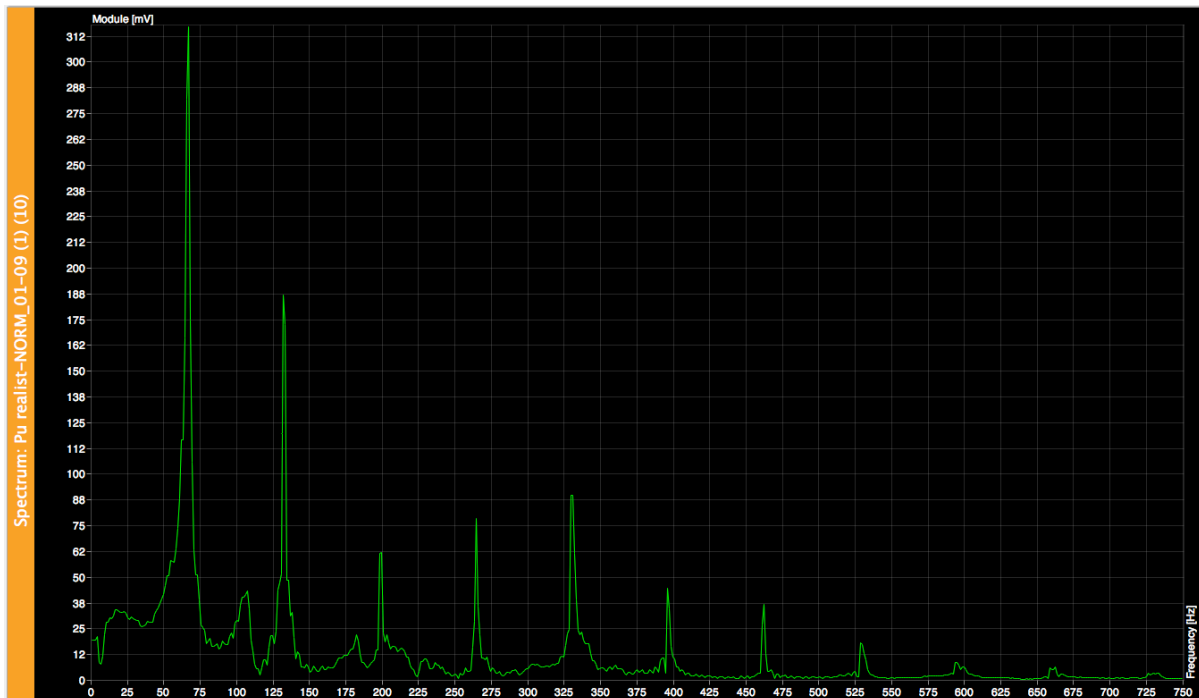


Figure 5.10 A diagram illustrating the characteristics of the string bass' acoustic spectrum produced by a pickup placed under the foot of the bridge. The X axis represents the frequency domain in hertz, the Y axis the amplitude of the wave form in millivolts.

The relative strengths of the harmonics shown in Figure 5.10 above (the pickup trace) are displayed in the table below.

- 65Hz = 318mV
- 132Hz = 187mV
- 198Hz = 61mV
- 264Hz = 78mV
- 330Hz = 90mV
- 396Hz = 44mV
- 463Hz = 37mV
- 529Hz = 18mV

The above tables explain why the late 1960s witnessed a dramatic change in the sound of string basses on jazz recordings. The electronic pickup lent an unnatural edge to the sonority of the string bass, due to the increased presence of the upper harmonics. By emphasizing the upper partials, the sound became more aggressive, particularly when amplified through the low fidelity bass amplifiers used at that time. In conjunction with a more rapid peak and smoother decay, characteristics shared by the electric bass, the pickup also contributed an aggressive growl as lowered strings vibrating against the

wooden fingerboard were subjected to this midrange prominence.

The nature of the envelope produced by a piezo-electric pickup was also responsible for a gradual increase in the average level of the string bass on recordings during this era. In comparison to the subtle underpinning provided by the unamplified instrument of the past, newer recordings featured a more prominent bass. This is explained in the section below. Figure 5.11 revisits a graphic representation of a four bar walking bass line as produced by a Realist pickup seen previously in Chapter 3. It is unprocessed and features clearly visible spikes which correspond to the individual notes played by the bass player as he walked through the chord changes. Between the notes are sections of relatively low level which represent the background noise coming through the bass. Figure 5.12 is the same passage after processing with compression and an audio limiter. The spikes are now comparatively even and the average level of the bass has been considerably increased. This was achieved by amplifying the signal and at the same time placing an upper limit to the maximum level it could attain. Control of the upper limit is necessary to avoid overload and distortion further down the audio chain during the mixing process. While the background noise has been also increased by this procedure, the ratio of signal to noise remains quite large and therefore acceptable.

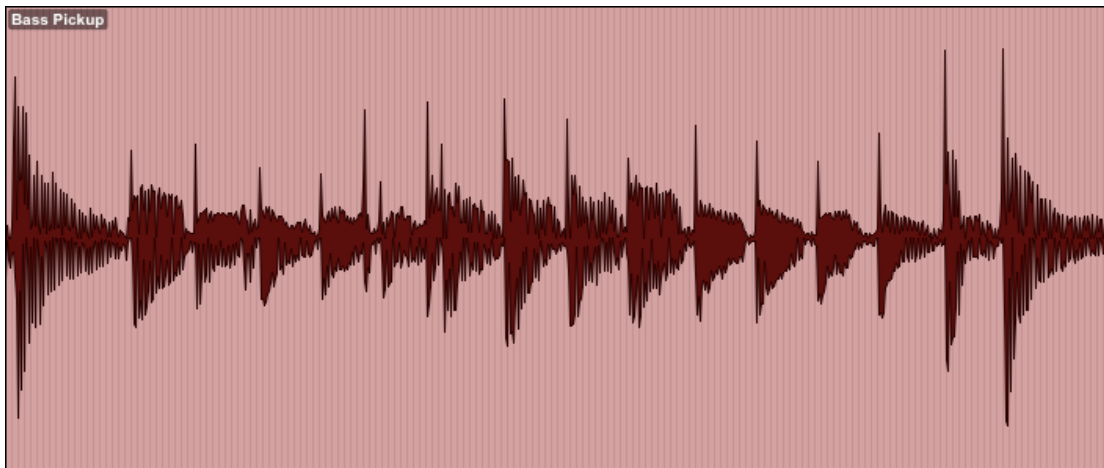


Figure 5.11 Four bar excerpt from a big band performance showing waveform of the output from a pick-up (unprocessed).

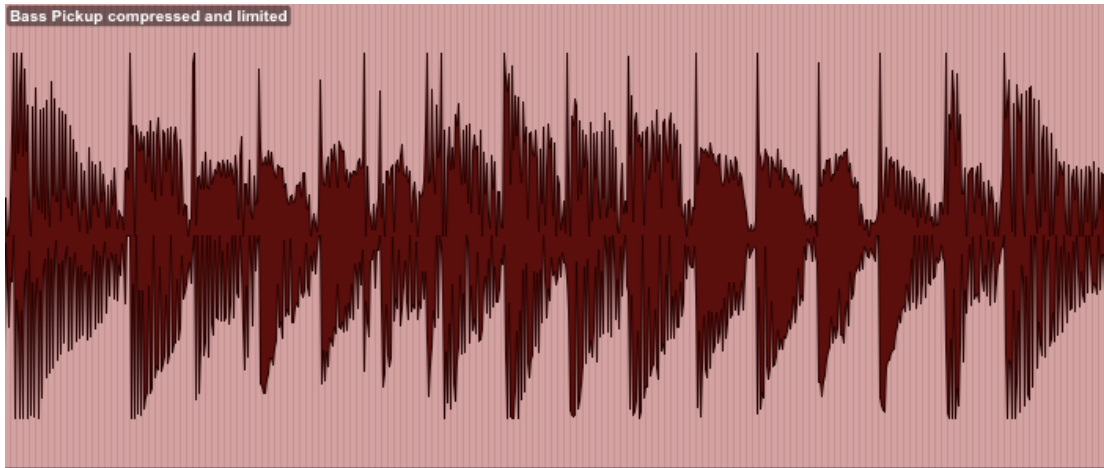


Figure 5.12 The same four bar excerpt showing waveform of the output from a pick-up after the application of compression and limiting.

Figure 5.13 shows the output of a U-87 microphone placed ten inches from the bridge of the bass. It was recorded concurrently with the pickup's trace but the signal to noise ratio is dramatically smaller. In fact the most prominent features, the seven spikes, are caused not by the individual bass notes but correspond to the loud snare drum backbeats occurring nearby. If the same processing is applied to this signal as was used on the pickup, it is largely triggered by the drum hits rather than the bass itself. As a result while the average level of the bass is elevated slightly, the background noise is also dramatically increased.

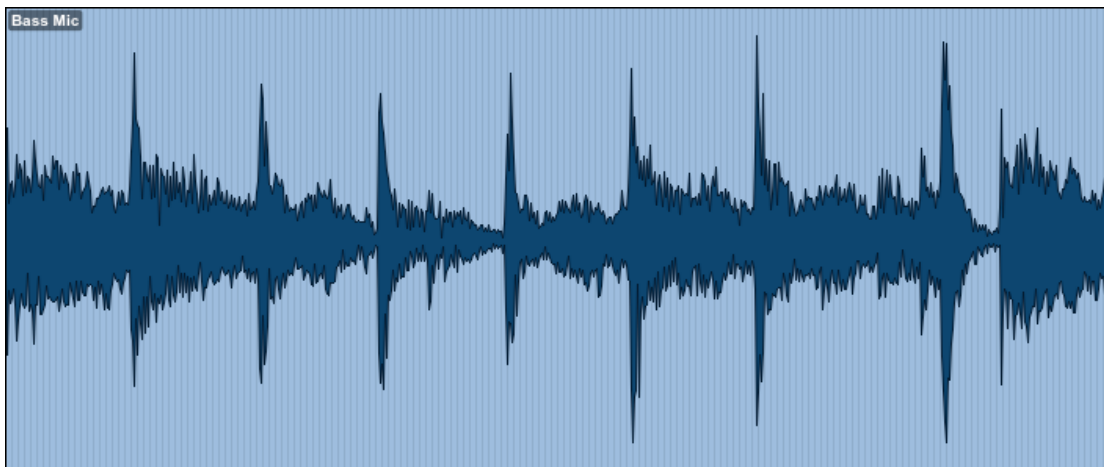


Figure 5.13 The same four bar excerpt showing waveform of the output from a U-87 microphone.

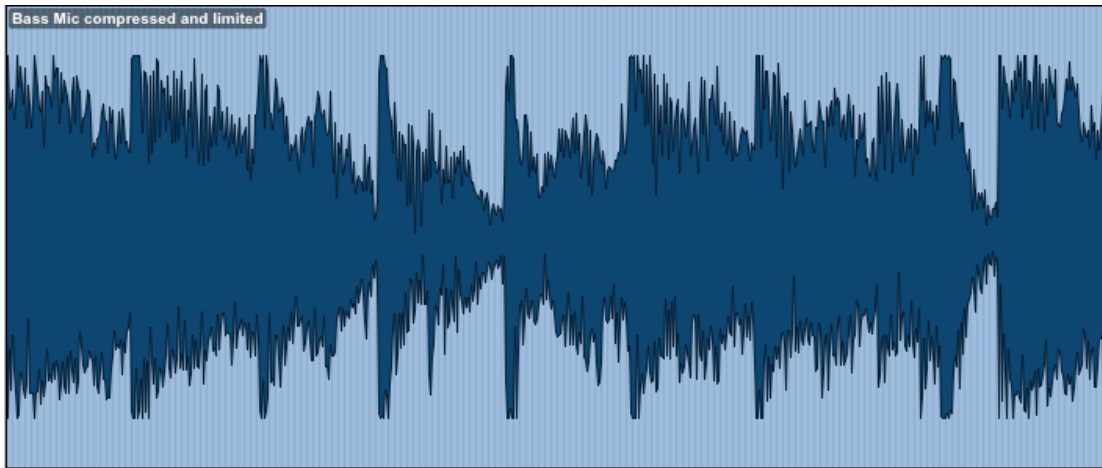


Figure 5.14 The same four bar excerpt showing waveform of the output from a U-87 microphone after the application of compression and limiting.

Figure 5.14 shows the results of applying exactly the same processing to the microphone's output as was applied to the pick-up. The processing has been triggered by the snare hits rather than the bass and while the average level of the signal has been increased substantially it has been done so indiscriminately with regard to the signal and the noise. In other words, efforts to compress the microphone signal in order to improve the bass' consistency are thwarted by interference from louder instruments (the drums) nearby. Either the bass has to be removed and placed in an isolation booth to improve signal to noise ratio, decreasing the bassists natural engagement with his fellow musicians, or greater care has to be taken in limiting the volume of the rest of the ensemble during the recording. In either case the bass would be responsible for decreasing the vitality of the ensemble's performance. The other alternative involves dispensing with the microphone altogether and relying totally on the pick-up signal. The widespread adoption of this strategy explains the bass sound that predominated during this era.

The influence of the electrification of the rhythm section on the careers of jazz bassists is no better illustrated than in the case of Stanley Clarke who came to prominence as a member of Corea's early 1970s group *Return to Forever*. In its original incarnation the group released two moderately successful and critically acclaimed albums of subtle South American inflected jazz.²⁸⁷ Thereafter Corea changed musical direction

²⁸⁷ Chick Corea, *Return To Forever*, ECM 811 978-2, (1972).

and according to Berendt:

Regrettably, Corea disbanded this group. His next ... lost much of its charm and ease which seem Corea's real strength. It became only too obvious: Corea wants to 'make it' with the rock audience.²⁸⁸

It was an impulse shared with other jazz luminaries such as Charles Lloyd, Eddie Harris and John McLaughlin. Corea fired vocalist Flora Purim, exchanged the lyrical saxophone for an electric guitar and Clarke's acoustic bass for a heavily amplified electric. Consequently, *Return to Forever* replaced its delicate material with hard-core displays of virtuosity and velocity in a brutally over-amplified jazz-fusion style. As far as Clarke was concerned, he was already a virtuoso on the acoustic bass, this much he had taken great pains to display on the group's first two records. The switch to electric bass meant he could be more flamboyant on stage and expend less effort doing so. His electric bass playing proved capable of attracting attention in a way that his acoustic bass expertise had not. Having achieved widespread popularity by establishing himself in the more commercial idiom, he subsequently indulged his passion for more traditional forms of jazz and as a result of this crossover strategy, reached a significantly expanded demographic. According to his website Clarke was *Rolling Stone's* very first Jazzman of the Year, and bassist winner of *Playboy's* Music Award for ten straight years.²⁸⁹

Early jazz-fusion is often criticized for its excesses in volume and self-indulgence, particularly the music of the Mahavishnu Orchestra, Return To Forever, Miles Davis, Tony Williams Lifetime and Weather Report. It would be inaccurate to attribute sole responsibility for this to the electric bass but, suffice to say, these musical styles would have been impossible to perform effectively had the acoustic bass been used. Clarke offered his perspective:

When I was about 17, I said to myself that the electric bass was not really an instrument. I threw it away and played acoustic. But when those electric pianos started coming out and all those drummers started playing loud it was hard to hear ... I (now) use an electric bass when everyone is playing electric instruments. I find it goes well with electric guitar especially. I find playing an upright with an electric guitar doesn't go. Either they don't match, or the guys who are playing electric guitar don't know how to play with upright bass.²⁹⁰

By the early 1970s, a considerable number of jazz artists had transformed their

²⁸⁸ Joachim E. Berendt, *The Jazz Book* (New York: Lawrence Hill, 1975), p. 399.

²⁸⁹ Ivan Bodley, cited at <http://www.stanleyclarke.com/bio.html> (accessed 2 January 2012).

²⁹⁰ Stanley Clarke, cited in Arnold Jay Smith, 'Bass Lines', p. 16.

music into a 'jazz-rock' or 'jazz-funk' hybrid, taking advantage of the powerful rhythmic impulse provided by an electric bass. Examples include *Tribute to Jack Johnson* by Miles Davis,²⁹¹ and *Headhunters* by Herbie Hancock,²⁹² the largest selling jazz album of all time.²⁹³ Essentially the bass players associated with the aforementioned groups, Michael Henderson and Paul Jackson, respectively, were not hired because they could play jazz, but because they were consummate rhythm and blues and funk players. Henderson's lack of empathy with traditional jazz caused considerable friction within the group, something that Davis was happy to endure in the interests of moving his music in a new, more commercial direction. Henderson related how Davis specifically ordered him to resist the efforts of the other musicians to engage him in conventional jazz interaction, and to staunchly maintain his ostinato underpinnings:

He hired me to play just what I was playing. He hired me to bring something new to his music. I thought that maybe he wanted me to learn some of his older stuff, but he said, 'If you play any of that old shit, you're fired!' And he told me, 'Anytime the guys try to play any of that shit, don't follow them.'²⁹⁴

The association of electric bass players with a host of highly visible and respected jazz artists lent credibility to the electric bass itself, helping to dispel the attitude that it was unworthy of inclusion in creative music ensembles. Rather than advancing the development of the established jazz repertoire, the electric bass widened it, making feasible musical amalgamations not possible otherwise by encourage the assimilation of rock and funk rhythms into the jazz language. The impact of the electric bass on the role of the jazz ensemble bass player led to a re-appraisal of the nature of the jazz ensemble itself. To quote Howard Mandel:

Jazz was a single language with a common repertory and a canon of techniques that enabled people from different musical (and social) backgrounds to build something spontaneously. Things began to change in the 1960s. The common language broke down ... with the advent of electronics.²⁹⁵

²⁹¹ Miles Davis, *A Tribute to Jack Johnson*, Columbia CK 47036, (1971).

²⁹² Herbie Hancock, *Head Hunters*, Columbia CK 65123, (1973).

²⁹³ According to <http://www.sa-cd.net/showreviews/4815> (accessed 17 March 2011).

²⁹⁴ Michael Henderson, cited in Paul Tingen, *Miles Beyond: the Electric Explorations*, p. 119.

²⁹⁵ Howard Mandel, *Future Jazz*, p. 5.

The following four examples are ostinato patterns that are typical of the funk underpinning favored by many jazz artists in the early 1970s. Their dynamic articulation and active 16th note nature essentially preclude the use of the acoustic bass as an effective instrument on which to deliver them. (See Appendix A, CD track 30-33).

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Figure 5.15 Bass line to Herbie Hancock, 'Spank a Lee', *Thrust*, CBS 80193 (1974), as performed by Paul Jackson on the Fender Bass. [CD Track 30].

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Figure 5.16 Bass line to Herbie Hancock, 'Palm Grease', *Thrust*, CBS 80193 (1974), as performed by Paul Jackson on the Fender Bass. [CD Track 31].

NOTE:
This figure/table/image has been removed to comply with copyright regulations. It is included in the print copy of the thesis held by the University of Adelaide Library.

Figure 5.17 Bass line to Herbie Hancock, 'Actual Proof', *Thrust*, CBS 80193 (1974), as performed by Paul Jackson on the Fender Bass. [CD Track 32].

NOTE:
This figure/table/image has been removed to comply with copyright regulations. It is included in the print copy of the thesis held by the University of Adelaide Library.

Figure 5.18 Bass line (1st section) to Miles Davis, 'Right Off', *A Tribute to Jack Johnson*, Columbia KC 30455 (1971) as performed by Michael Henderson on the Fender Bass. [CD Track 33].

The infusion of new electric styles in the early 1970s brought jazz into the mainstream. Jazz was swept up in the wake of rock music's popularity. Ron Carter may have felt

justified in 1977 when he remarked that ‘I don’t feel that the electronic [sic] bass has done anything to liberate the upright bass’.²⁹⁶ However, the electric bass did much to liberate jazz music from the confines of its traditional musical forms. The study now considers the stylistic expansion of jazz that occurred as a result of the integration of technological influences from popular music, including the use of the electric bass.

The hegemony of rock music in the 1960s had a significant impact on jazz artists. Whilst the audiences for rock and jazz had initially been considered as separate demographics with mutually exclusive tastes, (as reflected in the different radio formats for the two genres) the gradual defection of increasing numbers of jazz music listeners to the rock camp caused jazz performers considerable unease. According to Miles Davis:

Jazz music seemed to be withering on the vine, in record sales and live performances. It was the first time in a long time that I didn’t sell out crowds everywhere I played. In Europe I always had sellouts, but in the United States, we played to a lot of half-empty clubs in 1969. That told me something. Compared to what my records used to sell, when you put them beside what Bob Dylan or Sly Stone sold, it was no contest.²⁹⁷

Dwindling audiences and record sales caused many jazz artists to reconsider the wisdom of staunchly maintaining a traditional jazz aesthetic. Many jazz performers looked to the highly successful rock music genre for musical and presentational elements that could be appropriated into their own repertoire. Rock musicians had demonstrated in performance the effectiveness of delivering a more basic, dynamically powerful music, one that could be experienced in a more physical way than jazz. This, as the study has demonstrated, was largely due to increasing technological reliance, particularly on the electric bass. The presentation of rock concerts had also nurtured quantum leaps in technological innovation in the field of professional audio. Late 1960s rock groups had made routine a concert experience in which sound levels were of seismic proportions in comparison to the sedate jazz club ambience. H. Stith Bennett confirmed the electric bass’ role in this intensification:

The electric bass with its amplification equipment produces low-frequency sound at an intensity unknown in the history of music. In contradistinction to its forerunner—the pipe organ—an electric bass is portable, and therefore more easily encountered by audiences. Both instruments share the role of a technical turning point in the performance of music. They share, as well, the use of the building materials of a structure as a musical medium. Reports that a rock group was ‘shaking’ or ‘rocking’ the place can often be taken

²⁹⁶ Ron Carter, cited in Arnold Jay Smith, ‘Bass Lines’, p. 14.

²⁹⁷ Miles Davis, cited in Robert Walser (ed.), *Keeping Time*, p. 371.

literally.²⁹⁸

Advertisements began gracing the pages of *DownBeat* magazine touting the advantages of various bass amplification products in terms of brute force rather than refinement. For example Stadel amplifiers were described as featuring ‘towering, overpowering power’.²⁹⁹ The Premier 75 bass amplifier promised to ‘shake the back walls – generate big, big sound’ through employment of its –‘giant 15 inch’ speaker.³⁰⁰ Although this style of language, glorifying power and volume over clarity initially seemed incongruous in a jazz magazine, the persistence of these advertisements suggested a change in the way the bass was being conceptualized. Previously the string bass had been viewed as providing discrete foundational support, an insistent but unobtrusive pulse. In contrast, the electric bass was regarded as bone-shakingly powerful, a thunderous force able to produce a recalibration of the frequency balance of performance. Instead of the strident, top-heavy brass and reed sonority of big band jazz, the electric bass dramatically increased the physically palpable low frequency range.

The fact that the maximum acoustic output of an electric bass/amplifier system is practically unlimited meant that the ability of bassists to be heard was no longer hostage to the sensitivities of their musical colleagues. Given sufficient amplification, a strong, commanding presence was assured. Conversely, the utilization of the electric bass also permitted the other members of the rhythm section freedom to exploit the full dynamic potential of their instruments. With the adoption of the Fender Rhodes electric keyboard as a substitute for the customary acoustic piano, the ever-increasing power and sophistication of guitar amplifiers and the practicality of applying microphones to individual drums, the rhythm section as a whole became empowered with an explosive presence. Perhaps the best example of the consequences of this electrification is the Tony Williams Lifetime. Far from being a jazz ensemble with rock trappings, the former Miles Davis sideman brought the full, unbridled power of a rock performance into a jazz context. Their sophomore release in 1970, *Turn It Over*, saw the inclusion of bassist Jack Bruce. Although Bruce brought with him considerable cachet as the former bassist with

²⁹⁸ H. Stith Bennett, *On Becoming a Rock Musician* (Amherst: University of Massachusetts Press 1980), p. 226.

²⁹⁹ *DownBeat* (3 February 1972), p. 39.

³⁰⁰ *DownBeat* (18 May 1967), p. 33.

Cream, Lifetime proved far too uncommercial for popular taste. What it did unleash in its short tenure was the presentation of a totally electrified virtuoso ensemble, a stentorian rhythm section of heavily distorted guitar, Hammond organ, electric bass and drums steeped in the jazz tradition in terms of technique and advanced harmonic vocabulary, with all the aggression and energy of the most bombastic rock group. Needless to say, had they employed an acoustic bass, the dynamic levels sustained by this ensemble would have been impossible to achieve.

The adoption of the amplified bass opened the floodgates to the widespread electrification of the jazz ensemble and the early 1970s witnessed a plethora of jazz acts utilizing expanded sound systems, replacing their acoustic instruments with electric substitutes and joining the technologically empowered fray. Don Ellis, for example, a former stalwart of the larger traditional jazz ensemble, had his LP *Connection* reviewed in early 1973 by Eric Vogel in *DownBeat* magazine:

The name of this record probably stems from the fact that almost all the instruments [23 pieces including amplified strings] are connected to electrical outlets – a terrific business for Con-Edison but in my opinion a step backward in comparison with the ‘pure’ *Tears of Joy*, where electricity was used only sparingly. I wish I could hear Don Ellis’ wonderful sound during an electric power failure. He has in his orchestra all the colors in the rich palette of instruments: Nine brass, eight rhythm, a string quartet and a saxophone or woodwind quartet. What wonderful sounds could have been produced here without the help of electricity! Does Don Ellis, himself a trumpet virtuoso ... really need the cheap Echoplex effects? All the other pieces are more or less distorted by the inhuman-sounding electric connections.³⁰¹

Volume was not the only parameter subject to technological expansion. For example, on sax player Eddie Harris’ album *Eddie Harris Sings the Blues* new textures and timbres were produced using electronics.³⁰² Many of these efforts served to increase the sense of isolation modern recording techniques were already conferring on the bass. The predominant use of the ‘direct injection’ technique on the electric and string basses removed them from their acoustic surroundings. The bass was further disconnected by the mixing strategies used to place the other instruments within their own separate and uncorrelated sound fields, the result of efforts to explore new sound localization techniques. The bass was left dry and prominent, both in the process of recording and in

³⁰¹ Eric Vogel, ‘Review of *Don Ellis Connection*’, *DownBeat* (1 February 1973), p. 8.

³⁰² Eddie Harris, *Eddie Harris – Sings the Blues*, Atlantic SD 1625 (1972).

its subsequent presentation on disc – non-reverberant and centrally panned. For example, the song ‘Please Let Me Go’ features Harris singing vocal lines through his heavily reverberated saxophone whilst using a wah-wah pedal and electronic amplification to modulate the tone. Meanwhile the unrealistically loud and raspy string bass occupies a totally different acoustic plane resulting in what Doyle refers to as a ‘sense of disordered space, of Dionysian abandon’.³⁰³ Realism was sacrificed in the effort to create new sonic spaces and the lack of ensemble togetherness is only compounded by the many overdubs superimposed. The liner notes to this recording reveal a plethora of instruments assigned to Harris himself, suggesting that he was eager to exploit the facility to overdub extensively in the studio. Whilst this practice had become standard in rock recordings by 1972, its utilization in a jazz context was often interpreted as an affront against the principles of group interaction so axiomatic to the jazz aesthetic. As Witkin observed:

A quality of ‘liveness’ and spontaneity had always been prized among jazz musicians and their audiences. Indeed, many would argue that spontaneity, improvisation and the uniqueness of every live performance of a piece is the sine qua non of true jazz of any kind.³⁰⁴

The fact that a large string section was also recorded after the basic tracks had been completed was another technique at odds with traditional jazz performance. Jazz appeared to be relinquishing some of its oldest performance tenets and adopting a popular music aesthetic with all the technological subterfuges its production entailed.

The desire to exploit the new recording technology and the iterative procedures necessary to do so changed the nature of the bass player’s function. Jazz bassists were gradually introduced to the production line approach to recording familiar to Motown bassists a decade earlier. Under these conditions, bass players had to anticipate the likely direction subsequent overdubs might lead the work in progress. They had to provide an appropriate foundation, whilst being aware of the possible arranging options their playing might discourage if their bass parts became overly busy. LA session bassist Joe Osborn explained:

With 16 track machines in general use today, almost all records are produced in sections, rhythm first, then vocals, then strings and horns. Most arrangers depend on their rhythm

³⁰³ Peter Doyle, *Echo and Reverb: Fabricating Space in Popular Music Recording, 1900-1960* (Middletown Connecticut: Wesleyan University Press, 2005), p. 5.

³⁰⁴ Robert W. Witkin, *Adorno on Music* (London: Routledge, 1998), p. 161.

players to create hooks, figures, turns, and even chordal variations on which the vocal, string and horn writing can be pegged. We have to keep our minds not only on how our own lines are working, but also on what the arranger can make out of them. It's a responsibility, and those guys who lay down just ordinary lines don't get asked back.³⁰⁵

These forays into new electronically mediated sonic territories were not always welcomed in the jazz press. Many contemporaneous record reviews disapproved of the blatant gimmickry through which artists attempted to imbue their work with a more modern veneer. Like mixing oil and water, the electric bass led rhythm section seemed incongruent with the stylistic proclivities of the soloists. Typical was the following evaluation:

This is not an album for the jazz connoisseur due to its funky commercialism, r&b-cum-rock concept and conspicuous excesses ... Add to this a typical jazz rock rhythm section with heavy handed and often repetitious thumping, and you have a typical, commercial jazz LP obscuring a potentially untypical, lyrically haunting guitar soloist. Properly disciplined and without electronic gimmickry and an overbearing rhythm section, [Phil] Upchurch is capable of a five-star LP.³⁰⁶

In recognition of the growing importance of the electric bass in contemporary music, *DownBeat* also introduced a new category to the international critics' poll – Electric Bass – on 15 August 1974. It is perhaps more than coincidence that they waited one month after their rebranding from *DownBeat: Jazz-Blues-Rock* to *DownBeat: the Contemporary Music Magazine* to acknowledge the electric bass. Their new title recognized the difficulty in maintaining genre distinctions. The desire to embrace a more modern ideology was also reflected in their advertising which increasingly promoted electric instruments, particularly guitars and larger amplifiers, products for the amplification of brass and woodwinds and electric basses in the hands of young, long haired everyman rock musicians fronting anonymous ensembles. This represented a departure from their previous style of commercials featuring an abundance of trumpet and trombone endorsements from respected older established jazz artists. Instead of glorifying musicians with tangible gifts as in the past, the magazine was using electronic instruments, in particular the electric bass to suggest that anyone could aspire to artistic greatness given the right technological tools. Rather than the acoustic instrument as a

³⁰⁵ Joe Osborn, cited in David Perry, 'Joe Osborn: Studio Stringer', *DownBeat* (25 May 1972), p. 11.

³⁰⁶ John McDonough, 'Review of *Phil Upchurch: Darkness, Darkness*', *DownBeat* (18 January 1973), p. 30.

means of displaying intrinsic talents, the electronic instrument was now the measure of, and pathway to success. On 27 March 1975 *DownBeat* for the first time in its history published an issue that predominantly featured bass players. It was significant in that the electric bass was finally achieving something akin to parity with its acoustic cousin in the eyes of at least one critic, Charles Suber, who introduced the issue:

This is the first time that *DownBeat* has devoted most of an issue to bass players. It's about time too, considering how the role of the bassist has grown in contemporary music. The bass has come a long way since it was a tuba. ... [T]he music grew up and Leo Fender's creation became a real instrument in the hands of serious musicians. Unlike some musicians and critics with limited vision, Clarke and Carter and their contemporaries do not see an irreconcilable conflict between creativity and electricity.³⁰⁷

Within a year a new artist would emerge who would consolidate the electric bass' position in the jazz pantheon and elevate it to new artistic heights – Jaco Pastorius.

The current chapter has identified the early 1970s as a period that experienced the confluence of many factors; technological, musical and industrial that contributed to a groundswell of change for the jazz bassist. The fallout from rock music's hegemony having settled, jazz bassists found themselves in a music world substantially transformed by practices and techniques established in the service of jazz's musical Other. The chapter following examines the work of Pastorius, a seminal figure in the evolution of the bass' role in the jazz ensemble. In as much as one person can be credited with conferring respectability on the electric bass in the jazz context, it would most certainly be Pastorius. Comparison of his work with more traditional bass performances is undertaken in order to illuminate the expanded techniques and concepts Pastorius brought to bear in his ensemble work. His role in the intensification of group interaction, the establishment of a more aggressive style, and the blurring of the demarcation between soloist and accompanist will be examined. Technological aspects of the recording process itself, which helped to magnify the sonic signature of the bass and lent it a more assertive personality, will also be investigated.

³⁰⁷ Charles Suber, 'The First Chorus', *DownBeat* (27 March 1975), p. 6.

CHAPTER SIX

Jaco Pastorius: The Electric Jazz Bass Attains Respectability (1976-1985)

Having established the extent to which the jazz bass was affected by commercial music's popularity in the 1960s and early 1970s, the study now considers the arrival of electric bassist Jaco Pastorius into the jazz arena. Popular music's influence had tempered to some degree the high art aspirations of jazz musicians and encouraged a more visceral, less contemplative relationship between jazz performers and their audiences. In embracing this new philosophy, Pastorius employed a wide range of technologies to deliver performances of substantial sonic power, the impact of which was reinforced by his extroverted stage persona. By incorporating the sonic experimentalism and outrageous stage theatrics of pop musicians such as Jimi Hendrix within the context of a consummate jazz performance, Pastorius attracted a younger, wider audience to jazz.

From a more general perspective, the period under examination in the current chapter witnessed many important technological developments in electronics, most significantly for bass players, in the field of digital audio. New media, notably Compact Discs, were introduced which could accommodate deeper and louder bass frequencies unfettered by the mechanical limitations of the vinyl format. At the same time the rapid globalization of the music business caused further expansion in musical styles, increasing the pressure on jazz bassists to develop a more comprehensive, less esoteric musical vocabulary. Meanwhile, the enthusiasm with which MIDI was received meant that the attention of bassist/composers such as Charnett Moffett and Marcus Miller was temporarily diverted from the more traditional concerns of jazz – interaction and spontaneous improvisation to composition. The efficiencies generated by MIDI implementation also saw the studio environment in which bassists performed change dramatically as generous spaces were no longer required to accommodate the large ensembles that MIDI had made redundant. In the field of music production, multi-track recording techniques continued to bring about changes in the way both the bass, and the jazz ensemble as a whole were captured in the studio. Live ensemble performances, in which everyone played simultaneously, were often replaced by sequential sessions in

which musicians contributed their parts separately – the bassist often accompanying digital drum machines and sequencers. As the increasing sophistication of these machines produced more lifelike results, bass players began to feel the specter of their own redundancy rising under an increasingly automated music production system.

By the mid 1970s the infiltration of popular black music styles and fashion into the jazz genre was considerable. Scholar Gene Santoro reflected on the effects of this commercialization:

Funk brought back into jazz an element that had been downgraded by bebop purists – popular reaction, audience participation. Funk’s rhythmic insistence was irresistible. You had to move to it. That made it approachable, accessible to anyone. Perhaps predictably, that made it distasteful to those who wanted to model jazz after European high art, with its emphasis on more distanced, ‘intellectual’ or ‘reflective’ appreciation.³⁰⁸

The electric bass, which delivered an essential component of funk’s rhythmic undercurrent, had been instrumental in bringing about this artistic reorientation. As the number of established jazz artists who embraced jazz-fusion increased, the electric bass and the funk inspired vocabulary it brought to the jazz ensemble came to be viewed with some misgivings. The electric bass was perceived as a threat to the ambitions of string bassists. It encouraged a stylistic development in jazz music, the pursuit of which was stimulated by its commercial popularity, in which sonically, the acoustic bass was clearly the inferior choice. The tables, if not turned, were certainly less secure, and the insecurity caused a schism within bass player ranks. The fact that considerable vitriol was exchanged is substantiated in an interview with electric bass player Anthony Jackson who took offence at a comment he ascribed to string bassist Ron Carter. According to Jackson: ‘He [Carter] basically said that the world was going along fine until the electric bass came along’.³⁰⁹ This led to a long running altercation between the two, often cited in contemporary music journals. Jackson’s rejoinder challenged the traditionalists by insisting that: ‘There is nothing on the upright bass that cannot be played as well or better on the bass guitar’.³¹⁰ Jazz simply needed an electric bassist sufficiently innovative to satisfy its creative impulses, while at the same time displaying a mastery of its traditional

³⁰⁸ Gene Santoro, *Highway 61 Revisited: The Tangled Roots of American Jazz, Blues, Rock, and Country Music* (New York: Oxford University Press, 2004), p. 88.

³⁰⁹ Anthony Jackson, cited in Jim Ferguson, ‘The One & Only Anthony Jackson’, *Guitar Player* (January 1986), p. 40.

³¹⁰ Anthony Jackson, cited in Jim Ferguson, ‘The One & Only Anthony Jackson’, p. 46.

heritage. In this way the revolutionary aspects could be seen as being directly linked to the historical development of jazz rather than as extrinsic stylistic elements. Technology would then be recognized as instrumental in promoting the evolution of jazz rather than disrupting its course.

Arguably, no one has advanced a more convincing argument for the value and legitimacy of the electric bass within a jazz context than Pastorius. Pastorius was a little known 25-year-old Florida electric bassist when he burst into the jazz milieu, having served an apprenticeship in the funk and r&b clubs in the southern USA. Confessing a less than exclusively jazz bias, Pastorius by his own admission was something of an eclectic. He proudly acknowledged his pop, soul and rhythm and blues interest: ‘No one convinced me if something was cool, or not cool. I was into the Beatles, the Stones, the Wailers, Sam and Dave, along with [jazz drummer] Max Roach.’³¹¹ A self-taught auteur, he attributed his eclecticism on the bass to the technological deficiencies of the record player he owned during his adolescence:

What I did, when I was a little kid, was I listened to records on a record player I won from a Rice Krispies contest. It was just a kid’s record player so I couldn’t hear the bass, only the melody. So I played what I could hear, if it was a sax or a piano or whatever.³¹²

Pastorius’ musical curiosity had led him to focus his attention on those aspects of his records that he could hear, rather than those that were more appropriate to the traditional role of a bass player. His attempts to replicate these more prominent features led to an expanded technique and a musical conception that was more inclusive than many of his bass playing contemporaries. Pastorius’ improvisational language also benefitted from the local ethnic diversity, blossoming with an eclectic mix of influences including Latin, Caribbean, soul and r&b styles, all popular in the Fort Lauderdale area. Pastorius’ early career was advanced by his association with the multi-instrumentalist Ira Sullivan and guitarist Pat Metheny, both of whom he met in Florida. The elder Sullivan recalled his aversion to the electric bass prior to meeting Pastorius:

I used to refuse to play with Fender Bass players until he came along. He had that sound and that incredible speed. He made the bass a solo instrument, which was something

³¹¹ Jaco Pastorius, cited in Neil Tesser, ‘Jaco Pastorius: The Florida Flash’, *DownBeat* (27 January 1977), p. 12.

³¹² Jaco Pastorius, cited in Ray Recchi, ‘South Florida’s Pastorius Breaks the Bass Barrier’, *Ft. Lauderdale News and Sun Sentinel* (27 November 1981), n.p.

people hadn't heard before.³¹³

Neither speed nor sound quality was sufficient to warrant the kind of accolades bestowed on Pastorius. Previously, other electric bassists had delivered similar attributes, for example, Clarke's lightning velocity and the unusual piano-like timbre associated with Swallow. In Pastorius' case, his extraordinary technique and liquid sonority were at the service of an undeniably superior musicianship, one steeped in a more comprehensive proficiency in the language of the jazz soloists. Drawing heavily on the iconic vocabulary of the bebop masters and skillfully infusing it with broader stylistic references, Pastorius succeeded in undermining the prejudice of jazz critics against his electric instrument by challenging them on their own terms. Pastorius was no stranger to the jazz world's customary bias against the electric bass, particularly the musical elitism of jazz bassists. In a statement addressing their disdain he remarked: 'Bass players tend to have a real jazz ego. Those who play the string bass don't want to consider the electric a musical instrument.'³¹⁴ He continued with a sarcastic reference to the popularly held view of the bass as the underdog of the music world, a view he was so determined to discredit:

Young rock musicians, on the other hand, chicken out because they can't learn the guitar. It's easier to play the bass – anybody can do a passable job without knowing a thing about music.

Prior to the release of his debut album, Pastorius had performed on a recording by Metheny entitled *Bright Size Life* for Manfred Eicher's ECM label.³¹⁵ The producer had been so ill disposed to using an electric bass – afraid it would undermine the legitimate 'jazz' reputation of his record label – that he had pressured Metheny to use a string bassist instead. As Bob Moses, the drummer on the session recalled:

Before we made that record Metheny had already gotten some pressure from ECM not to use Jaco. I don't think Manfred Eicher even knew who Jaco was, plus he had some biases against electric bass. His attitude was, 'This is jazz. It has to be acoustic bass.' They even tried a lengthy rehearsal with [string bassist] Dave Holland. I said to him, 'Man you are crazy if you don't use Jaco. With all due respect to Dave Holland, Jaco blows him away! Your music is twice as alive with this cat. And it's great that it's electric bass. It makes the music 20 times more exciting, more grooving. Holland had a much more intellectual

³¹³ Ira Sullivan, cited in Bill Milkowski, *Jaco: The Extraordinary and Tragic Life of Jaco Pastorius 'The World's Greatest Bass Player'* (San Francisco: Backbeat Books, 1995), p. 53.

³¹⁴ Jaco Pastorius, cited in Jack Zink, 'Jaco's Forecast is Sunny' (1977).

<http://www.jacopastorius.com/features/forecast.html> (accessed 25 March 2011).

³¹⁵ Pat Metheny, *Bright Size Life*, ECM 1073 (1976).

approach. He's fine – he's a great bass player, no doubt. But with him it was just more precious, more of a museum kind of thing. Jaco's thing was thrilling, exciting. It had that fresh kind of vibe like Prince or something. It went beyond a musical thing – it was the energy he brought to it.³¹⁶

Moses' comment comparing the raw energy produced by the two bassists betrays a change in attitude that was occurring among many younger players eager to revitalize jazz. His allusion to the rock icon Prince also underscores the degree to which associations with the world of popular music had infiltrated jazz discourse. A more exuberant 'rock 'n' roll' attitude was becoming increasingly desirable with younger jazz musicians. As the study has established, Holland was a consummate bassist with a broad range of experiences at the cutting edge of jazz and jazz-rock fusion. Yet the level of energy his instrument could generate was found wanting when compared to Pastorius' Fender, a situation that reflected both an ideological and a technological rift. The personal preference of the drummer for the electric bass arguably had as much to do with the effect it had on his own playing as on the desirability and marketability of a new sound within the guitar jazz trio context. The electric bass served to empower Moses' percussion with a heightened dynamism. His aggressive drumming on this recording is in stark contrast with much of his previous work such as *Bittersuite in the Ozone* recorded two years previously with a string bassist.³¹⁷

It was within this climate of jazz sectarianism – 'straight ahead' acoustic jazz versus electric 'jazz-fusion' – that the music world was introduced to Pastorius when his eponymous debut album was released in 1976.³¹⁸ The strategically placed first track was a rendition of Charlie Parker's interpretation of Miles Davis' bebop classic 'Donna Lee', accompanied only by conga player Don Alias.³¹⁹ This particular performance became a cause célèbre within the jazz community. It gave notice that a new virtuoso had arrived, someone who challenged the jazz purists by demonstrating the potential for the fretless

³¹⁶ Bob Moses, cited in Bill Milkowski, *Jaco*, p. 66.

³¹⁷ Bob Moses, *Bittersuite in the Ozone*, Mozown MZ001 (1973).

³¹⁸ Jaco Pastorius, *Jaco Pastorius*, Epic EK 33949 (1976).

³¹⁹ There is considerable disagreement over the authorship of this tune, Parker and Davis both claim to have written it. More than just a case of one musician's word against another – this situation reflects the power of recording technology to cloud these issues when one artist's interpretation becomes the definitive version. See Miles Davis, *The Autobiography of Miles Davis with Quincy Troupe* (New York: Touchstone, 1999), p. 103.

electric bass to deliver performances that satisfied all the hallmarks of superlative jazz. His interpretation of ‘Donna Lee’, along with other equally impressive selections on the album, was sufficient to establish his artistic credentials and excite the jazz press. Typical of the reaction is the following from critic Neil Tesser:

The corresponding hurricane of music that has been unleashed on a hardly expectant world goes by the unlikely name of Jaco Pastorius ... [who] at once began to re-define the conception and connotations of the electric bass guitar. Jaco’s playing is nothing less than revolutionary. In fact, he has almost single-handedly opened a heretofore unimagined world of resources for the instrument, forging an ultra suede sound that at once encompasses the tonal characteristics and phrasing idiosyncrasies of amplified guitar and bass fiddle.³²⁰

The following transcription from a BBC interview in which Pastorius draws attention to his rendition of the bebop classic, suggests that he was fully aware of his strategy for mitigating jazz prejudice against the electric bass:

You gotta check it out! You got to! Listen to the first tune, the first cut on the album, and you’re dead. You will not believe it! This is my claim to fame. I play ‘Donna Lee’, y’know? Charlie Parker’s ‘Donna Lee’, just bass and conga drums and look out! You never heard nothin’ like this, just beware! (smiles).³²¹

In a later interview, Pastorius explicitly acknowledged his debt to Parker: ‘[Parker] is definitely a big influence on me; he definitely can play some great lines. I really like the way Charlie Parker plays.’³²² Pastorius’ performance of ‘Donna Lee’ represents the point where the jazz and rock/funk/soul axes finally intersected. With exceptional fretless intonation and a wide range of expressive articulations including harmonics, double and triple-stop chords, Pastorius set a lofty precedent for electric jazz bassists to follow. A detailed study of the phrases played reveals indebtedness to Charlie Parker and the preceding thirty years of bebop development, rather than any radically new harmonic approach. The truly revolutionary aspect of the recording, however, lies in the fact that such fluid and graceful lines were played on an instrument that had until then been considered incapable of producing them. (See Appendix A, CD track 34).

³²⁰ Neil Tesser, ‘Jaco Pastorius: The Florida Flash’, p. 12.

³²¹ Jaco Pastorius, cited in Clive Williamson, ‘Jaco Pastorius: Bass Legend’ transcription of BBC interview (1978). http://www.symbiosis-music.com/jaco_pastorius.html (accessed 25 March 2011).

³²² Jaco Pastorius, cited in Steve Rosen, ‘Portrait of Jaco’, *International Musician and Recording World* (August 1978), p. 24. <http://www.jacopastorius.com/features/portrait.html> (accessed 25 March 2011).

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Figure 6.1 Excerpt from Jaco Pastorius' performance of 'Donna Lee'. Jaco Pastorius, *Jaco Pastorius*, Epic EK 33949 (1976). [CD Track 34].

With this performance, Pastorius attracted the sort of attention from jazz purists that had eluded other virtuoso electric bass players who had preceded him, such as Clarke and Swallow. Clarke for his part, had introduced a powerfully aggressive electric bass style to jazz-fusion, but he was less successful in integrating his funk and soul influences into more traditional jazz idioms. Rather than synthesizing these influences into a coherent style he juxtaposed them, simply switching to his string bass when more traditional swing was required. In common with bassist Jack Bruce, Clarke's approach was arguably to extend the repertoire of the jazz bass by highlighting the electric bass' non-jazz ancestry, by exploiting those characteristics that differentiated its sonority and stylistic vocabulary from the more traditional string bass. As Clarke recalled:

I started playing it [the electric bass] more like a guitar, because it looked like a guitar to me. I was holding it this way, horizontally, and I thought, 'Wow, this is a guitar – well, it's a bass guitar, but I'll play it like a guitar.'³²³

On the other side of the jazz-fusion divide were electric bass players Michael Henderson and Paul Jackson, mentioned earlier. Both of these players brought a sophisticated funk sensibility to their ensembles, yet failed to display any engagement with traditional jazz language. In comparison to these two approaches, Pastorius, by grounding his style firmly in the footsteps of the bebop masters, assured himself of an impeccable foundation on which to develop a revolutionary new amalgam. In the words of bassist Christian McBride: 'It was a combination of his love of r&b bass lines and the subtlety of jazz. Jaco had those bubbly percolating lines, but he made them harmonically sophisticated.'³²⁴

Having attained a high degree of musical proficiency, largely by being unaware of the bass' ostensible limitations, Pastorius sought to differentiate himself in other areas. He began by modifying the intrinsic qualities of his instrument. He removed its frets, a strategy which helped distinguish its sound from the conventional electric bass and enabled it to share the pitch expressivity of the string bass. With this alteration he could control the bloom of his Fender's notes and exploit pitch gestures, glissandi and slurs previously impractical on the stock instrument. His early recordings confounded

³²³ Stanley Clarke, cited in Tom Mulhern, *Bass Heroes*, p. 6.

³²⁴ Christian McBride, cited in Dan Ouellette, 'Christian McBride on Jaco Pastorius', *DownBeat* (July 2004), p. 88.

reviewers with his assimilation of the expressive nuances of the acoustic bass and indeed even the experienced ear of keyboardist Joe Zawinul was deceived by Pastorius' playing. As Zawinul reported: '[I asked him] "Hey kid, do you play electric bass too?" He got such a warm, rich sound on that Fender fretless, I thought he was playing an upright bass.'³²⁵ Twenty years previously, in 1956, no one would have confused the tone of Pastorius' fretless Fender with that of a gut stringed acoustic instrument. However, the sound of the string bass had undergone its own metamorphosis as increasing levels of technology were applied to its recording and amplification. What made Pastorius' sound so convincingly like an acoustic bass was not just similarities in their fretless intonation, it was its resemblance to the newly electronically mediated sonority that had become fashionable with most string bassists by the mid 1970s.

Pastorius exploited the technological power of his electric instrument/amplifier combination, the expressiveness of the Fender's fretless neck and the nuances afforded by the application of newly minted electronic devices such as digital delay lines and flangers to produce a debut album of remarkable diversity. It featured a variety of styles, each highlighting previously untapped resources available only through the utilization of the electric bass. One such innovation was his revolutionary use of harmonics, most effectively demonstrated on his composition 'Portrait of Tracy'. While possible to some extent on the string bass, the extended reach involved renders many of his chordal voicings impractical on the larger instrument. His debut album also showcased his skills as a composer across a number of genres that further documented the adaptability of his fretless Fender. The electronic effects processing used on the album to augment the palette of sounds available to Pastorius, showed him to be fully aware of the electric bass' more interesting possibilities. The microtonal pitch discrepancies intrinsic to performance on the fretless Fender proved particularly effective in creating engagingly complex new timbres when processed. In this way his innovations extended back to tradition be-bop while reaching for unexplored sonic vistas. In short the album, in particular the opening track, represented what Uri Gonzalez referred to as 'the quintessential bass players'

³²⁵ Joe Zawinul, cited in Bill Milkowski, *Jaco*, p. 73.

manifesto.³²⁶

- Case Study

The following case study involves two recordings demonstrating how the technological modifications applied to the bass, specifically the transition from upright to electric, impacted on the jazz ensemble as a whole. It compares two versions of an Ornette Coleman piece entitled 'Round Trip' recorded by different ensembles eight years apart. The first features Jimmy Garrison on acoustic bass, the second Pastorius on fretless electric bass. The recording from 1968 features Garrison and drummer Elvin Jones, both ex-members of the seminal progressive jazz outfit, the John Coltrane Quartet. Here they are performing in a piano-less quartet with Coleman and Dewey Redman on saxophones.³²⁷ The transcription of the bass part during the first two minutes of the performance gave rise to the following analytical overview. (See Appendix A, CD track 35).

The 1968 version opens with a very loose, ensemble unison rendition of the thirteen bar tune in which the string bass attempts, rather unconvincingly, to play the melody with the saxophones. The imprecision can be interpreted in a number of ways. First, there may have been a genuine disregard for conventional accuracy in this freer collective context on the part of the group and/or producer. Second, Garrison had had insufficient preparation, or, third, the inaccuracy of the bass was not felt important enough to warrant a retake because its contribution would not be sufficiently distinguishable on late 1960s playback equipment. Garrison would have been quite familiar with this musical context, having just spent the last few years as the bass player in the Coltrane quartet until the leader's demise in 1967. Garrison's other recordings at the time attest to his considerable technical prowess. Once drums at bar 14 establish the four-to-the-bar swing feel, the bass provides a diatonic underpinning almost exclusively in quarter notes. His lines are modally inspired, based on G dorian with the exception of an ascending chromatic passage in bars 39 until 51, and short pedal point sections from bars 58 until 65, and from bars 82 until 85. Garrison uses predictable stepwise motion and sequences built around

³²⁶ Uri Gonzalez, 'What Does Donna Lee Mean? An Analysis of the Construction of Meaning in Music' (Uppsala University, 2004), <http://urimusic.awardspace.com/> (accessed 25 March 2011).

³²⁷ Ornette Coleman, *New York Is Now*, Blue Note LP BST 84287 (1968).

third intervals to provide a steady pulse over which the saxophonist and drummer interact freely. As the intensity of the drumming increases toward the later sections, the acoustic bass is effectively buried in the mix. Whilst his presence can still be felt, his notes become indistinct. Listening to this recording in the mid 1960s, one would have been hard pressed to distinguish anything other than a propulsive, indistinct thump in the bass registers. Recalling the circumstances of his involvement with the group in a later interview, Garrison recounted Coleman's desire for the bass to be featured more strongly:

One thing Ornette wanted was for the bass to be part of the front line. Normally when you see a band, the bass is in the back, and I took it for granted that that was the role; but when I would go to listen to Ornette, Charlie Haden was always up front. When I joined the group, that's where I stood – right between Ornette and the trumpet. You know it kind of changes you psychologically because you start thinking you're a part of what's going on melodically; consequently, you have to think another way.³²⁸

Whilst visually this prominence was easily achieved in performance, sonically its limited volume hamstrung the string bass. Technology was as yet incapable of empowering the acoustic bass to the same extent as its electric counterpart. In 1968 the electric Fender Bass was potentially far more effective in presenting the musical results of 'thinking in another way', even though an artist with the requisite vision had yet to materialize.

³²⁸ Jimmy Garrison, cited in Herb Nolan, 'Jimmy Garrison: Bassist in the Frontline', *DownBeat* (6 June 1974), p. 18.

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Figure 6.2 An excerpt of the bass line to Ornette Coleman, 'Round Trip', from *New York Is Now*, Blue Note LP BST 84287 (1968), performed on string bass by Jimmy Garrison. [CD Track 35].

Eight years later guitarist Metheny recorded his version with Pastorius on fretless electric bass and Bob Moses on drums.³²⁹ (See Appendix A, CD track 36). As in the earlier recording, the walking bass style is used to establish the tempo and rhythmic orientation of the piece. The difference on this occasion is it is used as a point of departure. Here Pastorius exploits the anticipation of a seamless, unrelenting quarter note pulse to disturb and defy our expectations. Sonically, the engineer has afforded the electric bass as much space as the guitar. The melody is played in unison, but instead of being relegated to the rear of the stereo landscape, the bass is panned hard left, the guitar hard right with the drums in the center.³³⁰ This effectively separates the instruments and intensifies the illusion of a conversation between three equals. Though the bass has not relinquished entirely its responsibility for establishing the harmony, its role has been significantly expanded. The quarter note lines are interrupted by many interjections and syncopations (bars 33-37), which either disrupt the forward momentum or arrest it entirely. Double stops (bars 32, 59 and 76), slurs (bars 32,101) and glissandos (bars 63-64 and 67) are employed to break up the underlying flow, imbuing the music with a temporary floating quality. Rather than disturbing the improvisational flights of the guitarist, Pastorius' use of these gestures invites the other two musicians to respond accordingly, and they seem to delight in the interaction.

³²⁹ Pat Metheny, *Bright Size Life*, ECM 1073 (1976).

³³⁰ The extreme stereo panning is a practice whose precedent lies with rock recordings of the late 1960s, such as Cream, *Wheels of Fire*, RSO 827 578-2 (1968).

The jazz language has also undergone transformation in the bass as a direct result of the employment of new technologies. Passages incorporating consecutive fifth and sixth intervals abound. These are particularly difficult to perform on an acoustic bass, especially crossing registers into and out of thumb position. They sit perfectly comfortably on the smaller electric, as do some of the more guitaristic double stop phrases. The double string unisons in bars 125-126 are practically impossible to perform on the string bass but add another dimension to Pastorius' range of expression. The tone of the bass is clear and commanding, regardless of the variations in the dynamic level of the ensemble. Each note is articulated with finesse and authority. Whilst other electric bassists such as Bruce chose to increase the instrument's dynamic level by articulating hard, adding an aggressive edge to the performance, Pastorius adopted a more sophisticated approach. He preferred to play with a firm but more controlled touch and, by taking advantage of the ample headroom provided by his amplification, he raised the level of the softer articulations that lent color and personality to his playing. Pastorius explained:

It's all in the hands. In order to get that sound, you have to know exactly where to touch the strings, exactly how much pressure to apply. You have to learn to feel it. And then [the bass] just sings.³³¹

By the combination of exceptional bass playing and creative technical production displayed on this recording, the musicians and engineering personnel transformed the conventional soloist/accompanist relationship into a more convincing and satisfying three-way discourse. Technology was instrumental in transforming the trio into a truly equal partnership. Whilst this style of expanded interaction had its precedent in the Bill Evans Trio recordings of the early 1960s featuring LaFaro, it was, the study contends, the application of the electric fretless bass with its more articulate tone, ease of playing and unlimited volume that enabled bass players of Pastorius' talent to challenge the soloists they were ostensibly accompanying to new heights and extend the boundaries of jazz music while increasing its dynamic range.

A comparison can usefully be drawn between this trio performance and Cream's recording of 'Crossroads', demonstrating the degree to which jazz recordings were being

³³¹ Jaco Pastorius, cited in Neil Tesser, 'Jaco Pastorius: The Florida Flash', p. 13.

influenced by seminal rock performances.³³² Significantly, it is in the presentation style of these recordings that the two performances display the most obvious resemblance. The separation of the individual instruments across the stereo panorama, particularly the highly amplified electric bass and guitar located at opposite sides, suggest a non-hierarchical relationship between them was envisioned, comparable to that achieved in Metheny's *Bright Size Life*. Likewise, their familial tonal quality is similar enough to draw attention to their musical interactivity. If an acoustic bass had been used in either case, or a mono mix, the dissimilarity between their respective timbres and envelopes and their identical spatial positioning may have rendered this relationship less obvious and re-established a more subservient role to the bass.

³³² Cream, 'Crossroads', *Wheels of Fire*, RSO 827 578-2 (1968).

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Figure 6.3 Excerpt of the bass line to Ornette Coleman's 'Round Trip', performed on electric bass by Jaco Pastorius in 1975. Pat Metheny, *Bright Size Life*, ECM 1073 (1976). [CD Track 36].

As digital audio processing devices became more widely available during the late 1970s, Pastorius began to expand his use of electronics in concert appearances. Among the technological processes he incorporated was the looping function of early digital delay processors. Pastorius was one of the first bass players to introduce these devices and exploit their primitive real-time record/playback capabilities. By performing a short passage and recording it into the device he was subsequently able to trigger its endless repeat. This procedure allowed him to solo over the device's accompaniment.³³³ The necessarily short loop (due to the limited amount of memory in these early devices) provided an easily recognizable formal element, in much the same way as Miles Davis' bass ostinati had underpinned his ensemble's harmonic excursions on *Bitches Brew*. Pastorius' interaction with the machine provided a compelling solo feature for the bassist, establishing a new relationship between the musician performing in the moment and his reproduced Other. The resulting 'schizophonia', to use R. Murray Schafer's term, found Pastorius reacting to his own recordings in a heightened state of self-awareness.³³⁴

³³³ Jaco Pastorius, *Honestly: (Solo Live)*, Jazzpoint Records (1986) contains a collection of these performances recorded the year before his death in 1987.

³³⁴ Schafer's notion of 'schizophonia' refers to the split between the original sound and its electroacoustical transmission or reproduction. R. Murray Schafer, *The New Soundscape: A Handbook for the Modern Music Teacher* (Canada: BMI, 1969), p. 43.

Pastorius was both sound producer and receiver, a technologically enabled form of what Peter Doyle refers to as ‘self-audiencing’.³³⁵ In this way Pastorius introduced a process akin to multi-track studio overdubbing procedures into a live performance environment. Rather than addressing the audience directly as he would have done customarily in a traditional solo performance, Pastorius’ attentions were redirected toward his virtual presence. The focus of the audience was drawn away from the solo performer and toward the interaction between man and machine – toward the technology itself.

Another of Pastorius’ innovations was his employment of multiple amplifiers in a spaced array, which exaggerated the kinetic intensity of the flanging and chorusing effects he often used. In comparison to the conventional procedure in which time-based effects are mixed with an instrument’s direct signal and channeled to a single amplifier, Pastorius preferred to keep the original and processed signals isolated, directing them to two separate Acoustic brand 360 amplifiers.³³⁶ Taking advantage of the physical distance between the two speaker cabinets greatly intensified the perception of the chorusing effect, while allowing the bassist to monitor his clean, unprocessed signal from a vantage point in front of the untreated cabinet. As Pastorius explained:

A couple of times on records I’ve played the bass twice; I play it and then I play it again and get it to sound like two basses. On stage sometimes I want to get that sound so I’ve had a little digital delay hooked up. You have the echo through one amp and then have the straight amp. I like to use that when I’m soloing because it really puts a nice ambience on.³³⁷

This procedure represented more than just the desire to replicate performances achieved through overdubbing multiple tracks in the recording studio. The delay lines and multiple amplifiers had the effect of enlarging the sound field occupied by the bass. They created a sound larger than life – a sound, the aural perception of which was at odds with its visual localization. Technology had the power to both disrupt and reconfigure natural spatializations, by producing a sonority that was physically unbridled and kinetic, a disembodied sound that defied the visual impression that it should be emanating from a single source – namely the direction of the musician’s body. The changing delay times

³³⁵ Peter Doyle, *Echo and Reverb*, p. 24.

³³⁶ Steve Rosen, ‘Portrait of Jaco’ (1978) includes details of his amplification set-up, <http://www.jacopastorius.com/features/portrait.html> (accessed 26 March 2011).

³³⁷ Jaco Pastorius, cited in Steve Rosen, ‘Portrait of Jaco’.

involved in the use of a flanging device cause pitch fluctuations to be superimposed onto those intrinsic to performance on a fretless bass, adding greatly to the sound's complexity and subtlety. They provide combinations of what Charles Keil calls 'participatory discrepancies': microtonal and micro temporal 'out of tune' and 'out of time-ness'.³³⁸ Another benefit in using a spaced array in this manner is more pragmatic. Under normal circumstances when a low frequency signal is delayed by small amounts and fed back upon itself, as is the case with a single amplifier arrangement, phase cancellations occur which can greatly reduce the strength of the bass' low tones, compromising the foundation of the music. This side-effect is far less noticeable with a spaced array in which the physical distance between out of phase drivers produces a far more complex sonority that retains more of its fundamental frequencies.

A closer examination of Pastorius' instrument and amplifier configuration reveals the extent to which technology was responsible for helping him achieve his personal sound and conversely, how far the sound he achieved deviated from the equipment manufacturer's own conception. According to Pastorius: 'I turn the bass on the amp all the way up because I only use the back pick-up on the bass. I never use the bass pick-up on the front so I have to compensate quite a bit with the amp'.³³⁹ The front pickup, set closer to the neck, produces the deeper sonority of the two due to its position nearer the middle of the string. This is an area in which the string exhibits wider vibrational excursion, producing stronger lower order harmonics. In comparison, the pickup closer to the bridge – the one Pastorius employed exclusively – produces a tone richer in the higher harmonics at the expense of the fundamental frequencies. These upper partials are further emphasized by his penchant for plucking the strings very close to the bridge with his fingers, a technique which produces a mid-range heavy 'honking' tonal characteristic, one that reveals more details of articulation perhaps, but which lacks sonic heft and weight. To compensate, Pastorius then advanced the bass tone control on his amplifier to maximum in order to increase the lower frequency balance. In this way technology facilitated a greater degree of tonal customization than that possible merely by physically adjusting the performer's technique. Logically, both the manufacturers of the bass and the

³³⁸ Charles Keil, 'Participatory Discrepancies and the Power of Music', *Cultural Anthropology*, 2. 3 (August 1987), p. 275.

³³⁹ Jaco Pastorius, cited in Steve Rosen, 'Portrait of Jaco'.

amplifier voiced their respective equipment to produce what they believed to be the optimal sound when their controls were set to a nominal middle position. The sound that Pastorius desired was only possible by effectively subverting these standard settings.

Significantly, Pastorius' acceptance in the jazz world appears to have been enhanced by his preference for less than state of the art equipment. Indeed, the way Pastorius represented himself and his instrument in the jazz press leads one to suspect that he did not wish to seem technologically dependent. He often appeared to disguise his reliance on technology by hiding it behind a smokescreen of disingenuousness. This smokescreen was often rendered less opaque by his display of knowledge incommensurate with a technological neophyte. For example, when asked by Bill Milkowski: 'What is it about the old Fenders that you like so much?' Pastorius responded:

The old Fenders really have a punch, and not just a treble punch, either. More like clear lower-mids; plus, they're quick. You can play that fretless real fast. And I feel comfortable with these. I've had lots of people make basses for me, and I own different sorts of them. I've probably owned over a hundred in my life, but none of them sound like these old ones.³⁴⁰

The specificity of his description reveals a man familiar with the orthodoxies of the tone-shaping equalizer module with its discrete parametric controls, the type found on modern-day recording consoles. Such descriptions would unlikely have been forthcoming from older musicians like Miles Davis. It reveals the degree to which bass players such as Pastorius were becoming more technologically astute in comparison with the previous generation. Compare for instance Holland's inarticulate and inaccurate explanation of the functioning of his string bass pick-up, cited previously.

Pastorius often extolled the virtues of his classic 1962 Fender Jazz Bass. However, the degree to which he modified it both ergonomically, in terms of his removal of its frets, pickguard and bridge cover, and electronically, by adopting an unorthodox pickup configuration, raises questions about the exact reasons for his preference. Apart from displaying his discriminating ear – the ability to identify specific frequency bands, Pastorius' response, cited above, serves another function. It implies that since 1960 when his bass model was first manufactured, twenty-four years of technological evolution had

³⁴⁰ Jaco Pastorius, cited in Bill Milkowski, 'Jaco Pastorius', *Guitar Player* (August 1984), p. 61.

been unable to supply a superior instrument in spite of his vast experience with these later models. This effectively distanced Pastorius from the mass of electric musicians widely held to be reliant on the use of modern technology to hide their musical deficiencies. By being seen to be so superior on an un-extraordinary and unsophisticated instrument – the kind anyone could acquire – his abilities were perceived as non-technologically dependent, as being intrinsic. His preference for a vintage bass effectively shrouded the importance of his instrument’s modifications to the achievement of his artistic ends. Pastorius’ use of a distressed Fender Jazz Bass became an iconic branding image in much the same way as had McCartney’s use of the Hofner ‘Beatle bass’. Referring to this journeyman image of Pastorius, Milkowski asked: ‘Practically a trademark of your onstage appearance is a well-worn Fender Jazz Bass. Why do you continue to play the same old beat-up instrument?’ Pastorius responded:

Because it sounds good. My fretless, which is probably what I’m most noted for, is a ’62 Jazz Bass that I got in Margate, Florida, for \$90 with a case. I got it when I was 19, so I’ve had it for about 13 years now. My fretted bass is even older – it’s a ’60 Fender Jazz Bass that I got for \$90 from a saxophone player in Florida named Ben Champion.³⁴¹

The comments following Pastorius’ initial, common sense response suggest another agenda. His attention to the details of his instrument’s acquisition, far from creating merely an interesting anecdote may have served another function. The who, where and at what ridiculously low price specifics generate a mystique about his instruments, a mystique he was only too happy to encourage. Consider the following quote relating to the final disposition of a favorite bass following Pastorius’ untimely death:

Like the fate of a mythic hero’s mighty weapon, the original condition and final resting place of the world’s most famous fretless [1962 Fender Jazz, a.k.a. the ‘Bass of Doom,’ SN 64437] are shrouded in mystery. Its legendary tone was well documented through every era of Jaco’s career, and he himself told several versions of the tale.³⁴²

Pastorius’ constant reference to the age of his Fenders and their battered, road-worn appearance, presents as a foil to the statements of other bassists such as Clarke, who advocated the adoption of space age technologies. Pastorius’ glorification of his Fender’s vintage, however, was contradicted and undermined by his liberal use of technology in

³⁴¹ Jaco Pastorius, cited in Bill Milkowski, ‘Jaco Pastorius’, *Guitar Player* (August 1984), p. 60.

³⁴² E. E. Bradman and Scott Shiraki, ‘Jaco’s Gear Through the Years’, *BassPlayer* (January 2002) <http://www.bassplayer.com/story.aspx?id=4124&terms=acoustic+360> (accessed 7 July 2011).

modifying its tone, changes necessary to achieve his signature sound. It was however perfectly understandable as a strategy inspired by the desire to generate for his Fender some of the veneration given to older acoustic instruments. Any access to the prestige accorded vintage acoustic basses would be welcomed in a jazz world so indisposed to the electric bass' acceptance. Pastorius continued:

You see one of the main reasons I use these same old basses is because I've worked so hard and so long on the road – forever. I mean, I know everything about these basses of mine, every bit of chicken grease and every drop of sweat that's ever been on them. These things are beat up, all right, but I hardly put any scars on them at all. Man, I used to do one-and-a-half flips off my amps and land on them – looked like I was killing them. But I really never touched them. It was just an illusion – all entertainment. That's what I am: I'm an entertainer.³⁴³

Pastorius' explanation, full of romance and pathos, is an attempt to personalize his mass produced instrument. As he waxes nostalgically about the things they have experienced together 'on the road' the technological nature of the instrument seems to slip away and a human quality, an interpersonal relationship is established. This personification is intensified as he attempts to absolve himself from the responsibility of causing them any damage. In the end, the very notion that was to cause such discord in jazz circles in subsequent years – the dilution of the jazz aesthetic by aspects of 'show-business' – was revealed as he announced: 'I'm an entertainer'. Interestingly the brand of acoustic bass used by string bass players seems to engender far less interest in the jazz world. Their perceived unique nature, the fact that they are often hand made and essentially one of a kind makes the modifications such as Pastorius undertook in order to personalize them unnecessary.

In Pastorius' hands the bass was moving away from its traditional foundational role – one suited for the conservative, dark sound produced by most instrument and amplifier manufacturers. It was entering a new phase that called for a more distinct sonority, one that would enhance a sophisticated soloistic style of bass playing. As a result of the popularity of Pastorius, manufacturers began adapting their amplifier designs to facilitate these more radical bass tones. The old ideal of a straight line with gain – the classic hi-fi amplifier mantra – was replaced with new design targets characterized by increasingly modified voicings. SWR, for example, introduced their 'Marcus Miller' endorsed range,

³⁴³ Jaco Pastorius, cited in Bill Milkowski, 'Jaco Pastorius', *Guitar Player* (August 1984), p. 61.

which featured a ‘U’ shaped equalization characteristic that scooped out the middle and accentuated the low and high frequencies. Coupled with speaker cabinets featuring titanium high frequency drivers, these amplification products were an aggressive alternative to previous designs. Larry Hartke, president of Hartke Systems, a company involved with designing amplifiers for Pastorius in the mid 1980s, recalled Pastorius’ pioneering spirit in a statement that also underlined the success with which he managed to publicly downplay his technological interest:

Everybody knows Jaco was an innovator, but what I think most people don’t know is that he was right there at the very forefront, leading the way, when all the new technology was changing the sound of bass. People know him for his Acoustic Amps and Fender basses, and of course they should. But what goes pretty much unknown is that he had embraced the new technology before anyone. That was the way he was, always moving forward. We just never got to see where he was going to take it.³⁴⁴

Technology also played a large part in allowing Pastorius to exhibit a more dynamic and engaging stage presence than conventional jazz performances customarily warranted. The simple, durable design of his electric bass afforded a degree of physicality that would have been impossible with a more delicate acoustic bass. His concert showcases often involved the abusive manhandling of his Fender bass, delivered at excessive volume. His violent gestures included jumping on the instrument while it lay on the stage or whipping it with his strap. By incorporating these theatrical strategies, Pastorius attracted the attention of an audience inured to such behavior at rock’n’roll concerts, aligning himself (and by extension the jazz group with which he performed) with volatile rock and funk artists such as Hendrix and James Brown. The association was made even more palpable by liberally quoting their music during his performances. In time they became concert clichés that maintained high audience attendance figures.

These less cerebral presentations, with their allusions to aspects of performance art, helped improve market share for jazz in the 1970s and 1980s. According to Warner Brothers record executive Ricky Schultz, the record sales of the group Weather Report doubled during Pastorius’ involvement. As Schultz explained:

[Pastorius] was special, he was creative, he was innovative, he was making news. He definitely seemed to be the element that had pushed Weather Report to a new level of public awareness. [He] made music that was pretty marketable and had a broad appeal and

³⁴⁴ Larry Hartke, <http://www.jacopastorius.com/features/hartke.html> (accessed 26 January 2011).

could cross over to a rock market while still having jazz credibility.³⁴⁵

Pastorius' exploitation of technology was not limited to areas involving live performance. His knowledge of studio procedures enabled him to achieve a higher degree of autonomy in his recordings. By taking advantage of a broad range of technological developments occurring in the field of music production, Pastorius was able to assume greater control of his musical output. In this regard he was typical of a growing number of younger artists who, as a result of their increasing utilization of electronics in performances, were becoming more comfortable with adopting an expanded role in the recording studio control room. This self-sufficiency was in sharp contrast to the preceding generation of musicians such as Miles Davis who, as the study has demonstrated, knew or cared little for the exigencies of recording, and relied on technicians for all facets of their productions subsequent to their actual performance. Zawinul, himself no studio novice, praised his bassist's command of the studio:

Jaco had an especially good working knowledge of the mixing board. I knew the music inside out, that was my strength, but Jaco knew a lot about adding reverb to the instruments and getting a good drum sound. And his work at the board gave such a huge presence to his bass sound.³⁴⁶

Pastorius' technological expertise resulted in a product that was more representative of his artistic vision. His hands-on approach permitted direct access to the musical material without the intercession of an engineering intermediary, while his understanding of what was possible in the studio empowered him to exploit its full potential. For example, it allowed him to indulge his multi-instrumental talents, enabling the contribution of his own drum and keyboard tracks. By experimenting and manipulating the audio at will, Pastorius was able to use the technological tools at his disposal to generate ideas that helped inspire musical goals impossible to attain by more conventional production methods. By the time he commenced work on his second solo recording, *Word Of Mouth*, in August 1980, Pastorius had begun taking full advantage of the overdubbing capabilities of multi-track recording.³⁴⁷ He used this facility to produce largely self-performed works often in the comfort of his own home. This reflected a

³⁴⁵ Ricky Schultz, cited in Bill Milkowski, *Jaco*, p. 98.

³⁴⁶ Joe Zawinul, cited in Bill Milkowski, *Jaco*, p. 79.

³⁴⁷ Jaco Pastorius, *Word of Mouth*, Warner Bros. Records K 56 897 (1981).

general tendency of many 1980s jazz artists to abandon the more traditional live interactive techniques of spontaneously created ensemble jazz. The former procedures were replaced with less orthodox compositional methods which resulted in recordings that owed little to live performance. Without the constraints and anxieties imposed by expensive studio time and budget conscious recording company executives, the luxury of home recording greatly expanded the capabilities of jazz artists to develop new sounds and textures. The increased palette of instrumental colors, however, was achieved at the expense of immediacy and ensemble interaction. The illusion that individual tracks had been performed simultaneously was still sought, even though the two-way interaction was being replaced by pre-meditated musical gestures that reinforced the impression of interaction even though none had occurred. Bill Milkowski related the details of a typical tune's production:

The tune 'Crisis' is a good example of just how involved this project got. Jaco's bass line was recorded in Florida. In New York, he had Jack DeJohnette, Michael Brecker, Herbie Hancock, Don Alias, and Bobby Thomas do overdubs. Each musician came in alone and played while listening to only the bass track. Back in Florida, Jaco had Erskine overdub a fast beat similar to 'Teen Town'. He then put the tape away. A few months later, he flew to L.A. and had Wayne Shorter and Hubert Laws overdub their parts, again while listening to just the bass line.³⁴⁸

This new methodology, highly dependent on piecemeal processes had its musical drawbacks, a fact not lost on Pastorius. For someone experienced in reacting instinctively and immediately to stimulations received in ensemble performance, it did not take long for him to explore other creative options. In an attempt to reintroduce some of the excitement and challenges involved in live performance, and to reduce the degree of pre-determinism attendant in this step by step procedure, Pastorius developed innovative ways of working in the studio. For example, by drawing on practices traditionally used in other musical genres such as reggae and dub, he transferred his interactive impulses from his bass to the mixing board:

I did it in a way similar to Jamaican dub music. For instance, while Wayne was playing I would sit at the control board and maybe slide a little of Herbie's piano into Wayne's headphones for a few bars, just so Wayne would react to it. It was a pretty strange way of recording, but it worked really well and I will definitely try something like it again.³⁴⁹

³⁴⁸ Bill Milkowski, *Jaco*, p. 99.

³⁴⁹ Jaco Pastorius, cited in Bill Milkowski, *Jaco*, p. 99.

In a procedure similar to that employed by the Beatles twelve years previously on tracks such as ‘Hello Goodbye’ and ‘I am The Walrus’, Pastorius’ basic tracks no longer necessarily included his Fender bass as a foundation.³⁵⁰ Whereas the Beatles had been obliged to work in this fragmented manner by the unavailability of sufficient tracks on the four and eight track recorders of the late 1960s, Pastorius endorsed the method as a means of inspiring new musical approaches. Larkin’s ‘foundation stone’ had at last become ‘the cornice’. According to Milkowski:

For the album’s orchestral version of ‘Three Views of a Secret’, Jaco recorded the basic tracks in New York with himself on piano, Jack DeJohnette on drums, and Toots Thielemans on harmonica. In L.A. he overdubbed strings, brass, woodwinds, voices, and his bass. (7 string players were overdubbed 9 times to produce a 63-piece string section).³⁵¹

These ‘track at a time’ recording procedures and the extensive use of MIDI driven sequenced parts in live performance both reflect the incursion of automated musical components into the jazz performance arena. As the extent of their application and frequency of employment increased, however, the advantages they offered had to be considered in light of the changes they precipitated in the nature of jazz performance itself, particularly the constraints they imposed on the jazz bassist. The quest for new and more complex textures began to severely limit Pastorius’ improvisational freedom within Weather Report. Eventually, he became disenchanted with the ensemble’s reliance on technology and parted ways. Drummer Peter Erskine offered the following explanation:

[By 1982] I think Jaco was frustrated having to play all these written out bass parts that Joe was composing for this new thing he was conceptualizing. And it drove Jaco nuts that Joe was doubling the bass with synthesizer bass. He *really* hated that. Jaco called it ‘technological overkill’.³⁵²

Pastorius and Clarke both were responsible for raising standards of technical proficiency and magnifying the sonic impact of the electric bass in the 1970s. In both cases technology played an important role in helping them achieve a singular presence in the marketplace. Pastorius, as discussed previously, while partial to a vintage Fender bass and eight year old amplifier design, employed them in unorthodox configurations, subverting their technologies to achieve a revolutionary sound. Clarke, on the other hand,

³⁵⁰ The Beatles, *Magical Mystery Tour*, Parlophone SMMTSMMT1 (1967).

³⁵¹ Bill Milkowski, *Jaco*, p. 100.

³⁵² Peter Erskine, cited in Bill Milkowski, *Jaco*, p. 110.

embraced space age designs and favored brand new, cutting edge instruments by Alembic and others in combination with sophisticated amplification and signal processing equipment. Technology was gradually assuming a greater role in personalizing their sound, in helping each artist to develop a recognizable and distinguishing sonic ‘brand’.

Previously with the string bass, the player’s tone had been chiefly associated with his or her physicality, the ability to ‘dig-in’ or play with aggressive force. Once the Fender was introduced, the amplifier assumed much of this responsibility, but it was a sound determined largely by manufacturers who sought to emulate the traditional string bass. Eventually, bass players such as Pastorius began to devise their own adaptations to achieve the sound they wanted to hear. At first these actions were subtractive; the removal of the designer’s accessories such as bridge covers and string mutes to attain more sustained notes, and the substitution of bright round-wound strings for duller sounding flat-wounds. These modifications reflected a desire to cease emulating the sound of the string bass. Gradually, as the technology became more sophisticated, the changes grew more additive; conventional amplifier tone circuits were adjusted to extreme settings, outboard effects were incorporated, distortion and compressor pedals used. In short, technology under the control of the performer was adopted and, with its use, the range of bass sounds began to expand. This desire to apply the latest technological innovations to their instruments led to a general explosion of customization products that entered the marketplace in the mid 1970s. Brass bridges by Leo Quan, replacement pickups by Bartolini and other bass parts were all targeted to satisfy the impulse bass players felt to individualize their sound. As bassist Chuck Rainey remarked:

Everybody that has a Fender, it’s modified. I mean everybody. The pickups are modified, with more coil. You cannot go to a store and buy a bass without fixing the bridge. And for so many years they’d put this little thumb guard under the neck, not realizing that no one plays with their thumb. So players take the thumb guard off and put it on top; then they take the plate off, because that’s just about the best place to hit the strings.³⁵³

As this compulsion gained traction, players and manufacturers began pursuing more unconventional alternatives. Innovative designs and unusual materials such as carbon graphite, exotic woods and even aluminum saw the explosion of new boutique instrument manufacturers who swelled the ranks of the established companies such as Fender and

³⁵³ Chuck Rainey, cited in Tom Mulhern, ‘Bass Heroes’, p. 167.

Gibson. Steinberger and Kubicki, for example, both offered radical new instruments each delivering unique tonal characteristics. The introduction of synthesizer bass as an adjunct to more traditional instruments influenced the scope and range of the accompanying role of the bassist. Reggie Hamilton recalled how the synthesizer bass made the purchase of a five string bass mandatory for the Los Angeles session bassist in 1987: ‘That was right after the synth-bass thing really took off. Back then you were looked down upon if you didn’t have a 5-string.’³⁵⁴ The extra low B string was necessary to enable bass players to access increasingly wide ranging bass tessitura. The expansion of the palette of timbres available from the electric bass also led many players to further explorations in the realm of synthesizer technology. For example, in 1986 Roland introduced the GR-77B analog synthesizer that was used with a bass guitar/controller. Tracking difficulties with low frequency signals however, limited the instrument’s success.

With the expanding influence of a more global musical awareness, jazz ensembles augmented their repertoire with materials drawn from many disparate sources including South American salsa, Jamaican reggae and World music in general. As a result, the role of the bass player became more demanding as the requisite number of styles to be mastered within the jazz ensemble context grew. Conventional notions of bass guitar sonority and technique were increasingly challenged as these influences brought with them their own bass playing orthodoxies. As bassists became increasingly adept at soloing for example, the darker generic tone of the 1960s Fender Precision bass gave way to a more distinctive brighter tone, one that better projected the nuances and articulations of these more demanding playing styles. Six string bass guitar designs were eventually introduced which further expanded the harmonic and melodic possibilities, permitting new levels of self-accompaniment. The extension to the range of the electric bass mandated significant research and development into speaker and amplifier design in order to ensure its effective reproduction. Customized rigs boasting bi and tri-amplified multi-driver speaker systems superseded the traditional Ampeg B-15 and Fender Bassman amplifiers, stalwarts of the 1950s and 1960s.

The 1980s also witnessed the introduction of technologies extrinsic to the bass that

³⁵⁴ Reggie Hamilton, cited in Ed Friedland, ‘Backing the Superstars’, *Bass Player* (November 1998), p. 20.

allowed its deep sonority to be effortlessly captured and more dramatically presented. In 1983 the Compact Disc format was launched. Unlike the vinyl LP, the Compact Disc suffered no significant technical issues with low frequencies since its player's laser required no direct mechanical contact in order to interpret the recorded signal. Combined with the generous improvement in dynamic range, this new full-bodied medium allowed high bass levels to be recorded with impunity. According to engineer Bob Katz:

The bass response of a good digital recording, compared to analog tape, goes down to the center of the earth, flat and clean. When artists want deep, strong bass, they're not afraid to do it. It was routine in almost all LPs to roll off below 100 Hz even, certainly below 60Hz.³⁵⁵

Not surprisingly, this capability influenced what was considered an appropriate level of bass on recordings. The extended low frequency range also changed what was considered practical to play on the bass, not just in terms of performance technique but also in respect to what was sonically reproducible. The sudden downward extension of bass parts to low B (30.9Hz) in the mid 1980s may be partly explained by the desire to exploit the new medium's capabilities.

Extrinsic factors that affected bass players also included those concerned with the production of jazz music, not just its reproduction. The period under review saw the introduction and proliferation of the MIDI protocol launched in 1983. It was developed as a means of communication between synthesizers from different manufacturers and initially was used primarily to achieve more interesting and complex timbres. In time, however, it became increasingly employed in other areas of jazz production where synchronization was involved. For example, the locking of MIDI sequencers to multi-track tape via SMPTE or other more proprietary time-codes became commonplace.³⁵⁶ This technique resulted in the ability to augment the number of parts in an arrangement without having to commit them to the finite number of valuable tape tracks available on standard 24 track recorders. The expansion of possible instrumental voices encouraged arrangements to become more complex and multi-layered. Just as the trombone player in the 1930s found his musical freedom within the three part polyphony severely constricted

³⁵⁵ Bob Katz, personal email to author 7 January 2012.

³⁵⁶ David M. Huber and Robert E. Runstein, *Modern Recording Techniques* (Oxford: Focal Press, 2005), provide a full explanation of the Musical Instrument Digital Interface protocol (p. 302), and the Society of Motion Picture and Television Engineers (SMPTE) time code (p. 372).

once technology permitted the addition of a dedicated bass player and more instruments, the 1980s jazz bassist became similarly restricted by the added complexity encouraged by MIDI arrangements.

Technological developments naturally had the effect of generating interest in those aspects of musical production that were most conspicuously transformed by their application. Musical texture, for example, traditionally required an increase in instrumental resources in order to produce more complex sonorities. As the application of MIDI technology became more universal, the search for new and innovative sounds became an end in itself. Bassist Robert Hurst for example, ruminated on the possible implementations:

I'd love to play another instrument that functions as a bass. I'm learning about MIDI applications to acoustic bass so I can access steel drum sounds, bass marimba sounds – all those bass tones. The rumba bass has *baaad* bass sound. I'd love to walk that.³⁵⁷

Drum machines and other forms of automated sequencer driven musical parts, common fare in pop productions, gradually were assimilated into jazz performances. Even artists with a long traditional pedigree such as Wayne Shorter and Herbie Hancock eagerly incorporated and exploited the sounds and techniques they made available. While these machines contributed repeatability, indefatigability, unwavering tempo and pre-determinism, their less desirable attributes included complete non-reactiveness, a limited range of articulation and rhythmic inflexibility. Ironically it was often the responsibility of the jazz bassist to provide a humanizing element to counteract their robotic nature. The ability of bassists to provide a precise level of imprecision in their playing was seen as advantageous in re-energizing productions with some of the micro-temporal fluctuations normally associated with human performance. The degree of deviation was small to be sure, lest the bassist be accused of insufficient rhythmic acuity. Bassist Steve Rodby (from the Pat Metheny Group) described his awareness of both human and mechanical issues in late 1987:

We're playing with a lot of sequences now. I've had years of experience playing with a click doing studio work, but it's a whole other thing, playing this music with sequencers. Both Paul [Wertico, the drummer] and I aspire to making it feel very loose. You can't really cheat – you can't speed up a whole lot and slow down at the cadences – but we push and pull enough on it that we give it that jazz factor. We're in there jamming, even though

³⁵⁷ Robert Hurst, cited in Dave Helland, 'Riffs', *DownBeat* (March 1992), p. 14.

we're playing with these robots.³⁵⁸

Whilst the immutable click did impose significant restrictions on the natural ebb and flow of the music, it nevertheless permitted considerable freedom in the manner in which the bass player could phrase notes between the clicks. Because it was used solely as a basis for synchronization and not heard as part of the musical fabric, the click track was far less restrictive than the drum machine. Rather than providing an inflexible quarter note click, the quantized drum machine performance was often locked to a eighth or sixteenth note grid. The rigidity of this arrangement, coupled with the severely restricted dynamic and timbral variances of these early devices lent an unnatural stiffness to the rhythmic texture. The constant exposure to the accompaniment of machines challenged bass players to refine their skills as they struggled to reconcile their natural, organic sense of rhythm with the machine's empirical accuracy.

Although drummers had been the first musicians to experience the threat of redundancy as digital drum machines caught the imagination of jazz artists, developments in MIDI sequencing programs soon jeopardized other instrumentalists. Both electric and string bassists, whose position as the bedrock of the jazz and commercial music ensemble had remained impervious to the changing tastes of popular music since the days of the tuba, soon found themselves competing with the synthesizer bass. Bassist Michael Manring relates the uneasiness the digital revolution of the 1980s caused:

Many of us were afraid we might be losing our gigs to machines within a few years. Drummers were especially hard hit by what is, in hindsight, perhaps an over-enthusiastic fervor for the steely perfection of drum-machine rhythms. As hits started climbing the charts with synth-bass grooves replacing the suddenly seeming quaintness of the real deal, we bass players figured we might be next on the list.³⁵⁹

As the use of synthesizer bass triggered from sequencers quickly became established, bass players often found themselves reduced to a secondary role, commissioned to soften the machines' mechanical articulations. Bassist Nathan East recalled:

A lot of times people will want to double the synth bass, or have some [string] pops in there, just to get a little more human feel, just to stray away from the machine. Chances are if there's a synth bass there's a drum machine and synthesizers, and people want to add

³⁵⁸ Steve Rodby, cited in Jim Roberts, 'Jazz Bassist: Steve Rodby', *Guitar Player* (December 1987), p. 112.

³⁵⁹ Michael Manring, cited in Chris Jisi, 'Bassnotes', *Bass Player* (15 November 2008), p. 17.

some kind of human element to it. It's usually beat-the-synth-bass time.³⁶⁰

The security of the bassist was threatened as mechanization and automation began to challenge their previously exclusive domain. East confirmed the widespread assimilation of digital techniques:

I do feel fortunate to be working so much, because since I've heard so much synth bass lately I know there are a lot of records being made with it and that's money out of somebody's pocket, work that could have been done [by a bass player].³⁶¹

Often the time-consuming nature of these MIDI processes caused bass players to question their effectiveness. Bassists' direct engagement with the music was often diminished by the counter-intuitive procedures involved in the manipulation of the technologies. Missing was the social element that often produced superior results. As bassist/producer Bernie Edwards complained:

Now I like playing with people. I don't like to sit around and play with machines all day long. I don't want to spend 3 hours setting up a Synclavier and have it break down. I don't want to spend 4 hours getting a pattern on the drum machine. Tell the drummer and he'll play it. You know, you look over there at the drummer smiling, or the piano player, and they're just groovin' on each other. It's one of the problems with all the techno toys – what we're getting is a lot of records that have perfect time, no fluctuations in tempo, everything perfect because all the machines are locked in. It's sterile to me.³⁶²

By the late 1980s bass players such as Charnett Moffett were producing recordings that involved extensive overdubbing and automated performance. These recordings, impossible to reproduce live without the addition of auxiliary instrumentalists, were largely motivated by a search for new textural sonorities. As Moffett moved between string bass, electric five-string bass and a host of synthesizers and drum modules, a new modernist aesthetic was in evidence, a desire to produce music – of its time – using whatever technology was available. As he explained:

I don't want to be limited as a bass player. I'm here trying to help to keep this [the jazz bass player] tradition going. But I am also influenced by the music of today, because I am *here* today. That's why my album *Net Man* is a diverse album.³⁶³

³⁶⁰ Nathan East, cited in Robin Tolleson, 'Profile: Nathan East', *DownBeat* (February 1987), p. 47.

³⁶¹ Nathan East, cited in Robin Tolleson, 'Profile: Nathan East', p. 47.

³⁶² Bernard Edwards, cited in Gene Santoro, 'Hit Man on the Production Line', *DownBeat* (June 1987), p. 20.

³⁶³ Charnett Moffett, cited in Jeff Leveson, 'Charnett Moffett: Interview', *DownBeat* (April 1988), p. 27.

While the sentiment was certainly noble, the results were often less than well received. The mechanization involved in recordings from this period was hardly transparent. Much of the technology was quite unsophisticated by today's standards. However, the impetus to utilize it was powerful, and one that the artists themselves took some pains to acknowledge, as if the employment of these tools somehow validated the results. Technology was bestowing on jazz artists intoxicating new freedoms. In their enthusiasm to exercise their new powers they were frequently blinded to their own limitations and the often-sterilizing contribution of their arsenal of electronic music devices. The ability to perform and record their works unaided, to take sole responsibility for all facets of production, revealed the dangers of self-sufficiency. While empowering musicians such as Moffett to indulge their artistic fancy, it also removed the moderating influence of fellow musicians and collaborators. For example, Moffett's 1988 release *Beauty Within* on the seminal jazz label Blue Note, elicited the following review from critic Scott Yanow:³⁶⁴

Charnett Moffett is a virtuosic bassist with very impressive chops but this release is largely a waste. The dense electronic ensembles never seem to develop beyond the melody statements and the sidemen fail to display any originality. Since Charnett wrote all six of the compositions and produced the date himself, the blame for the disappointing fluff rests with the leader.³⁶⁵

Neither was the infatuation with new technology limited to the younger generation of jazz artists. Seminal saxophonist Shorter was only one of many such stalwarts who succumbed to its allure. For example, *Phantom Navigator*, received the following lambasting despite the presence of bassist John Patitucci:³⁶⁶

After almost twenty years of preoccupation with Brazilian percussion, Shorter discovered drum programming, and the result is dreadful, with obvious, clanging 4/4 beats on almost every track. Meanwhile, the harmonic foundation is laid down by bland sustained synth chords, and too-fast tempos give the record an annoying perky quality.³⁶⁷

In short, the period under review was one in which the promise of technology far outweighed what it could deliver. It took some years for the promises to be more

³⁶⁴ Charnett Moffett, *Beauty Within*, Blue Note B1 91650 (1988).

³⁶⁵ Scott Yanow, 'Review of Charnett Moffett, *Beauty Within*', <http://www.allmusic.com/album/beauty-within-r144119> (accessed 16 July 2011).

³⁶⁶ Wayne Shorter, *Phantom Navigator*, Columbia C 40373, (1984).

³⁶⁷ D.B. Wilson, 'Wilson and Alroy's Record Reviews', <http://www.warr.org/shorter.html> (accessed 15 July 2011).

completely fulfilled.

The electric bass in the hands of Pastorius and others had issued a convincing challenge to the exclusivity of the acoustic bass in jazz. As the use of electric instruments grew less controversial during the 1980s, the period witnessed an explosion of technology in jazz productions. With the introduction of MIDI and its rapid assimilation into jazz, this technology was effectively foregrounded. Musicians, such as Moffett, adopted a style of production that featured explorations into sound design and textural generation possible only through the employment of the latest technology. In music of the 1980s, as in that decade's popular films such as George Lucas' *Star Wars* sequels, the concepts of stylistic integrity, thematic development, and ensemble interaction as with their filmic equivalents; character development, story plot and interpersonal dynamics, often took a backseat to the deployment of audio and visual effects. Technology became the star. As recordings became vehicles for overt technological display, conventional jazz techniques and playing styles sat increasingly uncomfortably in their new aural surroundings. Many of these works were targeted to the burgeoning 'adult contemporary' radio stations that began to dominate the jazz airwaves. Their flagrant commercial aspirations only served to erode the integrity of these jazz musicians as their work came to display 'increasing conformity and compliance to the aesthetic dictates of mass culture'.³⁶⁸

The flirtation of jazz artists with synthesizers and drum machines eventually became less intense under critical censure. In the following decade, challenged by a neo-classicist movement discussed in the next chapter, jazz returned to a more conventional balance between real instrumental playing and machine-driven performance. This is not to say that technology was used any less, in fact it arguably became more pervasive as increasingly recordings were committed to computer-based programs such as Pro Tools rather than to tape. Its use, however, became decidedly less conspicuous. Instead of robotic rhythm tracks and expressionless synthesizer sounds, technology was applied inwardly to the manipulation of the minutiae of the recordings. The bass was at the forefront of developments in this period as its sound and role underwent an intense period

³⁶⁸ Ronald M. Radano, 'Review of Francis Davis, *In the Moment: Jazz in the 1980s*' in *American Music* Vol. 8, No. 2 (University of Illinois Press: Summer, 1990), pp. 239. <http://www.jstor.org/stable/3051955> (accessed 14 July 2011).

of reassessment. It served as a lightning rod for much heated invective, often along racial lines, as bassists tried to reconcile the expanded demands on their stylistic and technical abilities and the need to re-establish what it meant to be a bass player pursuing an historically Afro-American jazz tradition.

CHAPTER SEVEN

The Young Lions and the Technological Backlash (1980-1990)

By the 1980s, as demonstrated in the previous chapter, the stylistic boundaries of jazz had expanded immensely, obliging bassists to master an increasing variety of performance techniques on both electric and acoustic bass. These techniques, which included aspects of rock and funk performance, were assimilated onto a traditional framework established by a lineage of earlier bass masters. With the worldwide expansion of the music industry and growing interest in music from all corners of the globe, more esoteric styles also introduced their own particular bass requirements. Meanwhile, bassists could not afford to ignore the increasingly sophisticated technical demands soloing on the more traditional acoustic bass mandated. The stylistic cross pollinations referred to above and the technologies that accompanied them were not universally welcomed. The technological mediation of the bass was a particularly powerful site of controversy. In some quarters the need to re-establish the sovereignty of the traditional jazz aesthetic, and the unamplified string bass within it, was seen as essential to the music's survival. The current chapter examines the conflict this reactionism generated and the part the bass played in the reconciliation of the opposing viewpoints.

The emergence in the mid 1980s of a neo-traditionalist movement spearheaded by trumpeter Wynton Marsalis triggered a controversial reassessment of the bass within the jazz ensemble. While the specifics of this movement and its political and ideological implications are beyond the scope of this study, a brief examination is necessary in order to understand its polarizing effect on jazz bass players. The 'Young Lions', as its musicians collectively came to be known, were thought to be engaged in a struggle over what Scott DeVeaux described as 'the possession of [jazz] history, and the legitimacy that it confers'.³⁶⁹ According to Francis Davis, the Young Lions charged themselves with

³⁶⁹ Scott DeVeaux, cited in Stuart Nicholson, *Is Jazz Dead: Or Has It Moved to a New Address?* (New York: Routledge 2005), p. 54.

honoring the glories of the past through ‘atavistic celebrations of swing and bop’.³⁷⁰ Marsalis, its figurehead, was a charismatic leader who attained the status of a cultural icon. He attracted unprecedented media attention, philanthropic awards, congressional citations and considerable government funding for his work as a performer and educator. Appointed adviser and eventually director of the prestigious Jazz at Lincoln Center program in New York City, Marsalis was granted considerable power under that establishment’s well-financed auspices and cultural authority. Due to his impressive musical credentials, combative opinions and high media profile, he enjoyed a formidable lobbying presence. Many critics, however, questioned whether the added status that jazz came to receive as a result of Marsalis’ widely publicized efforts to institutionalize it, exacted too high a price. These questions led to intense public debate. Paul Erickson characterized the acrimonious conflicts that followed Marsalis’ appointment to the Center as being fueled by ‘charges of racism, age discrimination, artistic close-mindedness, and elitism’.³⁷¹

Essentially Marsalis was seen to be leading a crusade bent on purifying jazz. He appeared determined to remove popular music’s influences, re-establishing jazz as a dignified Afro-American art form. According to Iverson, the Young Lions manifesto gave the ‘*appearance ... of a unified disdain for jazz music that wasn’t swinging, virtuosic, and informed only by the great black jazz musicians comfortable with chord changes*’.³⁷² Critics believed that the movement pursued a black revisionist agenda which sought to de-emphasize the contributions of other races and reaffirm the importance of the blues and swing as the essential ingredients of jazz. Marsalis’ comments, in his role as the dominant spokesman in Ken Burns’ documentary *Jazz*, were seen as evidence of this historical and racial bias.³⁷³ His opinions were framed with carefully chosen videos and anecdotes that emphasized the importance of black innovators such as Louis Armstrong and Charlie Parker. Whilst historical preeminence of these and other seminal

³⁷⁰ Francis Davis, *In the Moment: Jazz in the 1980s* (Oxford: Oxford University Press, 1986), pp. xiv and 258.

³⁷¹ Paul Erickson, ‘Black and White, Black and Blue: The Controversy over the Jazz Series at Lincoln Center’, *Jazz and American Culture 2*, Summer 1997, cited in Nicholson, *Is Jazz Dead*, p. 54.

³⁷² Ethan Iverson, *Do the Math*, <http://dothemath.typepad.com/dtm/1-young-lion-jazz-of-the-1980s.html>. (Iverson’s italics).

³⁷³ Ken Burns, *Jazz*.

Afro-Americans is incontrovertible, the project's Afro-centricity was criticized for largely understating the value of musical developments occurring after 1960, particularly those of white jazz artists. These developments coincided with the adoption of technologies such as the electric bass and amplification generally, which encouraged cross genre fertilizations. As Stuart Nicholson suggested:

Marsalis' heroic role was immortalized in the lengthy Ken Burns documentary *Jazz: A History of America's Music* (2001). Burns, who devoted entire episodes to just two and three years of early jazz history, suggesting the music was more about the past than the present, famously sped through almost a quarter of jazz history, from the 1960s to Marsalis' emergence in the early 1980s, in *one* program thereby failing to acknowledge that anything of significance had happened in the interim.³⁷⁴

Marsalis' definition of jazz was discriminatory; he defined it by what it was not, rather than what it was – and what it was not was the funk inspired, electric bass underpinned fusion that he felt was masquerading as jazz. He remarked:

When I first came to New York in 1979, everybody was talking about fusion. Everyone was saying jazz was dead because no young black musicians wanted to play it anymore ... people were bullshitting, playing fusion and saying it was jazz. All these critics were following Miles Davis, he was playing rock music – they didn't realize the absurdity of their position.³⁷⁵

Underlying his frequent diatribes was a disdain for the way mass cultural influences had infected jazz with the trappings of lowbrow entertainment. These influences were felt to demean and debase the integrity of jazz music, an art form whose proud, somber history the Young Lions were eager to proselytize. They were intent on re-establishing the high art tradition that jazz had enjoyed mid-century. According to Marsalis:

I do not entertain and I will not entertain. I'm a musician. I'm serious about what I'm doing. I will not play funk. Funk musicians don't pay the kind of dues that jazz musicians pay to the music.³⁷⁶

His neo-traditionalist views railed against the diluting influence of popular music in the performance of traditional jazz forms, in particular the expanding employment of electric instruments. In light of technology's widespread and conspicuous adoption into the production and presentation of jazz since the 1970s, this revisionist challenge was guaranteed to spark heated debate. Electric bass players in particular took exception to

³⁷⁴ Stuart Nicholson, *Is Jazz Dead?*, p. 27.

³⁷⁵ Wynton Marsalis, cited in Stuart Nicholson, *Is Jazz Dead?*, p. 27.

³⁷⁶ Wynton Marsalis, cited in Mitchell Seidel, 'Profile: Wynton Marsalis', *DownBeat* (January 1982), p. 52.

this ideology, even comparing it to fascism. For example Anthony Jackson declared:

Why, then, do we find Mr. Marsalis and his congress of wannabes extolling the virtues of ‘pure’ jazz taking upon themselves the twin mantles of protector and rejuvenator? We are, in my opinion, witnessing no less than a modern cultural parallel to Germany in the 1930s, with a megalomaniacal ‘arbiter of good taste’ undertaking a redefinition and reclassification of a country’s expressive potential, ostensibly to weed out contaminating influences.³⁷⁷

Nowhere is the neo-traditionalist rhetoric more effusive than with the Young Lions’ attitude toward the bass. In short, they held no truck with the electric bass within what they considered a ‘real’ jazz context. As for the string bass, the sound they glorified was old school, gut stringed and unamplified in the manner of the seminal Afro-American bassists of the 1940s and 1950s. As bassist Ben Wolfe enthused:

I prefer the sound of every one of my favorite bass players – Paul Chambers, Ray Brown, Oscar Pettiford – without the amp. I want to experience the problems that my heroes experienced – the strings breaking, intonation trouble, a drummer playing too loud.³⁷⁸

The movement saw the way in which the sonority of the string bass had been technologically transformed during the preceding two decades as symptomatic of much that was wrong with modern jazz. They believed that the role and function of the string bass had been undermined by a technologically inspired pursuit of speed and facility that reduced its ability to deliver an authentic swing pulse. Drummer Jeff ‘Tain’ Watts, a member of Marsalis’ own ensemble, echoed his leader’s opinion when he commented on the performance of (non-black) bassist Eddie Gomez in a contemporary album by Bennie Wallace:

The bass was from the cello style of bass playing that’s increasingly in abundance. I couldn’t get with that at all. It’s bass based on an amp sound as opposed to getting the wood to vibrate by pulling the strings. A good bass sound comes from the body of the instrument rather than the fingerboard and the strings – Ray Brown as opposed to Eddie Gomez, the leading proponent of the cello school these days.³⁷⁹

The Young Lions advocated a return to a more vigorous, forceful approach to the string bass, one that produced an aggressively swinging undercurrent unmediated by technology. This vision of the heroic, unamplified bassist powering the ensemble with

³⁷⁷ Anthony Jackson, cited in Stuart Nicholson, *Is Jazz Dead?*, p. 48.

³⁷⁸ Ben Wolfe, cited in Stephen A. Smith, ‘Interview with Ben Wolfe’, <http://www.allaboutjazz.com/iviews/bwolfe.htm> (accessed 16 July 2011).

³⁷⁹ Jeff ‘Tain’ Watts, cited in Michael Bourne, ‘Blindfold Test’, *DownBeat* (February 1987), p. 46.

sheer determination and muscle was as idealistic as it was unrealistic. Evidently, it appealed to bassist Christian McBride. His enthusiasm was short-lived however, once his struggle to be heard beside powerhouse drummers Ralph Peterson and ‘Tain’ Watts took its toll. McBride developed severe tendonitis in both arms. Later, after accepting the futility of performing unaided in these settings, McBride reflected on the sonic results of his unamplified approach: ‘How many times have you heard an acoustic bassist play so hard you hear more string against fingerboard than actual note?’³⁸⁰

In their enthusiasm to emulate the methods of their idols, many of these younger bass players failed to consider the extent to which the circumstances of jazz performance had changed since their predecessors took to the stage thirty years previously. Technology had significantly increased the presence of the bass on modern recordings. Amplified basses, both electric and traditional, had changed the younger jazz audience’s expectation of how loud a well-balanced bass within the ensemble should be. Modern audiences had been exposed to rock music, with its reliance on a more prominent bass underpinning. Jazz had moved on. Marsalis, however, was unsympathetic. In an interview in which he praised his ensemble’s bassist Bob Hurst, Marsalis criticized what he saw as a decline in bass playing:

Bob Hurst brings an intelligence of such classic depth to his bass playing that it seems very rare, given how far the quality of acoustic bass playing has sunk over the past 20 years. Bob Hurst knows that Mingus, Paul Chambers, Ray Brown, and Ron Carter helped leave a legacy that only a fool would ignore.³⁸¹

Had the quality of bass playing really declined over the preceding twenty years or did his inflammatory comments hide another agenda? At first glance his statement does in fact seem reactionary. All of the aforementioned black string bass players had established themselves in the 1950s and 1960s as seminal figures. What had transpired in the interim was a surge in technological mediation that had been exploited by a younger generation of bassists including Clarke, Gomez and Vitous. These bassists each displayed a markedly superior facility in comparison to their elders, a facility that they were not averse to flaunting. Technology had significantly fortified their musical presence and

³⁸⁰ Christian McBride, cited in Chris Jisi, ‘Jazz Funk: Christian McBride and Chris Wood Double Their Pleasure’, *BassPlayer* (October 1998), p. 39.

³⁸¹ Wynton Marsalis, cited in Stanley Crouch, ‘Wynton Marsalis: 1987’, *DownBeat* (November 1987), p. 17.

made their instruments easier to play. These features encouraged the bassists to interact more fully within the ensemble, sometimes at the expense of a more foundational role. As veteran bassist Ray Brown remarked:

The era that we have now – it’s largely a bunch of young players who can really fly up and down that thing; I mean, they can really play it fast – and clean. And it’s good to hear. A guy who’s twenty-five years old, at fifteen he started out with amplifiers, so he didn’t have to bother specifically with getting a sound – he never had a problem of being heard. Not having to jump that hurdle – It prevents them from working out that part of playing which involves projection. I’m sure that if I had grown up in the last ten or fifteen years, I wouldn’t have that [my] sound – it wouldn’t be necessary for me to have it. Somebody will be interviewed about some old record, and they’ll say: ‘Well, he didn’t have very much technique.’ But there’s a reason – he would have wasted it, anyway, if he’d had it.³⁸²

An obsession with dexterity had precipitated a lowering of string action, the substitution of steel strings for gut and the use of an amplifier, which in turn precluded the sonority past masters such as Brown and Chambers had achieved. One suspects that what Marsalis lamented was a change in conception of the role of the bassist, rather than a reduction in virtuosity. Bassists had been enticed by technology to pursue a role at odds with that promoted by the recorded efforts of the seminal black bass players of the previous decades.

Eventually, however, this preoccupation seemed to reach an impasse. In the 1990s it appeared that many musicians were beginning to question the value of the emancipated string bass. At issue was whether the guitar-like speed and dexterity that technology facilitated were worth the compromises they inevitably brought to the tone of the instrument. The experiments in tone color and complex sonority generation that MIDI encouraged had re-awakened an appreciation of the subtleties and nuances already present in the timbre of acoustic instruments, such as the string bass. Pianist Don Pullen, for example, waxed nostalgically about the importance of Mingus’ sound to his music in earlier decades:

His bass had that certain sound. Mingus didn’t play many notes, but I heard him play some fantastically beautiful solos – short, maybe just a chorus or two – that were deep. His sound had a lot to do with his music. When anybody else plays it, unless Mingus’ sound is there, it’s going to lose something.³⁸³

³⁸² Ray Brown, cited in Les Tomkins, ‘Ray Brown: Fusions and Phases in Jazz’ (1980) http://www.jazzprofessional.com/interviews/Ray%20Brown_3.htm (accessed 31 July 2011).

³⁸³ Don Pullen, cited in Howard Mandel, *Future Jazz*, p. 27.

Pullen's remarks prioritized profundity rather than dexterity, a quality the acquisition of which could not be accelerated through technological means. He was referring to maturity, a technologically neutral attribute that in the end only experience would grant. By insisting on the removal of technological contrivances from the string bass, the Young Lions were effectively limiting the level of virtuosity the bassist could comfortably achieve. Bassists such as Hurst were obliged to re-focus their efforts toward more traditional aspirations, inline with those of their unamplified 1950s predecessors.

The attitude of the Young Lions was equally reactionary concerning the techniques for recording the string bass in the studio. They endorsed a return to an older method that avoided the electronic pick-up. Iverson suggested that the movement was rebelling against what it believed to be an unacceptable change of sonority occurring in the jazz ensemble, which was particularly evident on recordings. This transformation he attributed to a gradual increase in electrification since the 1970s, an impulse to modernization that was ill conceived. In Iverson's view, electrification, though it was applied universally, was particularly destructive to the bass' traditional sound:

Part of the problem was simply the way jazz was recorded in the 1970s. I don't know why these are often the worst sounding records in the music's history, but they usually are. The instruments themselves were occasionally at fault, especially in the rhythm section, due to an injection of rock and fusion electricity that wasn't really understood by straight-ahead jazz musicians. The offenses of the piano and drums in the 1970s were minor compared to the bass.³⁸⁴

At issue was not technology itself, since its application in other musical genres had produced superlative results. Rather, it was technology's excessive use in a style whose successful rendering was not well served by its indiscriminate employment. The pulse of the unamplified string bass was transformed into something entirely different by the electronic pick-up and amplifier resulting in a louder and brighter but less propulsive rhythm section underpinning. Marsalis' brother Delfeayo, who produced many of the mid-1980s records by the Young Lions, reverted to a microphone-only recording approach in an attempt to re-establish a natural string bass sound. His determination to do so was prominently displayed on his recordings with a slogan that underscored the Young Lions' preoccupation with the bass: 'To obtain more wood sound from the bass, this

³⁸⁴ Ethan Iverson, *Do The Math*.

album was recorded without usage of the dreaded bass direct'.³⁸⁵

In opposition to the notions held by Marsalis were those of bass players who felt that in order for jazz to continue evolving, it was essential that it reflect contemporary times, including those technological and musical developments that had transpired since the bebop era. Principal among their emblems of modernity was the electric bass. Players such as Marcus Miller, Victor Bailey and Charnett Moffett were typical of a large contingent of bassists who embraced this attitude. Their music often exploited MIDI to the full, indulging a variety of modern recording techniques to produce works that showcased new sonorities in imaginative textural combinations. In light of the cutting edge nature of their work, it was only natural that some missteps would occur, productions that in hindsight might have been better served by more traditional approaches, or which should have been abandoned altogether. These bass players were easy targets for Marsalis and he did not hesitate in attacking their modernist aspirations and denigrating their music. Marsalis believed the failure of 'fusion' musicians, as he called them, to produce what he considered any worthwhile art was the result of their infatuation with technology. He suggested technology took the emphasis away from the music and placed it squarely on the machinery used to produce it. In the following remarks, Marsalis considered the penchant of fusion musicians to inundate their productions with as many real and virtual instruments as possible as an indictment of their artistic integrity and depth of knowledge:

What I hear in fusion is the same thing I see in videos – there is no aesthetic parallel to the level of technology at work. If those whose music is promoted through videos had one-tenth of the information about music that those who make videos have about film, we might hear something truly innovative. That is one of the reasons why in interviews those musicians choose to focus on the equipment they're using, not the music they're making.³⁸⁶

Marsalis may well have been criticizing Marcus Miller's work with Miles Davis. The bassist had expanded his role as the foundation of the ensemble to the extreme. As a result of the powers conferred through his exploitation of technology, he had assumed responsibility for the entire musical edifice. Miller seemed to be somewhat ambivalent about the results of his own work on Davis' album *Tutu*, a recording on which he played

³⁸⁵ Ethan Iverson, *Do The Math*.

³⁸⁶ Wynton Marsalis, cited in Stanley Crouch, 'Wynton Marsalis: 1987', p. 19.

nearly all the instruments himself.³⁸⁷ Seemingly, in an effort to pre-empt the criticism he appeared convinced would come, he explained rather apologetically:

It's a different kind of album. I mean it's not like a quartet playing, where everybody has his part and reacts to what's happening. It's more like a painting, where you look at what you have and you add more colors and more shadows as you go along. And that's the way I looked at it, more as a painting than ... something that caught a moment in time. 'Cause it didn't. It was put together. And that will offend some people. I don't think that should take over, because then jazz would lose whatever it is that makes it jazz ... because you lose a lot of spontaneity. But then, what you lose in spontaneity you gain in other things, like colors.³⁸⁸

Marsalis considered this 'painterly' approach an affront to the principals of jazz. He roundly criticized the use of what amounted to a pointillist technique, facilitated through MIDI and multi-tracking, which substituted ephemeral sonic glitter designed to seduce the ear, for more substantial musical statements. He remarked dismissively:

[Fusion musicians] refer to all these piles of instruments they use to put little sounds on many different tracks to give the music the illusion of the type of depth that comes with thorough knowledge of polyphony.³⁸⁹

Marsalis' criticism echoed sentiments expressed by Theodor Adorno some fifty years earlier:

The universal criterion of merit is the amount of conspicuous production, of blatant cash investment ... The development of the culture industry has led to the predominance of the effect, the obvious touch, and the technical detail over the work itself.³⁹⁰

Jacques Attali had voiced a similar warning. He cautioned against artists taking excessive 'pleasure in the instruments, the tools of communication', a tendency which threatened to cause the 'radical inversion of the innovator and the machine'. Like Marsalis after him, Attali perceived the danger of infatuation with technology leading to a situation in which musicians strive to achieve 'what technology makes possible, instead of creating the technology for what one wishes to produce'.³⁹¹ Miller, however, clearly embraced a

³⁸⁷ Miles Davis, *Tutu*, Warner Bros. Records 9285017 (1986).

³⁸⁸ Marcus Miller, cited in Bill Milkowski, 'Miles' Man in the Studio', *DownBeat* (February 1987), p. 20.

³⁸⁹ Wynton Marsalis, cited in Stanley Crouch, 'Wynton Marsalis: 1987', p. 19.

³⁹⁰ Theodor Adorno and Max Horkheimer, *The Culture Industry: Enlightenment as Mass Deception*, trans. Andy Blunden, <http://www.marxists.org/reference/archive/adorno/1944/culture-industry.htm> (accessed 23 January 2012).

³⁹¹ Jacques Attali, *Noise: The Political Economy of Music*, trans. by Brian Massumi (Minneapolis: University of Minnesota Press, 1985), p. 115.

different ideology. In a statement that confirmed his prioritization of composition and textural experimentation over improvisation, he explained:

I've been getting into sounds lately ... realizing that if something has an interesting enough sound, you don't have to play as much on the instrument ... you don't have to play a lot of notes. The sound takes over. So on *Tutu* there are a lot of sounds going on, and those things are important to me. They're part of the composition, even though I think a lot of people ... might see it as being kind of superfluous to the essence of the music. But in this music I think it is really important, and Miles thought so too.³⁹²

The bassist obviously relished the creative power that multi-track recording and MIDI technology had delivered, enabling him to expand the range of his musical creativity. Rather than being confined to the foundational role of previous generations of bassists, technology granted him access to a more holistic musical engagement. He was able to produce an entire composition literally from the ground up, layer by layer. How well it sat within the aesthetic criteria of jazz was another question that Miller hastened to address: 'I don't know if you can truly call that album [*Tutu*] "jazz" – Again it's not as pure as a quartet going in and everybody reacting to each other.'³⁹³ Apparently his artifice appealed to many critics. Consider the following review by Milkowski, in which production values are lauded over musical content in a total reversal of aesthetic priorities:

Tutu is the finest Miller album to date. I'm not so hot on side two myself but I admire Marcus' production values. The cat is subtle. Hear how he weaves Count Basie's voice, uttering the classic 'one mo' time', from 'April in Paris', into the bright fabric of 'Perfect Way'. Not to mention all the near subliminal pieces happening in that pop puzzle. And dig all the weird electronic dub sounds in 'Don't Lose Your Mind', or his clever use of clarinet to double the bass line on that tune. He makes sure there's plenty happening, both in the pocket and in the fabric, before he summons the maestro to add his voice to the proceedings.³⁹⁴

The process instigated in Davis' *In a Silent Way*, in which the trumpeter surrendered part of his musical authority to his producer was now complete. Milkowski refers to Davis' album as Miller's. The reaction of the Young Lions to *Tutu* was exemplified by the following response from Branford Marsalis, in which he criticized Miller's handling of the recording:

³⁹² Marcus Miller, cited in Bill Milkowski, 'Miles' Man in the Studio', *DownBeat* (February 1987), p. 22.

³⁹³ Marcus Miller, cited in Bill Milkowski, 'Miles' Man in the Studio', p. 20.

³⁹⁴ Bill Milkowski. 'Review of Miles Davis' *Tutu*', *DownBeat* (January 1987), p. 27.

Miles knows very little about the way these records are done ... it's a sort of downer that such an incredible musical presence as Miles has been reduced to being a spectator on his own records.³⁹⁵

Davis, the same artist who fifteen years previously had used the power of studio technology to inspire his soloists to new heights of interactivity, was now accused by Marsalis of being incidental on his own recording. Technology had allowed the roles of producer and musician/creator to coalesce, permitting Miller to co-opt responsibilities previously the exclusive domain of the artist. Previously, accompanying parts had been contingent upon the real-time performance of the soloist, reacting to and inspiring each other in the moment. Now, by contrast, the soloist was responding to the pre-recorded backing tracks that were subject to review and modification as necessary.

Technology not only altered the way jazz music was conceived, it also changed the way the bass was deployed in its recordings. The multi-track process and MIDI technology allowed Miller to feature his bass playing more prominently than on traditionally recorded albums. Not satisfied to provide an exclusively foundational role with a single instrument, Miller employed multiple basses that appeared in a variety of less conventional applications across the entire album. On tracks such as 'Tutu' and 'Tomaas', for example, a number of independent bass tracks are carefully assembled into tightly interleaved performances. Two or more bass players improvising simultaneously could never have achieved the precision that Miller's painstaking approach assured. The overdubbed basses provide a diverse assortment of colors and functions including fretless melodic lines, percussive string pops and fret slaps as well as funk ostinatos and walking bass passages.

Miller further expanded the range of sonorities on the album by performing a number of bass parts on synthesizers. In contrast to a more conventional through-performed bass line, his pointillist approach is often reflected in the momentary deployment of individual bass sonorities that come and go in dramatic fashion. These bass parts are supported by drum machine sequences that split the traditional drum set into individually processed fragments configured across the stereo panorama. The lack of 'participatory discrepancies' between the sterile drum machine patterns and the MIDI

³⁹⁵ Branford Marsalis, cited in Leonard Feather, 'Blindfold Test', *DownBeat* (May 1987), p. 39.

generated backing results in a harmonically sophisticated yet rhythmically robotic texture.³⁹⁶ In light of this reduced rhythmic sophistication and the absence of any genuine spontaneity between the music's component parts, it is hardly surprising that *Tutu's* marketing as a jazz album upset many purists. While the album contravened many of the most inviolable tenets of jazz performance including ensemble interaction, it did demonstrate the possibilities inherent in emerging technologies.

The presence of a bona fide jazz titan such as Miles Davis on a recording produced in this manner set a precedent for less organic approaches to jazz music recording. In the same way as Pastorius' undeniable jazz pedigree had conferred legitimacy to the electric bass, Davis' seminal presence inspired the widespread adoption of modern technological tools into jazz production. Miller's work also encouraged other jazz bassists to forge for themselves a more adventurous role in the jazz ensemble and to consider the bass as an untapped resource of expressive colors too long denied by obsolete technologies. For example, bassist Avery Sharpe, while refusing to renounce historical precedents, was nevertheless determined to cement his reputation as a contemporary innovator. Many of his albums, including *Unspoken Words*, exploited the facilities of the modern recording studio extensively.³⁹⁷ His technologically inspired re-interpretations extended to older material from the jazz canon, as Jim Roberts observed when comparing his rendition of 'Yesterdays' with Paul Chambers' bass-driven version from 1957:

But these are the late '80s, not the late '50s, so Sharpe's version of Jerome Kern's jazz classic 'Yesterdays' has a complex backdrop of overdubbed electronic keyboards. The 34-year-old bassist is acutely aware of the jazz tradition, but he's also attuned to the sounds around him today.³⁹⁸

A portent of more fruitful collaborations between musicians and technology came in the form of an album recorded by bassist J. F. Jenny Clarke in 1987, in which his engineer was actively and spontaneously involved in the production of sonic material. The importance of this spontaneity was emphasized by the anonymous reviewer, who, while praising the imaginative textures and sounds produced by studio techniques was clearly more satisfied with the result of real-time interactive passages:

³⁹⁶ Charles Keil, 'Participatory Discrepancies and the Power of Music', p. 275.

³⁹⁷ Avery Sharpe, *Unspoken Words*, Sunnyside 21 SSC 1029 (1988).

³⁹⁸ Jim Roberts, 'Riffs: Avery Sharpe', *DownBeat* (January 1989), p. 14.

European modernist J. F. Jenny-Clark, has released his first recording as a leader. *Unison* uses frequent overdubbing to foster feverish counterpoint, layer thick slabs of bowed tones, or intertwine percussive and lyrical notions. But he works best as an intricate, instinctive collaborator, as on the tracks here where he spars with, separately, pianist Joachim Kuhn, saxist Christof Lauer and digital engineer Walter Quintus.³⁹⁹

Terms such as ‘instinctive’, ‘spars with’, and ‘collaborator’, used in this context, seem to glorify those aspects of performance missing from so many studio contrived productions of the late 1980s such as Miller’s. The critic’s comments are prescient of a future in which technology would reach a sufficient level of sophistication and user-friendliness to allow it to be employed in spontaneous ways under the control of a new category of digital musician – a real-time sound processor such as Quintus.

Perhaps those technologies displayed in *Tutu* and other contemporaneous albums were not quite mature enough to fully pre-empt more traditional forms of jazz performance – they were however sufficiently threatening to generate considerable debate. Principal among these challengers was, of course, the Young Lions. What they objected to was technology’s glorification as an end in itself. In the case of many of his contemporaries, Marsalis believed that technology’s over-employment reflected a lack of artistic ability and was responsible for a great deal of inferior music that, due to its association with the label jazz, denigrated the entire genre. The Young Lions appeared to be involved in a struggle to regain control of their art, much as the beboppers had done after swing music’s appropriation by mass cultural forces in the 1940s. Their strategy was to re-emphasize those aspects of performance that were essentially unmediated by technology and therefore required a less invasive form of jazz production. These included the display of extraordinary musicianship on acoustic instruments infused by a respect for the jazz tradition, as opposed to a desire to pursue ‘the overriding imperative in the [modern] jazz aesthetic, innovation’.⁴⁰⁰ And this, of course, was where the unamplified string bass was so important. It represented a symbol of the technologically uncompromised purity jazz had once enjoyed. The unamplified string bass was a key ingredient in their campaign to re-assert the dignity of the jazz ensemble, to expose the

³⁹⁹ Anon, ‘Review of J. F. Jenny Clark, *Unison*’, *DownBeat* (February 1989), p. 42.

⁴⁰⁰ Thomas Conrad, ‘Wynton Marsalis: The Magic Hour’, *JazzTimes* (April 2004), <http://jazztimes.com/articles/14551-strange-liberation-dave-douglas> (accessed 6 September 2011).

charlatans who, in the absence of sufficient musical talent, were reliant on a smokescreen of technology.

Marsalis' distaste for digital recording practices was underscored in a response to a question posed by an interviewer on the release of his album *Think of One*.⁴⁰¹ Howard Mandel asked: 'Was *Think of One* made the traditional way, or did you take advantage of the studio?' to which Marsalis replied: 'No, we played. Our problem now is, we can't find a studio that's big enough to play in, so, though our engineer does a great job, the records don't sound as good as they should.'⁴⁰² Marsalis' first three words are more significant than the obvious, literal interpretation would suggest. Already by 1983, the piecemeal production routines employed by bassist Marcus Miller and implied in the phrase 'take advantage of the studio' were ubiquitous. 'No, we played' means 'No we played all together at the same time, in the old fashioned way – nothing was overdubbed'. Also implied is an allusion to their superior musicianship – no error correction was necessary. In short, the advantages that multi-track recording technology offered were of no interest to them – neither should they be – in their present form. As Marsalis complained: 'There's no such thing as jazz technology – no recording equipment created for the optimum jazz sound'.⁴⁰³

The ensemble on *Think of One* numbered just five musicians which, given its small size, suggests the second half of Marsalis' response, in which he lamented the unavailability of sufficiently large recording spaces, is significant for more than logistical reasons. After all, how much room does an ensemble of that size really require? Marsalis' statement reflects the difficulties he experienced in achieving a cohesive group sound in studios whose architectural configuration was being transformed as a result of the prioritization of engineering requirements. The isolation of the string bass and the placement of drums in a separate booth were counterproductive to the musicians' efforts and seriously compromised musical results however dramatic the sonic improvements they might deliver.

By the mid 1980s many of the seminal, large recording studios such as Mediasound on 57th St. in New York City (where *Think of One* was recorded) were closing. These

⁴⁰¹ Wynton Marsalis, *Think of One*, CBS CK 38641 (1983).

⁴⁰² Wynton Marsalis, cited in Howard Mandel, *Future Jazz*, p. 107.

⁴⁰³ Wynton Marsalis, cited in Stanley Crouch, 'Wynton Marsalis: 1987', p. 17.

recording spaces, essential to achieving the kind of sound Marsalis desired – open, spacious and rich in ambience, were failing due to competition from smaller facilities. Many of these featured a modest recording room divided into separate enclosures that were more suitable for recording other musical genres such as rock. The honeycomb of isolated booths, baffled spaces and the headphone monitoring they necessitated, were essential in order to ‘take advantage of the studio’. They facilitated overdubbing and error correction – techniques that the Young Lions did not care to implement. For them, cohesiveness in the rhythm section, particularly the bass and drum combination, necessitated a reversion to the style of recording prevalent in the 1940s and 1950s. In a review of Chico Hamilton’s *Are You The One* album, Branford Marsalis drew attention to the negative affects of contemporary studio practice on the rhythm section:

One of the major problems I had with this record is recording technique, because you can’t tell what kind of relationship the drummer and bass player have, because the drummer is in an isolation booth. You can tell he’s separated. It sounds so bad, it never really swings; there’s no air, no interaction, no group sound.⁴⁰⁴

The Marsalis brothers were not necessarily anti-technology. In fact, they voiced deep commitment to attempts to apply it to the string bass. Their proposed method however underscored their dissatisfaction with the electronic pick-up and involved the pursuit of an alternative, more organic technique. Branford Marsalis revealed:

We’re trying to develop a microphone for the bass, so it’ll sound like wood, not like an amplifier. I’ve gained enough leverage now to discuss such things with people, and they’re willing to listen.⁴⁰⁵

What Branford was assuming naively was that the solution to achieving the desired bass sound involved designing a microphone more suitable for rendering the bass in all its acoustic glory. But he was missing the real issue. The problem does not reside with the microphone at all. There have been microphones with the requisite dynamic and frequency characteristics to record the bass accurately since the 1930s. The problem is recording the bass in the presence of other musicians. To get the musicians close enough together to feel like a cohesive unit, unencumbered by any sound isolating physical barriers, and yet to be able to decode and decipher the bass’ sound from the mixture of

⁴⁰⁴ Branford Marsalis, cited in Leonard Feather, ‘Blindfold Test’, *DownBeat* (May 1987), p. 39.

⁴⁰⁵ Branford Marsalis, cited in Kevin Whitehead, ‘The Many Sides of Branford Marsalis’, *DownBeat* (March 1987), p. 17.

bass and noise generated by the other instruments, is the real conundrum. The closer the musicians are to each other, the worse the signal to noise ratio becomes. The more contrivances are set up to isolate the sounds of the individual instruments and improve the signal to noise ratio, the more the music is affected. This dilemma will undoubtedly be solved in the future, but one suspects that some very sophisticated technology will be required in order to do so.

Wynton Marsalis was accused of denigrating technology, and his passion for using acoustic instruments recorded in a traditional manner only served to consolidate this impression. However, the current author believes that what he was objecting to was the indiscriminate use of technology in the absence of a comprehensive assimilation of jazz music's heritage. As John McLaughlin remarked: 'I believe nothing is contemporary unless you can feel the tradition behind it'.⁴⁰⁶ The reason the bass secured such a prominent role in Marsalis' aesthetic was that it was the instrument that had been most affected by technology. The application of technology gave bass players unprecedented access to facility and volume, effectively emancipating the string bass from its traditional accompanying role. But a bassist who exploited technology superficially to gain this access to velocity and volume was, in his opinion, a bass player without sufficient respect for jazz music itself. Marsalis was in effect advocating the same approach that Pastorius had used. One should first gain a comprehensive grasp of the language of jazz – its harmonic and melodic heritage – and only then exploit technology to take this deeply historical music into the 21st century. Rather than playing faster and louder – play deeper. The first is relatively easy, technology has eased the physical difficulties; the second requires an apprenticeship to the past masters. This apprenticeship is no longer available in the old mentoring system perhaps, but it can be accessed using modern technology; technology that grants nearly unlimited access to over 90 years of recordings and facilitates their study with a plethora of computer-aided music analysis techniques. These became more firmly established during the period covered by the next chapter.

⁴⁰⁶ John McLaughlin, cited in Howard Mandel, *Future Jazz*, p. 81.

CHAPTER EIGHT

Pro Tools, Computers and the Bass (1990-2000)

Having examined bassist Marcus Miller's technologically inspired innovations during the 1980s, the study now considers the impact of computer technology and the transformative affect it had on bassists' activities. Personal computers began to gain traction in the marketplace during the mid-1980s and became attractive to musicians as music software utilizing the MIDI protocol gradually began appearing.⁴⁰⁷ By the mid-1990s the plunging cost and increasing sophistication of computer hardware, music software and digital storage reached a critical point, leading to their widespread adoption by both music professionals and amateurs. Most notable was the music industry's embrace of the Pro Tools audio recording and editing system, which introduced a level of recording flexibility impossible in the previous analog medium.⁴⁰⁸ Its establishment as the de facto industry standard revolutionized music production and introduced sweeping changes to the manner and places in which bass players worked. Meanwhile, computers brought to musicians entry-level recording systems with increasingly comprehensive features. These systems placed further downward pressure on professional studio budgets. As a result of this general amateurization of music production and the arrival of sample based music programs that permitted performances to be fabricated one note at a time, the need for the professional studio bass player was called into question. Veteran Los Angeles recording engineer and author Bobby Owsinski described the impact of the change over to digital audio workstations (DAWs):

Session work for studio musicians was severely and adversely affected. The typical studio musician who might've had as many as four sessions a day in Los Angeles or New York during the early 1990s might be down to four or six sessions a month in the early 2000s.⁴⁰⁹

The extent of technological mediation in the production of music had been steadily

⁴⁰⁷ <http://musicsoftwareforpc.org/music-production-software-a-brief-history/> , gives a brief history of music software. (accessed 17 July 2011).

⁴⁰⁸ In 2005 Pro Tools enjoyed 85% market share in the U.S. according to David Kusek and Gerd Leonhard, *The Future of Music: Manifesto for the Digital Music Revolution* (Boston: Berklee Press, 2005), p. 144.

⁴⁰⁹ Bobby Owsinski, *The Studio Musician's Handbook* (Milwaukee: Hal Leonard, 2009), p. 10.

escalating during the 1970 and 1980s. In the following decade, the digitalization of audio revolutionized the process by rendering an extensive number of musical parameters completely malleable. As celebrated author and engineer Roey Izhaki remarked: ‘The 1990s significantly reshaped much of the way music is made, produced, recorded, mixed and even distributed – computers triumphed’.⁴¹⁰ In order to assess the importance of these changes as they relate to the bass player, a brief history of the events leading up to the general adoption of the DAW is warranted.

Pro Tools entered the professional audio market place in 1991 as a modest four-track recording and editing system. Although it demonstrated significant potential, it was hamstrung by the high cost of digital storage devices and slow computer processing speeds of the period. Meanwhile, large established studios, those with sufficient financial resources to maintain expensive state of the art recording equipment and service facilities, were under a more palpable threat. Inexpensive modular recording systems based on the ADAT and DA88 digital tape formats were introduced in 1992 and 1993 respectively, offering musicians a flexible alternative.⁴¹¹ Studios that embraced this new hardware were able to offer comparable musical results at a fraction of the cost associated with the former system. Decreasing production budgets, a willingness to eschew palatial amenities and an increase in the use of devices such as samplers and drum machines in place of expensive studio musicians, changed the dynamics of the bass player’s world. By 1994, Pro Tools 3, with its 48-voice capability, began to seriously challenge the primacy of the tape-based recording infrastructure of many professional studios. With the quantum leaps made in computer technology fueled by the global expansion of their domestic and business adoption, the capabilities of the Pro Tools platform continued to accelerate. By 1997 the results obtainable with Pro Tools 24 in conjunction with faster computers led many commercial studio operators to question the financial wisdom of continued investment in expensive tape machines and outboard signal processors. The migration to the DAW centered studio was underway. As Richard Burgess observed in

⁴¹⁰ Roey Izhaki, *Audio: Concepts, Practices and Tools* (Oxford: Focal Press, 2009), p. xiii.

⁴¹¹ Both ADAT and Tascam’s DA-88 systems permitted frame accurate synchronization of up to 16 machines, enabling 128 tracks. The non-random access nature of their tape based format and the mechanical issues involved with the synchronization of multiple units however, made punching-in somewhat inelegant.

that year:

The results you can get from a \$3000 digital multi-track or Hard Disk recorder and a \$400 DAT machine don't sound a whole lot different from records being made on \$500,000+ professional studio equipment.⁴¹²

The advantages of a digital audio workstation were compelling. Comprehensive non-destructive editing, powerful signal processing, automation and complete mix recall were among the many attractive features. Originally conceived as a replacement for the analog 24-track tape recorder, hard disk systems rapidly expanded their functionality. From a medium on which to capture sound as transparently as possible, to a platform in which music could be comprehensively manipulated, the philosophy of recording underwent a radical metamorphosis. By 2002, with the introduction of Pro Tools HD (high definition), most professionals were convinced that sonic parity with the best analog tape machines had been achieved. Combined with a seemingly endless array of separate tracks on which to add parts to an arrangement, the editing capabilities of Pro Tools caused music production and the activities of the bassist within it to change dramatically.

Previously, the session fees that bass players commanded had amounted to only a small percentage of the total production budget in relation to the expense of studio rental. As competition forced studio fees to plummet, however, that proportion grew far more significant. As producer Tony Visconti recalled: 'In 1983 I was charging up to 2000 pounds a day for a 24-hour booking. In 1989 I could only get a maximum of 500 pounds per day.'⁴¹³ Producers began to question whether the skills the seasoned bassist brought to the session – skills that had been nurtured in the older studio system – were worth the expense. As new recording methods became established in the digital studio, these skills appeared to be becoming gradually redundant. For example, the ability to integrate into a large performance group within tightly regulated recording schedules and to interact with many fellow musicians and production staff in a cooperative, flexible fashion, became less important as real-time performances became increasingly unnecessary. As session bassist Leland Sklar commented:

Most of the time these days, I go to guys' houses and overdub bass on pre-produced tracks and it's just me playing. It's not nearly as much fun and creative to sit in a guy's garage

⁴¹² Richard Burgess, *The Art of Record Production* (London: Omnibus Press, 1997), p. 215.

⁴¹³ Tony Visconti, *Bowie, Bolan and the Brooklyn Boy* (London: Harper Collins, 2007), p. 335.

and overdub bass with no input and hang [socializing] with other players.⁴¹⁴

According to many session bassists, the recording techniques introduced by the digital audio workstation made obsolete the social aspect of music making, what Christopher Small embraced with his term ‘musicking’.⁴¹⁵ Traditional recording sessions of the analog tape era involved a good deal of social interaction and required communal activity to produce the music. As Sklar lamented:

The new world of Pro Tools and digital workstations means that everyone has a studio at home, so now I don’t see the other cats I like to play with as much. When we used to do dates together, there were always 4 to 8 players on the live date and ideas flew around the room. Now, when I get called for a date with a full band in a real studio, it’s like a gift.⁴¹⁶

This creative dialogue often led to improved musical results before digital technologies established less collaborative procedures. This is not to suggest that traditional recording sessions did not continue to happen. Technologically inspired stylistic changes, however, occurred in a wide range of musical genres, and they generated recording methods and protocols that necessitated the development of new musical and social skills. Often seated in the control room (or in front of their own computers) rather than a separate studio performance space, the bassist could interface directly with the technology. The visual cues previously experienced – the nod of another musician’s head for example – were often superseded by those obtained from the Pro Tools screen. The ability to see audio waveforms as well as hear them brought a wealth of useful sensory data to the bass player. The computer screen enabled the bassist to preview what was about to happen while overdubbing, rather than having to rely on memory or the vagaries of music notation. By exploiting these visual capabilities in combination with traditional aural skills, they were able to enhance their efficiency in the studio.

In addition to these environmental changes, other transformations affected the performers psychologically. As early as 1976 engineer Ray Moore had commented on a perceptible reduction in performance anxiety, the direct result of the corrective facility of multi-track recording. He remarked:

⁴¹⁴ Leland Sklar, cited in Bobby Owsinski, *The Studio Musician’s Handbook*, p. 284.

⁴¹⁵ Christopher Small, *Musicking: The Meanings of Performing and Listening* (Hanover NH: Wesleyan University Press, 1998), p. 9.

⁴¹⁶ Leland Sklar, cited in Bobby Owsinski, *The Studio Musician’s Handbook*, p. 284.

Once an artist realizes what can be done and can't be done later on, it certainly changes his studio playing ... knowing that if a mistake is made two minutes into a performance, it can be fixed.⁴¹⁷

With the advent of Pro Tools, this capacity for error correction expanded to unprecedented levels. Technology has alleviated significantly the fear of making mistakes and encouraged a greater spirit of abandonment in the recording studio. On the other hand, as increasing levels of mediation were made possible, the ability to perform flawlessly in the studio became less essential.

Many producers and artists, such as Wynton Marsalis, lament a fall in instrumental mastery attributed to error correction techniques. As Visconti observed: 'The advances in studio techniques and equipment were breeding mediocre musicians who needed the "fix it in the mix treatment"'.⁴¹⁸ This perceived lowering of performance standards is not exclusive to the digital age. In 1958 Gelatt had expressed dissatisfaction for what he termed 'the malefactions of magnetic tape'.⁴¹⁹ In his estimation musicians had grown lazy as a result of the conveniences of tape editing. The professional, meticulous attitude of musicians had been replaced with insouciance; the knowledge that repairs could be made later if they delivered a less than acceptable performance. Gelatt fondly recalled the days when 'the challenge of the unpatchable wax blank stimulated a musician to do his utmost'. Arguably, both a reduction in the volume of work and increased performance expectations generated by technology have contributed to this situation. As emerging technologies such as television, DVD, the Internet and countless others have vied for consumer attention, the social forces that supported the bassist's activities have withered. In short, bass players work much less than they used to, and with this reduction has come a lessening of performance rigor. As John Scofield remarked in 1987:

Maybe we're looking at a future where instrumentalists are rare. Because what are you going to do? You want to be a professional, but there's no place to work. There are about a tenth of the live gigs there were fifteen years ago.⁴²⁰

With recordings no longer informed by extensive touring and public performance, errors

⁴¹⁷ Ray Moore, cited in John Harvith and Susan Edwards Harvith, *Edison, Musicians, and the Phonograph*, p. 335.

⁴¹⁸ Tony Visconti, *Bowie*, p. 313.

⁴¹⁹ Roland Gelatt, 'Pangs of Progress' *High Fidelity* 8. 1 (January 1958), p. 40.

⁴²⁰ John Scofield, cited in Howard Mandel, *Future Jazz*, p. 97.

become more likely. Modern engineers, unlike their predecessors, are in a position to correct these infelicities effectively and efficiently without necessarily requiring additional input from the musicians themselves.

The substitution of error correction for well-rehearsed musicianship is of course, a questionable policy. The employment of this technological option, however, exerts a powerful attraction. This, of course, is exactly the development that Marsalis criticized so vehemently; the transformation of jazz recording from a simple documentarian activity to one in which technology itself has become intertwined with the creative process. Since performance issues can largely be corrected by editing, bass players have grown accustomed to relying on the safety net of digital recording in situations that would previously have required an entire retake. Pro Tools has also challenged conventional ideas of musical competence by opening up music production to a previously excluded group of enthusiasts. It has allowed producers and composers with little or no performance expertise to be creative by providing them with the necessary tools to construct music. All that is required is a fertile imagination and basic computer literacy. The frustration of dealing with musical collaborators who lack even the most basic traditional musical skills is the source of some resentment among bass players accustomed to performing with talented studio musicians. Sklar expressed his dissatisfaction at this development:

The only thing I don't like is the new technology of the digital world has allowed a lot of people into the business that should never be here. No time, no pitch, no ... Oh well, we'll fix it later. Bullshit! Do it right or go away!⁴²¹

Technology, however, should not be viewed exclusively as a means of compensating for inadequate musicianship. It can be exploited to help artists deliver performances that transcend those they are capable of performing in real time. To an artist with exceptional creative imagination, these technologies can be used to produce works that achieve a balance between traditional musicianship and innovative sonic manipulations. As reflected in the work of Pastorius, the use of technology needs to be mapped onto a strong foundation of historical engagement and not just substituted for musical technique.

⁴²¹ Leland Sklar, cited in Bobby Owsinski, *The Studio Musician's Handbook*, p. 280.

Of course, not all jazz performances in the modern studio are performed in a piecemeal fashion. Many, particularly those wishing to involve greater interactivity, are recorded conventionally with all the musicians performing concurrently. Even in this scenario, however, extensive editing is not necessarily precluded. Given judicious microphone placement, sufficient separation can be achieved to permit a great deal of flexibility. The following example (Figure 8.1) is a waveform representation of a live recording of the University of Adelaide Big Band 1.⁴²² It is included to illustrate the extent to which Pro Tools has plasticized recorded performance. In this particular recording no overdubbing was done and yet hundreds of microscopic edits were performed in which timings, pitch and durations were modified on the bass track and others. The degree of editing is reflected in the large number of individual regions in the diagram, each one subject to some kind of transformation.



Figure 8.1 A 1.5 minute window showing the extent of editing on trumpets, saxophones and trombones.

Presented below is a zoomed-in, before and after comparison of a Pro Tools edit window, illustrating the level of micro editing undertaken in the course of this typical jazz big band recording session. Error correction in the time domain was employed to synchronize the bass to the drum track, which was used in this section as the master temporal reference. This procedure improved the integration of the rhythm section. Pitch correction was extensively used to fix out of tune bass notes and, in some cases, produce

⁴²² This recording of the University of Adelaide's Big Band 1 received an award for 'Outstanding College (University) Performance' in *DownBeat* magazine's '32nd Annual Student Music Awards', June 2009.

notes the bassist missed in performance.

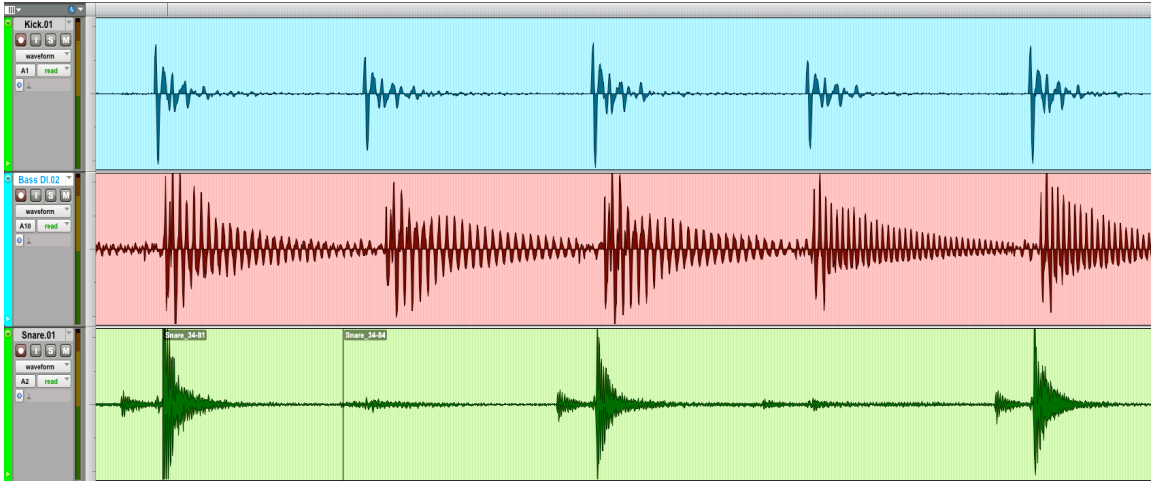


Figure 8.2 A two-second window showing (from top to bottom) unedited bass drum, bass and snare drum with rhythmic inaccuracies.

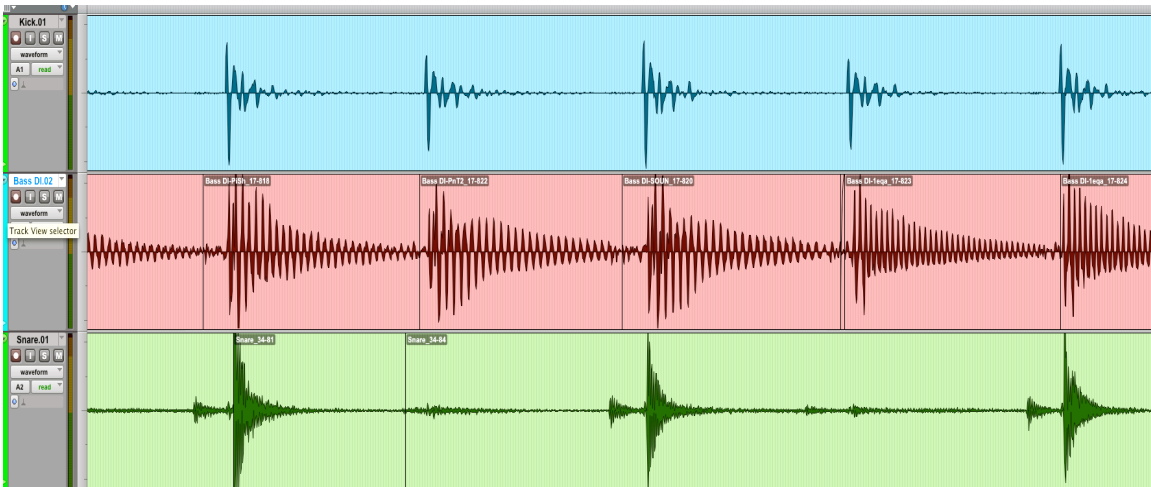


Figure 8.3 A two-second window showing edited bass part with entrances aligned and pitches corrected.

The diagrams above illustrate the extent to which the bassist's contribution can be reconfigured. The engineer's increased editing flexibility represents a concomitant decrease in bass players' musical sovereignty. The loss is reflected both intrinsically, within the details of the bass part itself, and extrinsically in its relationship to the other instruments. Most bass players today must accept the fact that their work is vulnerable to extensive manipulation at the hands of someone who may, or may not, share a similar

musical orientation. Bill Crow aired his reservations about the expanding role of the engineer:

Since jazz bass playing is about constantly choosing the notes in the moment, I don't enjoy being second-guessed by an engineer or producer. When the choices are less than perfect, that is part of the process.⁴²³

The tendency to scrutinize audio visually in moment-to-moment segments on the computer has encouraged a non-syntactical approach to music. Figure 8.1 above, for example, describes a vertical orientation to performance, a prioritization of the rhythmic and pitch relationships at consecutive points in time. This view is in opposition to the more natural way of experiencing music in the horizontal temporal plane, as a linear ebb and flow. The units of phrasing have been diminished as editing's microscopic capability has increased, leading to a situation in which a bass part can be transformed to such a degree that it no longer resembles the bass player's original performance. The note-by-note correction of pitch in a bass solo, for example, can destroy the emotional nuances intended by the bassist. Alternatively, an engineer can shift an entire bass performance by a few milliseconds if s/he does not share the bassist's idea of where the pulse should sit in relation to the drummer. The artist's reputation as established through recorded work now finds itself potentially at the mercy of another party. Arguably, once enough modifications have been done the edited performance represents a collaborative effort that should also reflect the input of the engineer. Present day conventions of attribution, however, will fail to acknowledge either the engineer's contribution or the bassist's marginalization. Exactly where this point of shared responsibility should reside is a question that has yet to be resolved. But as editing facilities gain in sophistication and the unrestricted use of orphaned notes and phrases becomes more widespread, the lines of demarcation will undoubtedly require redefining.

The cut and paste editing capabilities of Pro Tools has also greatly expanded the arranging options in recordings, loosening the bond between a performance and its context. Although inured to delivering bass parts that conform to the developmental nature of most conventional musical performances, bass players are often required to provide alternate ones that serve a non-syntactical function. While some bassists

⁴²³ Bill Crow, personal email correspondence with the author (6 August 2011).

undoubtedly view this as a welcome opportunity to indulge their creativity in uncharted waters, others are alarmed at the potential damage that might ensue when their bass part is cut adrift from the musical context in which it was originally anchored. Modern bassists must be cognizant of the potentialities of the digital audio environment and the ways in which it challenges the inviolability of their performances in order to protect their musical reputations. Marcus Miller related his experience in just such a scenario:

I remember a Buddy Rich record. This producer called me and said, ‘I want you to overdub.’ And I thought, ‘Good, I haven’t played straight time for a while.’ I walk into the studio, and the guy plays me the track – the big band with Buddy doing his thing – and the man says, ‘Look, I want you to know we’re not gonna sell any records this way, so we want you to just funk out – right over Buddy’s drums. Don’t worry about what he’s playing.’ I said ‘What?’ I felt like I was violating someone. You just don’t want anyone to think this was your idea, your conception.⁴²⁴

Other issues brought to light as a result of increasing technological mediation occur in the studio space rather than the control room, including those resulting from the maintenance of high signal to noise ratios. String bass players often find themselves ensconced in isolated booths where they are provided with individual headphone monitoring stations such as the Furman HDS-16. These units distribute adjustable mixes that can be fine-tuned at the player’s discretion.⁴²⁵ By permitting bass players to increase their volume level in the headphone mix beyond that which would occur naturally within the ensemble, undesirable outcomes can result. Chick Corea alluded to this effect in an album review from 1995:

The drummer [Tony Williams] obviously had everything very loud in his headphones – he’s hitting hard, but the piano and bass [Ron Carter] aren’t playing that hard. Sounded like a rock and roll mix.⁴²⁶

While personally adjustable levels enabled Carter to play less aggressively and still hear himself, it affected the level of performance vigor differently for each musician and natural sonic power relations were disturbed. Even with veteran and highly experienced jazz recording artists such as these, the resulting incongruence was clearly perceptible in

⁴²⁴ Marcus Miller, cited in Sam Freedman, ‘The Thumbslinger: Bassist for Hire’, *DownBeat* (April 1983), p. 17.

⁴²⁵ Details available at <http://www.furmansound.com/product.php?id=HDS-16>, (accessed 25 April 2011).

⁴²⁶ Chick Corea, cited in Chris Rubin, ‘Blindfold Test: Chick Corea’, *DownBeat* (December 1995), p. 86.

the recording. Crow related similar concerns about unwarranted technological interference:

I have often argued with engineers who want to isolate the micing of all the sounds in the studio, enabling easy editing. Musicians who blend well, and who make subtle adjustments in their volume and tone, do not appreciate being second-guessed during sessions. A sympathetic engineer can be a great help, but the primary creative process should remain with the creators of the music.⁴²⁷

For the studio musician, modern microphone techniques also required adjustments to their playing styles. The optimum sound generated by a performer for live performance often translated poorly to recordings. Crow explained:

If I played hard the way I usually did on jobs, the mike only got the beginnings of the notes, and not the after-ring I worked so hard to get. I discovered that if I played very softly in the studio, the mike would come and get me, and give me a wonderful recorded sound, but doing that, I had less influence on the music as it was being played.⁴²⁸

While Crow was willing to compromise his interactivity, Chuck Israels was less inclined to make that sacrifice in the interests of sonic improvement:

A sensitive player, upon hearing playbacks in the studio, will make adjustments in order to minimize the damage to the sound made by the close miking, with the result that the playing will then be under-energized in the interest of not sounding gross.⁴²⁹

It is interesting to note how acclimatization to increasing levels of technological mediation has transformed what some bassists consider the natural sound of the acoustic bass. Marc Johnson, for instance, described his preferred recording configuration, significant in its avoidance of the pick-up:

We went for the most natural sound possible. We used a Neumann M 149 microphone on the G-string side of the bass, 30¾" from the floor to capsule, and about a foot away from the instrument. It was aimed at a point between the bridge and the F-hole. In addition, we used a Schoeps CMC5 microphone between the bridge and the F-hole on the other side of the bass. It was positioned 41½" from floor to capsule, and again, about a foot away. This enabled us to get some of the warmth and the bottom of the sound from the Neumann and the top part of the sound for definition from the Schoeps.⁴³⁰

Johnson, in attempting to achieve what he terms 'the most natural sound possible', is

⁴²⁷ Bill Crow, personal email correspondence with the author (6 August 2011).

⁴²⁸ Bill Crow personal email correspondence with author, (22 July 2010).

⁴²⁹ Chuck Israels, 'Department of Lesser Amplification', <http://www.chuckisraels.com/articledepartment.htm> (accessed 26 January 2012).

⁴³⁰ Marc Johnson, cited in Anil Prasad, 'Marc Johnson's Homage to Bill Evans & Scott LaFaro', *Bass Player* <http://www.bassplayer.com/article/marc-johnsons-homage/mar-08/34331> (accessed 21 April 2011).

advocating a situation in which the ears of the virtual listener, as represented by the microphones, are placed less than a foot away from the bass itself. This constitutes a most unnatural point of view unless the observer is kneeling right in front of the instrument. The sound produced in the interests of reducing extraneous noise leakage, has become inculcated as ‘natural’, as opposed to the more distant sonority standard in the 1940s, as reflected in recordings by Brown and Mingus. Jazz engineer Bob Power confirmed the changes in bass recording:

There’s a big difference between listening to an Ellington or a Mingus record with that beautiful big thump from across the room and a modern record with a more present acoustic bass sound. Context is everything and modern recordings are a lot about presence. With acoustic bass a lot of the sonics are determined by the density of what else is going on and how much presence I need to get.⁴³¹

More elaborate recording configurations are increasingly common and are the direct result of the virtually limitless number of tracks available with the modern DAW. As well as enabling the deployment of more instruments in an arrangement – that is, the expansion of orchestration possibilities – these extra tracks also permit the recording of multiple perspectives of the same instrument. Dual microphones in combination with a pickup provide the engineer with at least three perspectives of the bass as its being recorded, which, while they maintain their separation on individual tracks, can be mixed in any combination. As in a cubist painting, multiple perspectives can be artistically desirable, although they can hardly be described as natural, however well they serve the mix requirements.

- The Engineer’s Relationship with the Bassist

Having addressed the consequences of audio’s digitalization, the chapter now examines the effect the increased dependency on the technical expertise of others has had on bass players. It deals with the change in status of the audio engineer brought about by the increasing complexity of studio facilities, recording processes and live performance presentations.

⁴³¹ Bob Power, cited in Maureen Droney, ‘From the Bottom Up’, *Mixonline* (1 August 2004) http://mixonline.com/mag/audio_lowdown_bass_recording/index.html (accessed 26 January 2012).

As the digitalization of the recording studio dramatically expanded editing capabilities, the macro splicing of multiple takes evolved into sonic manipulations on a microscopic level. Consequently the skills of the recording engineer assumed greater importance. In describing the studio control room, contemporary recording engineer Michael Paul Stavrou offered an opinion that reflected this change in status. Creative authority was transferred from the artist to the engineer:

A 'Control Room', by definition, is a place where the creator (that's you, the engineer) exercises his or her deliberate and complete 'control' over audio production.⁴³²

The level of technical facility of the recording engineer has become equally, and in some cases more important than that of the performers being recorded. Error correction technologies have placed the ultimate quality of performer's contributions squarely into the domain of the engineer, shifting responsibility from the musicians themselves. As Attali remarked: 'Music escapes from musicians'.⁴³³ In this way the socio-political dynamics of the recording studio have been fundamentally altered. Engineer Thomas Porcello has asserted that:

[As the engineer, I] know that in this session no one else possesses the technical knowledge that I do, which gives me certain rights to speak, judge, and act on particular realms of Jon's music. We [engineers] can exert these rights because we have exclusive knowledge of signal flow, signal processing, and, perhaps most importantly, the language of audio production. With this knowledge comes power and a certain degree of aesthetic autonomy over the highly technical means of music production.⁴³⁴

The digitization of the studio introduced non-destructive editing, removing the risk associated with re-recording over, and thereby erasing, a pre-existing performance. The issue became less whether or not the bassist could be trusted to better his or her previous performance, but whether the engineer's skills extended to the organization of the myriad attempts for later comparison and selection. Documentation assumed increasing importance as the process of recording generated more options in raw material. The final decisions regarding which fragments to use were often postponed until days or weeks after the original session had been completed and the musicians had departed. As Miller

⁴³² Michael Paul Stavrou, *Mixing With Your Mind: Closely Guarded Secrets of Sound Balance Engineering* (Mosman NSW: Flux Research 2004), p. 203.

⁴³³ Jacques Attali, *Noise*, p. 115.

⁴³⁴ Thomas G. Porcello, 'Tails Out: Social Phenomenology and the Ethnographic Representation of Technology in Music Making', in René T. A. Lysloff and Leslie C. Gay, (eds.) *Music and Technoculture* (Middletown Connecticut: Wesleyan University Press, 2003), p. 280.

explained:

When you had only four tracks you recorded your song and that was it. It took a couple of hours. But when you have 24 tracks, you take extra days to overdub and mix everything. When you have 48 tracks, you have two versions of the same song on tape, and spend a day deciding which take is the best. So the fact that modern technology gives us more choices means we take more time. Whatever option you have available, you will try out.⁴³⁵

As a result, the choice of which of a series of takes to use fell to the discretion of the engineer/producer rather than the performer. Unless the bassist was able to participate fully in the mixing process, choices would undoubtedly be made without his or her input. As Ray Moore remarked: ‘Sometimes the recording engineers play God in what they’re able to do in a situation and in what they finally mix down later’.⁴³⁶ The engineer assumed executive power as only someone with specialist knowledge of the possibilities of corrective plug-ins can decide whether or not a given performance is acceptable. Of course the ability to execute this kind of editing requires an engineer with considerable musical instincts, rhythmic acuity and harmonic knowledge as well as the technological expertise necessary for the implementation of the software. These skills are necessary in order to ensure the editing is done in a musically convincing way. Bass players in fact have proven themselves adept at expanding their role onto the other side of the studio glass. While it is beyond the scope of this study to cover this subject in detail, it would be a worthwhile undertaking to establish the reasons why such a large number of successful producer/engineers are bass players. These include Marcus Miller, Nathan East, Freddie Jackson, Steve Rodby and Bill Laswell as modern examples, and Tom Dowd as representative of a previous generation. For Miller: ‘There’s not a great separation between playing bass and producing’.⁴³⁷ In order to achieve a successful mix, many engineers consider the bass player’s contribution to be of paramount importance. Don Hahn, who counts Sinatra, Woody Herman and Count Basie sessions among his many engineering credits, offered the following comments regarding his prioritization of mix elements:

⁴³⁵ Marcus Miller, cited in Paul Tingen, ‘Marcus Miller: Camel Island Jazz Legend’, *Sound on Sound* (July 1999), <http://www.soundonsound.com/sos/jul99/articles/marcus.htm> (accessed 7 January 2012).

⁴³⁶ Ray Moore, cited in John Harvith and Susan Edwards Harvith (eds.), *Edison, Musicians, and the Phonograph*, p. 321.

⁴³⁷ Marcus Miller, cited in Paul Tingen, ‘Marcus Miller: Camel Island Jazz Legend’.

The bass is always first ... just let me get the bass and I'll balance the whole thing and it'll come out okay. The only time I can get screwed personally on any recording date with a rhythm section is if the bass player's late. There's nothing to relate to because everybody relates to the bass player. If he's not there, it doesn't work.⁴³⁸

His remarks confirm the primacy of the bass, not just in driving the ensemble, but also in supplying the foundation for the subsequent mix. It explains why engineers, using all the technology at their command, go to such great lengths to capture the bass with the most pristine clarity, often contrary to the bassist's own requirements. The better the bass is recorded, the more solid the musical foundation of the recording and the easier a sonically superior mix is achieved. Engineer Andy Johns also emphasized the importance of the bass, but from a different perspective. Johns' view is that the modern engineer must take a more personal involvement with the development of the music in order to assure a satisfying recording. His remarks confirm that the role of the engineer has been transformed from electrical and mechanical overseer, to musical collaborator:

The only way that you can get a proper mix is if you have a hand in the arrangement because if you don't, people might play the wrong thing or play in the wrong place. How can you mix that? It's impossible. The way I really learned about music is through mixing because if the bass part is wrong, how can you hold up the bottom end? So you learn how to make the bass player play the right parts so you can actually mix. It's kinda backwards.⁴³⁹

Clearly, if the bass is so fundamentally important to both the arrangement and the recording's success, a bass player who is well-versed in the techniques of the studio will be better equipped to provide a part that satisfies both musical and technical requirements than one who lacks the technological expertise. Conversely, the bassist, as a musician already accustomed to considering his or her contribution as the foundation of the music, will more easily adapt to the exigencies of established record mixing and producing practices.

As the study has illustrated, from the earliest recording sessions the bass has endured an uncomfortable relationship with the recording process. Modern studios are often no more sympathetic. Driven by recording industry imperatives, the aspirations of the recording engineer have significantly affected the experience of the jazz bassist in the studio. Chuck Israels, bassist with the Bill Evans Trio from 1961 until 1966 and a prolific

⁴³⁸ Doug Hahn, cited in Bobby Owsinski, *The Mixing Engineer's Handbook*, p. 128.

⁴³⁹ Andy Johns, cited in Bobby Owsinski, *The Mixing Engineer's Handbook*, p. 138.

session musician, provided an insight into the disparity between the goals of the musicians and engineering staff. He argued that changing industry standards have caused recorded sound to become increasingly less true to life. In his opinion the application of successive levels of technology has done nothing to improve the process of music making or its results. Market demands and overly enthusiastic adjustments to accommodate new forms of playback technology have seriously undermined the results of recording from the bassist's perspective. The final product realized in the control room often undergoes such invasive mediation that it bears scant resemblance to the sound being produced by the ensemble in the studio space. Israel complained:

I have been in recording studios, highly regarded ones, in which the engineer never ventured out of the control room and into the studio to hear the individual sound of the instruments or the balance and blend the musicians achieved in the room. It would be one thing if the results of that omission were acceptable, but they aren't. Bases are often either muddied or overly bright and almost always over balanced. Drums are usually recorded as if the listener had five ears, each of which was poised within inches of each part of the drum set. The havoc that this wreaks on the sound of sensitive players is so great that it's a wonder that any musical effect comes through.⁴⁴⁰

The disparity between the aims of the bassist and the engineer was highlighted in an article in *Mix* magazine in which the problems involved with recording the string bass within a jazz ensemble were specifically addressed. Of thirty-two contemporary recording engineers, thirty insisted that at least two microphones were necessary to adequately capture the sound of the acoustic bass. Whilst they all went to considerable lengths listing their esoteric microphone and pre-amplifier choices, none mentioned the affect on the bassist that the use of their techniques might precipitate. Only one respondent, Rik Pekkonen, discussed the problem confronting the engineer who defers to the bass player's demands for a purist recording approach:

The most difficult thing about recording acoustic bass is the situation you're in. If the bass is live in the room with a rhythm section, you will need a direct output, a microphone and baffling. If the bass player insists on a microphone only and no baffling and has to be next to the drums – and let's throw in an aggressive piece of music! – you'll have every instrument in the room on your bass track. After a playback where everyone hates the sound, you'll get to move the bass into an isolation booth or suggest the direct again. Normally, if I don't know the bass player, I will have all these options set up before the session so we don't waste time.⁴⁴¹

⁴⁴⁰ Chuck Israels, 'Department of Lesser Amplification'.

⁴⁴¹ Rik Pekkonen, cited in Maureen Drone, 'From the Bottom Up.'

The above quotation illustrates the degree to which the bassist's desire for a pure unmediated experience is largely incompatible with the achievement of technically acceptable recordings. Pekkonen's comments also reflect the disparity between the experiences of the ensemble members in the process of recording and the reality check of the subsequent playback, during which expectations are invariably dashed. They reflect technology's inability to fully capture and reproduce the performance as constituted within the minds of the performers. The microphones are objective and dispassionate in their rendering of the music, in contrast to the musicians themselves, whose subjectivity influences their recollections of the details of the performance. The sonic event is immaterial – it is the musical experience itself that is so difficult to reify. For the bassist, the microphone simply transcribes the contaminated sound emanating from the instrument within a noisy environment. It fails to feel the vibrations of the bass strings under the player's fingers or the emotions coursing through the bassist's mind during performance.

The application of sound reinforcement to live musical performance is another area in which technology has affected the bassist. From the 1920s to the 1950s the bass player was usually unamplified and totally self-reliant on delivering an adequate level of sound. In order to adapt to the rising dynamic levels of commercial music during the 1960s and early 1970s, bass players were attracted to a steady stream of larger and increasingly more powerful bass amplifiers. At this stage the responsibility for their sound still rested literally on their own shoulders, with the equipment they brought to the engagement. However, this self-reliance began to change in the early 1970s as concert promoters came to entrust their presentations to large sound companies such as Clare Brothers, and the Sunn Musical Equipment Company.⁴⁴² The bassists' large touring amplifiers were now redundant as the bulk of their sound was being projected through enormous public address systems. With the displacement of the ensemble's sound from the back line to the front of stage came the necessity for elaborate floor wedge type monitoring systems to enable the musicians to hear one another more directly. Once this practice had become established, bassists found themselves relinquishing control of the sound and dynamics of

⁴⁴² See Ritchie Fliegler. *Amps!: The Other Half Of Rock'n'Roll* (Milwaukee: Hal Leonard 1993), p. 70.

their instrument in concert to audio personnel. As early as 1980 advertisements for Fender's 300 Bass Slimline amplifier acknowledged both the increased demands on bassists and the role of the sound engineer:

Today's bass player is making more complex demands on his music than ever before. But there's never been an amplifier to totally match his music – until now. Four bands of conventional equalization and three separate parametric controls let the player create any sound he wants to hear on stage. And, with a selectable line level output, the sound-man can have a flat signal he can mix for the house sound. The built in internal limiter/compressor allows high volume playing without distortion. Effects input/output jacks gain control provide for effects looping with high or low impedance accessories. The 300 Bass is bi-amp ready with a built in electronic crossover.⁴⁴³

Fender introduced to the bassist a dedicated bass amplifier that essentially comprised a recording studio console's channel strip module, clearly necessitating the bassist's familiarity with advanced engineering practices and the audio engineer's involvement in order to utilize it effectively.

Acoustic bassists in particular found it increasingly difficult to deal with this external dependency, especially when confronted with engineers unsympathetic to their particular needs. Christian McBride described the difficulties he routinely confronts when forced to negotiate with audio technicians more familiar with the requirements of pop bands in large performance spaces. These personnel, he has found, are frequently unfamiliar with the subtleties of jazz instruments and their presentation:

Sound-checks are often even more important for acoustic bands, electric bands have more stuff; but acoustic instruments have to be heard, and in a 3000-seat auditorium you need some amplification. Most of the time you just have to be nasty because sound engineers want to tell you how your instrument is supposed to sound.⁴⁴⁴

In modern concert venues often as many as three people have a direct impact on the bass player's performance – the bassist, the front of house sound mixer and the monitor mixer. Israels is a particularly vehement critic of the 'impoverishment of the musical experience' caused by the ubiquitous use of amplification.⁴⁴⁵ He suggests that modern refinements to audio engineering have done little to improve live music and insists that the experience should remain pure and unmediated. For Israels: 'The *acoustic* tradition in jazz has been

⁴⁴³ John Teagle and John Sprung, *Fender Amps: The First Fifty Years* (Milwaukee: Hal Leonard, 1995), p. 149.

⁴⁴⁴ Christian McBride, cited in Bob Blumenthal, 'Road Runner: Christian McBride', *DownBeat* (February 1997), p. 25.

⁴⁴⁵ Chuck Israels, 'Department of Lesser Amplification'.

distorted to mean, ‘acoustic instruments whose sound is destroyed by amplification’.⁴⁴⁶

Israel insists that in his entire 35-year career as a professional bassist he has never experienced a sound system that did not hinder the ability of musicians to make their own natural balance adjustments on stage – even in the hands of experienced sound mixers. Clearly the objectives of live sound engineers and bassists do not always correspond. The difference may lie in two diametrically opposed views of the nature of jazz. For many artists the essence of jazz lies in the interplay and communication between the performers, for others it is embodied in the holistic effect of the ensemble. Amplification does nothing to improve either, in fact it does much to impede the former by smoothing out nuances of dynamics, dislocating the performers from each other and their instruments and rendering internal balances impossible to gauge accurately. In the case of the latter, it discourages the audience from actively listening in to the ensemble. Rather than engaging the spectators, amplification allows them to be passive as the sound waves wash over them. Part of the problem resides in the nature of the modern venue, which has grown ever larger due to financial imperatives and the influence that modern recordings have made on the expectations of today’s audiences as to what constitutes acceptable sound.

The development of sophisticated audio programs has also led to producers such as bassist Bill Laswell assuming the role of artistic collaborator after the fact. Laswell believed that Miles Davis’ music of the late 1960s and early 1970s suffered as a result of both the primitive recording technology used (8 track) and the lack of visionary engineering personnel, preventing it from being brought to its full potential. Of particular concern to Laswell was the lack of sufficient clarity in the bass on the original recordings. He and others, such as Bob Belden, believe that modern technology should be exploited in revisiting classic material, refashioning it into more satisfying works. Their conviction is predicated on the assumption that the original artist would have done the same if technology and technicians had permitted. Laswell used a process he called ‘reconstruction and mix translation’, in which he subjected the music on the multi-tracks to various forms of manipulation. The release of Laswell’s *Panthalassa: The Music Of*

⁴⁴⁶ Chuck Israels, ‘Department of Lesser Amplification’.

Miles Davis 1969-1974 documented his efforts.⁴⁴⁷ Most notable is the increased prominence of the bass and the heightened transparency in the reconstructed instrumental textures. The foundation was fortified in the remix to take advantage of the fact that the strength of the bass was no longer at the mercy of an anemic vinyl format. Laswell explained:

It was easy for me to bring the drums and bass up-front and give them a more dynamic, bigger sound that suits repetitive parts. The bass on *In A Silent Way* was an upright, and I tried to make it sound more like an electric bass by using effects such as the dbx 120x Subharmonic Synthesizer to enhance or synthesize the bottom end. I also took some bass drone and bowed bass, and looped and processed this and used it in different places to get an ambient or atmospheric texture. The new mix brings a new transparency and funkiness to the rhythm section, with the bass brought right up front.⁴⁴⁸

As a talented bassist himself what is interesting is Laswell's 'bottom up' perspective on the music:

I've been greatly influenced by dub music, which was the music style that initiated the current emphasis on bass ... the bass is always centre-stage, and it's interesting to see how our perception of bass has changed over the last 25 years. I've also been influenced in my studio work by hearing bass on PA sound systems, and trying to make the bass sound bigger and bigger all the time.⁴⁴⁹

The viewpoints expressed by Israels and Laswell demonstrate the opposing perspectives of two bass players from opposite sides of the recording studio glass. For Israels, modern recording engineers, even the most respected, appear to be little concerned with the actual sound that is being produced by the bass on the studio floor. Their first impression of the various instruments is the one received through the ear of the microphone or pick-up – in other words, mediated by technology. The modern recording engineer's point of reference has been established by technologically inspired conventions that have evolved with recording technology itself, rather than the sound emanating from within the performance space. According to Israels, the idea of how a jazz ensemble should sound has evolved into something quite different from reality as a result of the development of the techniques used to record it. Clearly there has been a

⁴⁴⁷ Bill Laswell, *Panthalassa: The Music Of Miles Davis 1969-1974*, Columbia CK67909 (1998).

⁴⁴⁸ Bill Laswell, cited in Paul Tingen, 'Bill Laswell: Reshaping the Music Of Miles Davis', *Sound On Sound* (May 1998), <http://www.soundonsound.com/sos/may98/articles/billlaswell.html>. (accessed 25 September 2011).

⁴⁴⁹ Bill Laswell, cited in Paul Tingen, 'Bill Laswell: Reshaping the Music Of Miles Davis'.

disconnection between the activities of the bass player within the ensemble and the efforts of the engineer to render them faithfully. Engineering personnel often countermand musical nuances and dynamic adjustments made by the bassist in the performance space as they pursue their own agenda in the control room. This is of concern for Israels, who felt his artistic integrity had been compromised and the resulting music degraded.

Laswell, on the other hand, relished the opportunity to use technology to ‘correct’ what he saw as mistakes of the past, largely attributable to outdated recording and delivery tools. The enhancement of the rhythm section was his primary objective, as he saw it as being essential to the improvement of the recording. His strategy of ‘bringing the bass and drums up-front’ implies a dissatisfaction with previous conceptions of rhythm section balance within the ensemble. Clearly, as he stated, the influence of bass-heavy dub music and its delivery on modern public address systems has inspired his re-assessment of the appropriate weight of the foundation of a jazz recording. As a result, he saw the bass part, as recorded by Holland in 1969, as insufficient to underpin the ensemble, not only in terms of its volume, which he could have simply raised in the remix, but in terms of its sonority. This inadequacy justified his use of a subharmonic synthesizer to generate a more stentorian bass; in his words – to make it ‘sound more like an electric bass’. Laswell, a seasoned bassist himself, saw no issue with assuming control of Holland’s bass part and adjusting it to suit his requirements. He called his technique ‘reconstruction and mix translation’ rather than ‘remix’, in order to avoid the charge of meddling with the original artist’s intentions. By whatever name one might wish to call them, Laswell’s efforts clearly represent a de-prioritization of the artistic power and authority of the original bassist in the ensemble. Pekonnen on the other hand, acknowledges the desire for the bassist to be recorded as non-invasively as possible, using only a microphone. He concedes, nevertheless, that ultimately his more comprehensive process, in which a pick up and baffling and/or physical dislocation is employed, will produce the better sonic result.

The current chapter has examined the wide-ranging repercussions that the explosion in computer technology has had on bass players, and the changes to their role brought about by the increasing mediation of the engineer. Those repercussions included

the ways in which the strategies of digital recording have challenged conventional notions of bass playing, and the extent to which the possibilities of error correction have eroded the traditional concept of musical competency. In the following chapter the future of the jazz bass player will be examined against the backdrop of ongoing technological innovations.

CHAPTER NINE

The Future of the Jazz Bassist (2005-2012)

Over the last 35 years the gradual infusion of technologically dependent styles into jazz has challenged the conventional lines of demarcation between musical genres. Traditionally, the term ‘jazz bassist’ evoked visions of a string bass player in a big band or small group setting, performing the blues or songs from the Tin Pan Alley canon. The modern jazz bassist is just as likely to be required to provide accompaniment and improvise solos in a wide variety of other styles employing a myriad of technologies to do so. Jazz has continued to diversify and evolve in spite of the reactionary pressure brought to bear by the Young Lions in the mid to late 1980s. The hostilities generated by the electric/acoustic bass debate, which, as the study has demonstrated, constituted the epicenter of the jazz versus commercial music divide, have largely subsided. This is reflected in the annual *DownBeat* readers’ poll of 2006 which consolidated both instruments under the one heading – Bass (Acoustic and Electric), rather than treating them independently. Significantly, the annual readers’ and critics’ polls in *DownBeat* also reveal a generational bias in the choice of instruments among bass players. In 2009, for example, those bassists who excelled on both the conventional string bass and the electric bass were predominantly from the younger generation of players. On the other hand, those who played one or the other exclusively were typically older. It is little wonder then that stylistic expansion is being encouraged by a generation of bass players who identify strongly with the rock and funk music with which they grew up. The current chapter considers the extent of this re-definition of jazz. It investigates how state of the art technology is affecting the bassist, and what its continued and expanding application in jazz portends for the bass player of the future.

Allan Chase, current chair at the New England Conservatory’s Jazz department, offered his assessment of what constitutes ‘jazz’ in the modern context, and by implication, what it means to be a contemporary jazz bassist: ‘Jazz to me is more of a process of music making or an orientation rather than a set of definite stylistic

guidelines'.⁴⁵⁰ His statement reflects the acknowledgement of a more expanded jazz orthodoxy, one that embraces all forms of music as possible material for improvisation. This prioritization of process over style is arguably the result of the globalization of jazz that has occurred over the last few decades, leavening traditional musical forms with an infusion of more exotic harmonic and melodic materials. In light of Chase's re-evaluation, the definition of a jazz bassist must also be broadened. Bassist Mark Egan revealed the myriad of styles that fueled his own development:

My sensibilities over the years have always been influenced by the whole evolution of bass. I've studied the history of the bass through jazz and rock, and continue to study it by listening to different players and composers. My sound is made up of a lot of things. I think there are a lot of jazz influences from my acoustic bass experiences. There are influences from Indian music, from sitars and vinas. I have influences from rhythm and blues, rock, and especially Motown music.⁴⁵¹

Also representative of this modern class of bassist is James Genus, who is renowned for both his acoustic bass playing in traditional jazz settings and his electric bass funk performances. Genus remarked on the eclectic ethos that has replaced the genre sectarianism he experienced twenty years ago in New York City:

There were a lot of purists back then. You might play Mondo Perso or Bradley's [two famous NYC music clubs, the former's musical fare blues and the latter traditional jazz orientated], but not both. But that kind of thinking has disappeared to a large degree. These days, musically, it's all come together.⁴⁵²

Thirty-seven year old Christian McBride, *DownBeat's* 2009 jazz bassist of the year, tried to put the stylistic expansion into a more historical perspective when he remarked:

We were the generation that was able to assimilate all that had happened before us, and at some point decided to use hip hop or certain types of indie rock, great music that not too many jazz people were keeping their ear on. It's no different than what any other generation of jazz musicians did.⁴⁵³

McBride rationalized the appropriating spirit of modern jazz by citing the precedent set by past masters, many of whom incorporated styles such as bossa nova, samba and calypso rhythms into jazz, all of which were essentially foreign to its Afro-American

⁴⁵⁰ Allan Chase, cited in John Janowiak, 'What is Jazz Education Today', *DownBeat* (October 2000), p. 11.

⁴⁵¹ Mark Egan, cited in Adrian Ashton, 'World of Bass, Mark Egan: Fretless Freedom', *Bass Guitar Magazine* 7 (2003), p. 67.

⁴⁵² James Genus, cited in Jim Macnie, 'The Twain Shall Meet', *DownBeat* (February 2011), p. 45.

⁴⁵³ Christian McBride, cited in Jimmy Katz, 'Christian McBride: Acoustic Bassist of the Year', *DownBeat* (August 2009), p. 28.

heritage. His opinion confirms that younger bassists feel perfectly justified in pursuing an expanded jazz conception.

As the current study has demonstrated, technology has played a significant role in the evolution of jazz. In terms of its recording, the degree of technological mediation has increased exponentially over the last few decades, influencing many aspects of the bass player's performance in the studio. As a result, bassists can no longer afford to remain ignorant of issues that were once the exclusive domain of engineers. To do so is to invite disenfranchisement. As Michael Chanan suggested: 'Musical power is now in the hands of the technologically aware, of the producer, sound engineer, mixer and remixer'.⁴⁵⁴ This risk of marginalization has obliged bass players to develop the appropriate skills and language to deal with a range of new issues. Bassists' understanding of technical matters has been enhanced by the widespread adoption of computer-based music recording programs among musicians. The reflexive environment these programs generate has provided bass players with an ideal platform for skill acquisition. One such bassist is Gerald Veasley, who encouraged others to empower themselves in order to retain control of their sonic signature, the sound of their instrument in the studio:

Often the studio engineer has a pre-conceived idea of what the bass should sound like. They don't know you or your bass sound. So you need to understand things like EQ, gain, how various frequencies will affect your sound. Don't just say, 'the bass sounds hollow' Say, it needs more low-mids. Or, 'Can you boost it at 300 cycles?' If the bass is not cutting through the track, you might need to boost the high-end frequency in the 2.5-3kHz range, or higher, if you want it to pop out. If you want more of a slap sound, you may need more low end, around 165Hz, boosting the bottom to take out some of the mids. These are just general principles that any bass player should be aware of. It pays to arm yourself with knowledge.⁴⁵⁵

In their own home studios, bass players can discover for themselves the effects of applying a host of sophisticated processes to their instrument's sound, using the resources of the Internet to master the requisite techniques and terminology. In effect, they become their own engineers. As Ken Micallef commented:

The days of recording sessions that involved mic'ing or plugging in your instrument, checking levels with the engineer and hitting the tape machine's record button are gone. Increasingly, musicians work alone in home studios. They study digital arrangements or MP3 files, and record their part with an array of plug-ins and effects. Then, they ship the

⁴⁵⁴ Michael Chanan, *Repeated Takes*, p. 151.

⁴⁵⁵ Gerald Veasley, cited in Ken Micallef, 'Home Studio: Plugged-in Soul Lab', *DownBeat* (February 2006), p. 55.

results via the Internet or snail mail.⁴⁵⁶

In this way, the home studio has generated new recording methodologies for the jazz bass player. Taking advantage of the fragmentary nature of much of today's music production, bassists such as Veasley often work in isolation. They find themselves commissioned to provide bass parts to previously recorded, partially completed recordings. Under these circumstances, bassists must assume the ancillary role of engineer/producer, developing innovative processes that fully exploit the flexibility of digital recording. For example, during his work on a Jaco Pastorius Big Band tribute album, Veasley, in the absence of a designated producer, delivered a large number of optional bass parts. The ability to provide these alternative performances was the result of the flexibility of the Pro Tools recording platform. Veasley explained his strategy:

Since I am producing myself and trying to anticipate what the producers might want, I recorded several different versions of Pastorius' 'Dania'. I recorded five versions, each with a slightly different feel. I also recorded five different solos with no edits, no overdubbing. The tune is so organic that I didn't want to cut up any bass part or solo. Every part was played straight through.⁴⁵⁷

Veasley's procedure above provides further evidence that the jazz bassist's role has become stylistically less well defined. There is no 'right' bass part, predicated on rigid stylistic parameters of the kind that might have been apparent forty years ago. In those days a big band bassist, for example, no doubt would have played essentially similar bass parts for every take. Even if the specific sequence of notes varied, each performance would have been characterized by the same rhythmic orientation. As late as 1999 Keith Negus believed that:

It can be reasonably argued that the vast majority of musical production at any one time involves musicians working within relatively stable 'genre worlds' (Frith, 1996) within which ongoing creative practice is not so much about sudden bursts of innovation but the continual production of familiarity.⁴⁵⁸

The destabilization of Simon Frith's 'genre worlds' has accelerated with the proliferation of digital audio recording. Veasley confidently provided five 'slightly different feels', undoubtedly drawing on a wide range of stylistic influences assimilated as a result of jazz's more recent embrace of the cross-generational genre pool. Whereas once this may

⁴⁵⁶ Ken Micallef, 'Home Studio: Plugged-in Soul Lab', p. 54.

⁴⁵⁷ Gerald Veasley, cited in Ken Micallef, 'Home Studio: Plugged-in Soul Lab', p. 55.

⁴⁵⁸ Keith Negus, *Music Genres and Corporate Cultures* (New York: Routledge, 1999), p. 25.

have smacked of indecisiveness and lack of musical awareness, today it is apparently a matter of professional courtesy and, more importantly, a reflection of the dynamic nature of contemporary musical genres. As Keith Negus confirmed: 'For those involved in day-to-day musical activity, genres are often experienced as dynamic and changing rather than rule-bound and static'.⁴⁵⁹ One is also forced to consider what Veasley meant by 'the tune is so organic'. Arguably, an organic tune would, by definition, imply a singular bass part to accompany it. His ability to provide five variations suggests that the process of modern recording has undermined the 'organic' nature of jazz music, by multiplying the number of equally satisfactory options.

The provision of a multitude of alternate bass performances also reflects today's more expansive demands on the bass player in the studio. The practice contributes a matrix of cross referenced possibilities, a mix and match strategy in which slices of one track can be inserted by cutting and pasting into any other, providing a virtually unlimited number of combinations. Nothing is achieved by providing four or five bass tracks that are all essentially the same. The true value of this procedure resides in the bassist being aware of those musical gestures that have not been included in previous attempts. If the composition finishes with a short note, perhaps a long one should be provided on an alternate track in case it is subsequently required through developments unforeseen at this early recording stage. Committing these alternates to disc in the interests of expanding the number of viable options, the bassist's duty is no longer simply to provide the definitive bass part at all, more a note pool or cache of resources. The act of recording a bass part begins to involve considerations subsumed from the arranger. In this way the technology of unlimited tracks influences what is played, by stimulating a kind of lateral thinking. The bassist is encouraged to furnish an expanded variety of musical elements, some undoubtedly inappropriate within their immediate musical context, but included in the interests of comprehensiveness. In this way the musical contribution of the bassist serves the exigencies of the recording process itself in a more profound way than it addresses the immediate demands of the music. This is an approach to music production that is particularly germane to the bass player, as the bassist is the instrumentalist most often performing in the early stages of recording, in a situation where the maximum

⁴⁵⁹ Keith Negus, *Music Genres*, p. 26.

number of changes might subsequently occur.

This recording method represents a strategy by which the maximum number of stylistic variants can be embraced, the appropriateness of any one of which is contingent on subsequently recorded parts. Depending on the stage of completion of the project, Veasley may be playing to a drum machine, an incomplete rhythm section recording, or simply a click. The final mix, once completed will be the result of a decision making process that has considered all the available alternatives presented by the various players, each contingent on an incomplete understanding of contributions yet to be recorded. The style will be undoubtedly ‘jazz-like’ in its characteristics – instrumentation, rhythmic orientation, presence of solos, and so forth. But the process by which the work is brought to fruition lacks one of the previous hallmarks of jazz’s character – spontaneity. Rather than twenty musicians reacting to each other in the moment as they commit a live performance to tape, DAWs have encouraged a sequential process involving the gradual generation of more options – ultimately under the control of the producer/mix engineer who later determines what will be included. The bass loses its status as the music’s ‘foundation’ in all but its low range presence. Conceptually, it is now one of many contingent parts. The music itself is only constituted at the end of the recording process. To paraphrase a remark made by Walter Benjamin in discussing how the internal logic of film is embodied within the editing process: ‘The meaning of each single picture [or in this case track] appears to be prescribed by the sequence of all preceding ones’.⁴⁶⁰ Like a sculptor, the producer chips away at a block of possibilities to reveal the artifact embodied underneath, the exact nature of which is only determined with the final stroke. This approach to music production represents a collaborative authorship process based on iteration, which Jason Toynbee termed ‘phonographic orality’.⁴⁶¹ By facilitating production methods that draw on the tradition of collective composition inherent in folk music, Pro Tools has further undermined traditional means of copyright and authorship attribution. Rather than reflecting the work of a solitary composer, the primary text – the

⁴⁶⁰ Walter Benjamin, ‘The Work of Art in the Age of Mechanical Reproduction’, *Illuminations* (London: Fontana Press, 1992), (accessed 23 January 2012)
<http://www.marxists.org/reference/subject/philosophy/works/ge/benjamin.htm>

⁴⁶¹ Jason Toynbee, *Making Popular Music: Musicians, Creativity and Institutions* (London: Arnold, 2000), p. 46.

mixed recording – is often the result of a multilayered compositional process in which the nominal composer is one of many.

As with Pastorius thirty years previously, the reliance on technology still appears to be a source of some discomfort to jazz bass players. Veasley's insistence that no editing or overdubbing were used, and his explanation of why they were avoided, is a disingenuous way of limiting his apparent reliance on specific areas of technology, namely those whose use might cast aspersions on his musicianship. By disassociating himself from selected aspects of the recording technology (in this case, error correction), Veasley established for himself the aura of a technologically savvy modernist while deflecting the perception that he would be unable to perform adequately without it. Bassist Steve Bailey was equally keen to dispel any suspicion of error correction. In his remarks concerning his 2011 album of solo fretless bass interpretations, *So Low*, he revealed:

I always wanted to do solo arrangements on the six string fretless ... not for the faint of heart! Truly, it was the most difficult undertaking I have ever attempted ... no pitch fixing, no editing, and no overdubs.⁴⁶²

The strategy has become routine among bassists. First, comment on how demanding the enterprise had been, thereby reinforcing one's reputation for heroics in the face of immense difficulty, then qualify its successful achievement by disavowing technology's less flattering interventions. His colleague Victor Wooten shared Bailey's attitude. Wooten in his review of *So Low* implied that technology had become something to be denied, albeit with a self-conscious twist:

Your ear will tell you that there is no way he could have produced all of this music with one bass and no overdubs (I know that he did), but the smile of your soul will tell you that it doesn't matter.⁴⁶³

Bassist Dave Pomeroy, on the other hand, enthused about the benefits his home studio brought to his musicianship. He appeared much less concerned with acknowledging his exploitation of its technological resources. Not only did it enable him to produce a solo album, the knowledge and insights he gained whilst engrossed in the project also

⁴⁶² Steve Bailey, cited in Jake Kot, 'Steve Bailey: Six String Bassist Extraordinaire', *Bass Musician Magazine* (August 2011), <http://bassmusicianmagazine.com/2011/08/bass-musician-magazine-featuring-steve-bailey-august-2011-issue> (accessed 27 September 2011).

⁴⁶³ Victor Wooten, cited at <http://www.stevebaileybass.com> (accessed 27 September 2011).

enhanced his more conventional performance efforts:

By working at home, I had total freedom to experiment with no real pressure or time constraints, which is very different from session work. If it took a couple of days to get something right, that's what I did. On the other hand, when you're working alone, the hard part is knowing when to stop! From a playing standpoint, to be not only the soloist, but also the entire band, forced me to literally invent new sides of my musical personality. It was very liberating to be able to pursue ideas that would be out of bounds in my typical 'studio player' world. Inevitably, some of the new stuff I discover sneaks into my studio work, which is cool. More than anything, I found that making my own music on my own time has made me a better sideman *and* studio player.⁴⁶⁴

Clearly, the economic feasibility of prolonging self-recorded projects, free from the constraints of professional studio budgets, allows bassists to contemplate aspects of their performances impossible to address during a traditional recording session. These can be re-examined down to the minutest detail, consequently generating a more discriminating view of one's capabilities. As John Patitucci reported:

I remember listening to myself on tape and just dying inside, hearing every little thing that was uneven or poorly executed magnified so much. You just go, wow, is *that* what I sound like?⁴⁶⁵

Technology has encouraged heightened objectivity, leading to a more thorough assessment of skills in the studio that, in turn, promote improvements in areas that normally escape the bassists' own scrutiny during live performance. Michael Manring was equally taken aback by the inconsistencies this studio experiences illuminated: 'The difference between what you hear while you're playing and what you hear in a playback can be such a shock'.⁴⁶⁶ The same forensic qualities that Benjamin ascribed to the camera in the 1930s could now be applied to the digital audio program. His observations concerning the camera now had a musical corollary:

... reproduction can bring out those aspects of the original that are unattainable to the naked eye yet accessible to the lens, which is adjustable and chooses its angle at will. Evidently a different nature opens itself to the camera than opens to the naked eye – if only because an unconsciously penetrated space is substituted for a space consciously explored by man.⁴⁶⁷

New perspectives, revealed by the 'lens' of Pro Tools, also encourage an expansion

⁴⁶⁴ Dave Pomeroy, cited in Ron Garant, 'Dave Pomeroy: Got Bass?', *Bassics Magazine* 32, p. 28.

⁴⁶⁵ John Patitucci, cited in Richard Johnston, 'Meeting of the Minds: Bi-Coastal Brain-Picking with Manring and Patitucci', *Bass Player* (December 1998), p. 54.

⁴⁶⁶ Michael Manring, cited in Richard Johnston, 'Meeting of the Minds', p. 54.

⁴⁶⁷ Walter Benjamin, 'The Work of Art in the Age of Mechanical Reproduction'.

of the bass' traditional role. Ingenious ways of employing the instrument present themselves to the bassist/recordist, many of which might be impractical to adapt to live performance. The bass becomes a source of sonic raw material through transformative processes generated in the computer. Bassist Ben Allison, for example, exploits the ability of the string bass with its large body to act as a drum. He produces rich rhythmic tapestries from individual samples generated by the application of various percussive techniques to the instrument.

I've been trying to coax as many sounds out of the bass as I can. That may mean preparing it with paper, or using a drumstick, or playing on the other side of the bridge for a kalimba sound. Acoustic bass has a lot of stuff people don't use.⁴⁶⁸

Today's bassists, once introduced and habituated to the use of Pro Tools, have their perceptions irreversibly transformed. One ceases to be able to approach performance, the previously 'unconsciously penetrated space', in the same manner as before. Every musical exchange is informed by the visual and auditory sense perceptions that DAWs have awakened. Digital audio techniques have enriched the bass player's consciousness, introducing to those such as Allison, who 'focus on hidden details of familiar objects ... an immense and unexpected field of action'.⁴⁶⁹

The infatuation with technology that has consumed jazz musicians over the last forty years has more recently appeared to cool. Ironically, an interest in more conventional forms of jazz performance seems to have been sparked a rediscovery of the joys of unmediated bass playing. For example, Steve Lawson remarked: 'I have a straight jazz quartet that just does standards, and I love those gigs! No looping, no e-bow, just walking bass and normal jazz soloing over changes.'⁴⁷⁰ Manring, an innovative soloist and bass experimenter, was asked whether he enjoyed playing the normal role of a bassist in an ensemble. His response was telling:

⁴⁶⁸ Ben Allison, cited in Bill Milkowski, 'Ben Allison: A Sense of Self', *Bass Player* (October 1998), p. 22.

⁴⁶⁹ Walter Benjamin, 'The Work of Art in the Age of Mechanical Reproduction'.

⁴⁷⁰ Steve Lawson, cited in Ron Garant, 'Steve Lawson: Extravagant Bass', *Bassics Magazine* 39 (2005), p. 14.

I love to do that. I love to play in a band and lock in with a drummer. That's one of the real joys about it. That's one of the great things about being a bass player. You don't get to do that on any other instrument.⁴⁷¹

Bunny Brunel was likewise keen to disassociate himself from his previous inclination to employ technology in his bass work, reverting instead to a simpler less mediated style. When asked if he used effects on his current album, Brunel replied: 'No, not anymore, I used to use a harmonizer, and sometimes I would double the bass melody. But I don't like to double anything anymore. Now I'm playing just straight bass.'⁴⁷² These statements suggest some bassists are becoming less preoccupied with technology, embracing a more mature attitude toward sound modification and refocusing their efforts back toward more fundamental, traditional musical objectives.

Forty years ago technology empowered bassists to make their presence felt more assertively. The increased presence encouraged them to showcase the bass in a more prominent way. Many of these pioneering artists such as Clarke and Miller took advantage of the novelty of highlighting a previously supporting instrument using compositions that were expressly designed to feature the bass. Now that technology has achieved for the bass a more elevated status in the jazz canon, greater expectations have been placed upon it. Compositions that once masqueraded as thinly veiled excuses for bass players to display their technical virtuosity are no longer sufficiently novel to generate interest. Bassist Adam Nitti discussed this development when asked; 'Do you think it's harder for a bassist to create his/her own style?', he replied:

There is a whole pile of records out there as 'bass records', all the tunes were written by a bass player, and [the recording] is led by a bass player. You're hearing the bass playing the melody on just about every song, and the bass is playing the bass line, and the solos. The songs are arranged for the sake of arranging them for the bass. If you listen to his [Pattituci's] first record, the bass is leading everything. Times have changed. You listen to his stuff now and it's very, very different. For one thing it's more straight ahead. Number two, compositionally these tunes are featuring whatever instrument needs to be featured at the appropriate time.⁴⁷³

⁴⁷¹ Michael Manring, cited in Robert Kaye, 'Ambling with the Manthing: Higher Consciousness Through Lower Frequencies', *Bassics Magazine* 39 (2005), p. 24.

⁴⁷² Bunny Brunel, cited in Ron Garant, 'Bunny Brunel: The Master of the Bass', *Bassics Magazine* 36 (2004), p. 8.

⁴⁷³ Adam Nitti, cited in Robby Garner, 'Gettin' Gritty with Nitti', *Bassics Magazine* (January/February 2002), p. 10.

While acknowledging the power the bass has gained to excel in many different roles largely, as the current study has shown, through technological innovations, these comments suggest that the need for bassists to plead their case is over. The future demands that the bass player be regarded in the same way as any other instrumentalist and judged on musical merit alone. Dave Pomeroy confirmed this attitude when he remarked of his recording *Tomorrow Never Knows*: ‘My main goal was to make a bass record that people would want to hear more than once!’⁴⁷⁴ Clearly he was conscious of the limited appeal that a bass-centric album with little else to recommend it would generate by 2002.

A clear indication that the infatuation with technology is losing its fervor was given during a review of the results of the Thelonious Monk International Competition: Bass Competition (2010). The judges included Patitucci, Carter, Holland, Haden, Hurst and McBride. The winner, twenty-four year old Ben Williams, delivered a performance notable not for its sophistication or lack of errors but for its sense of joyous abandon, an infectious, foot tapping beat. McBride remarked:

[Patitucci and Holland both said] ... we want a bass player who’s going to make our toes tap. That’s a prime example of how no matter how far-stretching you get as a jazz musician, it all comes back home. Ben made all our toes tap the most.⁴⁷⁵

McBride continued by acknowledging the errors in Williams’ performance – the very things that technology had been used to reduce over the last 50 years: ‘I think what gave Ben the edge was his imperfections. His imperfections really touched us. His performance was really soulful.’⁴⁷⁶

Clearly aesthetic preferences are currently being realigned in order to prioritize the human element of jazz performance on the bass. The ‘correctness’ of a given performance is not nearly as important as the empathy generated by an impassioned and risk-taking performance. As Keith Jarrett remarked: ‘Jazz is risk, and without the risk there’s no reward either for the player or for the audience’.⁴⁷⁷ A growing impatience with

⁴⁷⁴ Dave Pomeroy, cited in Ron Garant, ‘Dave Pomeroy: Got Bass?’, p. 28.

⁴⁷⁵ Christian McBride, cited in John Murph, ‘4 strings, 70 years Honored in D.C.’, *DownBeat* (January 2010), p. 13.

⁴⁷⁶ Christian McBride, cited in John Murph, ‘4 strings, 70 years Honored in D.C.’, p. 13.

⁴⁷⁷ Keith Jarrett, cited in Becca Pulliam, ‘Maintaining Standards: Keith Jarrett and Dave Grusin’, *DownBeat* (May 1992), p. 21.

perfection appears to be brewing, coupled with apathy toward gratuitous displays of technique. The same technical facility that technology has facilitated and indeed rendered commonplace thanks to the spread of jazz education, appears to produce works that lack sufficient humanity. As Marcus Miller commented:

Throughout the '20s, '30s, '40s, '50s and '60s musicians have been so constrained by time and the limitations of technology, that when those constraints fell away, it was natural for us to try to perfect things. And then we realized that it's not perfection that makes things. We realized that it's not being perfectly in tune that makes a vocal great. But we had to find that out.⁴⁷⁸

Further reactionary tendencies are becoming evident in some recording studios. For example, record producer David Chesky of New York based Chesky records has re-established a classic recording technique in his jazz productions. He has completely dismissed the invasive multi-track recording method, advocating a more traditional approach. Chesky related how he arrived at the decision to adopt his retro aesthetic, a decision that acknowledged the degree to which technology directly impacted on the very music it was meant to document:

I would walk into a recording studio and see fifty microphones set up. When I realized that people don't hear music that way, and that musicians play differently when they are recorded like that, I decided that if we ever started a company, it was going to have a different and unique recording philosophy.⁴⁷⁹

Chesky has encountered considerable resistance from musicians to his traditional techniques, a fact that emphasizes how much technology has redefined the performance of jazz in the recording studio in the minds of many of its best practitioners:

When we do jazz records we put up one microphone and guys go bananas, a lot of young players, they say 'I want headphones, I want to be in a booth.' You know why? You put them in a booth with headphones – everybody plays one dynamic – loud. They don't have to worry about dynamics, they don't have to worry about interplay. When you put them in a room together, all of a sudden the drummer has to play quiet, they have to listen. With one microphone, it's like a live performance.⁴⁸⁰

Chesky, in common with Israels, believes that modern recording practices have done a disservice to jazz music, impeding the very features that define it as a highly interactive art form. Rather than rejecting technology, he employs the very best equipment in a non-invasive way, giving back to jazz musicians the power to balance themselves in the

⁴⁷⁸ Marcus Miller, cited in Paul Tingen, 'Marcus Miller: Camel Island Jazz Legend'.

⁴⁷⁹ David Chesky, http://www.chesky.com/core/body_about.cfm (accessed 7 January 2012).

⁴⁸⁰ David Chesky, cited in Steve Harris, 'A Game of Chesky', *HiFi News* (August 2006), p. 83.

performance space. His spartan technique re-establishes the documentarian aesthetic of recording sessions 90 years ago, delivering a palpably real musical experience. As Chesky explained:

We go into a studio with one stereo mike, and we put a band in front of us. This is our mantra: one mike, natural perspective, real musicians in a real space. There's real interplay between the musicians, and it makes them play differently. A lot of musicians hate it at first, because they're used to an artificial environment where everything's assembled, pasted together, and airbrushed, but after a few days they get used to it and really like it.⁴⁸¹

And as for the bassist:

We just place the bass player in the right spot, let him get the sound in the room and adjust his own level. Acoustic only – no amplifier or pickup, like the old days but with very high-tech gear.⁴⁸²

Clearly technology has impacted on the jazz bassist in a dramatic fashion. It has contributed to a change in the nature of the genre itself, improved the bass player's engagement with the music by delivering a broad range of educational opportunities, driven technical levels of performance to unprecedented heights and eventually re-focused attention toward traditional concepts of performance interactivity. As the future unfolds, jazz bassists will be obliged to continually reassess their role in the jazz ensemble and find new ways to increase their viability or risk being marginalized by the very technologies that have contributed to their development.

⁴⁸¹ David Chesky, cited in David Lander, 'David Chesky: A Portrait of The Artist as his Own Man', *Stereophile* (October 2005), p. 55.

⁴⁸² David Chesky, email to the author (26 September 2011).

CONCLUSION

The current study has re-contextualized the bass and its role in the evolution of jazz by locating it within the sphere of contemporaneous technological developments. It has demonstrated that technology contributed to the evolution of the jazz ensemble in ways that have hitherto been largely unacknowledged. The bass and its technological mediation were shown to have driven changes in jazz language, musical style, and even transformed creative hierarchies. In so doing, the study has reconciled technology more thoroughly into the jazz narrative.

Chapters One and Two investigated the connection between the establishment of the string bass as the preferred jazz bass instrument and the nascent recording studio. It emerged that recording technology was essential in encouraging and facilitating the pursuit of artistic goals, the successful attainment of which would have been less likely with an alternative bass instrument, such as the tuba. Chapter Three examined the expanding influence of technology on the role of the string bass after World War Two. From intrinsic factors involving strings, and early attempts at amplification, to extrinsic forces such as the impact of tape recording and the servicing of emerging media, the role of technology in channeling the bassist's professional energies was reconciled with the developments in jazz music as an art form.

Chapter Four investigated social factors, technological developments and the emergence of more commercial forms of music in considering the arrival of the electric bass and its reception by jazz bassists. The case was argued that while many jazz bassists initially derided the instrument, the electric bass was significant in alerting them to possibilities inherent in a more robust, electronically assisted bass presence. Recording format changes and the development of more efficient music production techniques were shown to have influenced the evolution of increasingly sophisticated and idiomatically distinctive electric bass parts such as those of James Jameson. These parts were revealed to have heavily influenced many younger jazz bassists in the late 1960s, a development supporting Attali's contention that: 'In music, the instrument often predates the expression it authorizes.'⁴⁸³

⁴⁸³ Jaques Attali, *Noise*, p. 35.

Chapter Five examined the work of Miles Davis in the early 1970s to argue for the role technology played in the development of new forms of jazz and the importance of the bass in their evolution. In particular, the ways in which bass parts were reconfigured in the interests of facilitating greater musical plasticity were examined. A link was established between the employment of expanded editing and multi-track production techniques, modular performance methods and the transformation of the function of the bass within these new compositional forms. Chapter Six evaluated the impact of Jaco Pastorius. His ability to apply the fruits of technology to a musicianship that was heavily invested in the historical tradition of jazz was considered to argue that the use of technology and the maintenance of traditional musical values were not irreconcilable. The effects of various forms of automation, including MIDI, on the bassist were examined. The exploitation of these resources by the more innovative bass players of the era was investigated.

Chapter Seven visited the aesthetic conflict that transpired in the late 1980s, once the trappings of commercial music had become firmly entrenched into jazz production. This was accomplished by comparing the argument of the 'Young Lions' with the position of those who advocated the unrestrained use of modern technology in jazz. The study used the Young Lions' polemic as a background on which to demonstrate the ways in which technology, as displayed in Marcus Miller's oeuvre, generated innovative new methods of exploiting the bass. The chapter concluded by showing how the Young Lions and their militant rhetoric succeeded in drawing renewed attention to, and glorifying, the organic sound of the unamplified string bass by re-establishing a dialectic between electric and acoustic music advocates.

The incorporation of computer technology into jazz music production was the primary focus of Chapter Eight. The study demonstrated how technology expanded the sphere of interest of many jazz bassists, leading them to pursue artistic objectives that they may not have entertained had the technology to do so not been available. The de-socialization of jazz performance was also assessed, leading to the conclusion that while digital audio programs such as Pro Tools afforded artists greater autonomy, it did so at the expense of the frisson associated with social interaction in the studio. A consideration of the cut and paste methods of production encouraged by digital audio technologies was

also undertaken. Evidence was provided to suggest that technological dependency generated by these techniques was responsible for the perception of a weakening of performance rigor among many jazz artists and producers.

Chapter Nine considered the effects of the globalization of jazz on the modern bassist and the ramifications of the breakdown in genre distinctions that has ensued. A trend toward bass player self-education was noted, partly attributable to the widespread availability of digital resources. These materials were shown to have allowed bass players and others to maintain a greater level of artistic control by granting access to previously esoteric knowledge and production tools. The ways in which modern technology has altered the politics of music making both on stage and in the studio was contextualized historically. This was done in order to display how the bass player has undergone a gradual increase in technological mediation at the hands of audio personnel, as technology itself has grown more invasive and complex. The chapter drew on the remarks of several of today's leading jazz bassists to support the contention that the infatuation with technology evident during the last 30 years has recently begun to subside. Their observations suggested its replacement by a more mature and humanist attitude toward jazz bass performance, which advocates a return to a less mediated approach.

The study has presented a more techno-centric examination of the role of the bass in the evolution of the jazz ensemble. It has shown that much traditional scholarship, which considers the history of jazz bassists by examining transcriptions of their musical works, while invaluable, is unnecessarily myopic. The bass, as the study has established, was the instrument most hostage to technology's evolution and its story has remained incomplete in the absence of this acknowledgment. Technology evolved hand in hand with jazz bassists, delivering them from the anonymity of their original timekeeping function and providing tools that helped them achieve a more emancipated role. It also furnished the means by which their efforts were both disseminated and committed to posterity, and the analytical resources with which they might be analyzed and comprehended. Consequently, the present study has revealed a different perspective of jazz bass history, arguing that without technology's fertilization, the seeds of musical innovation would scarcely have blossomed in the same way.

Technology not only provided the tools of musical evolution – new bass instruments and recording methods – but was also a site in and around which heated polemic forced bass players to defend their various musical agendas. The conflicts arising from the use of technology in the production of jazz ultimately revealed themselves to be beneficial to the art form. For example, the bitter rivalry between electric bassists and string bass players proved, in the end, to be a healthy competitiveness, one that spurred both parties to greater musical achievement. Had technology not borne the Fender, delivering a quantum leap in facility and volume, arguably the string bass would have languished in its barely audible, technically challenged role. Its limited effectiveness in louder jazz styles undoubtedly would have affected the evolution of the jazz ensemble. Conversely had electric players not been the target of such disparagement, they would have been less determined to legitimize the Fender's jazz credentials.

Today technology is assisting bass players achieve the skill levels required to satisfy the demands of jazz's expanding stylistic boundaries by providing valuable educational tools and information. These include pedagogic aids such as Smartmusic.com, Band-in-a-Box and Aebersold products. As a result of the music's institutionalization, jazz colleges have expanded immensely in number and their programs undergone considerable growth and diversification since the 1970s. They continue to attract increasing numbers of bass students despite a measurable decline in job opportunities for the graduating bassist. As Brubeck remarked: 'Jazz is being saved by the very institutions that condemned it 50 years ago'.⁴⁸⁴ Clearly something is stimulating the interest, and arguably it is technology. Google 'jazz bass' and YouTube will oblige with hundreds of bass players of all nationalities with exceptional technique and innovative approaches. As Ray Brown attested, the best bass players today perform at levels that earlier generations were unable to achieve. While recordings have been the traditional medium through which styles could be emulated, the Internet permits both live and recorded performances to be presented with a visual component making their didactic function far more effective. Under the increasing specter of technological innovation, successive generations will undoubtedly acquire their skills from more advanced starting points.

⁴⁸⁴ Dave Brubeck, 'Jazz's Evolvement', *DownBeat* (February 2001), p. 35.

Future research will to a great extent be influenced by the development of new technological tools currently beyond the horizon. Technology will continue to provide new avenues of creative expression for the bassist while at the same time improving the reproduction of previously recorded performances. Technology has allowed us to hear things that were not apparent in the past, (see re-examination of Schuller analysis, Appendix B) and no doubt, its future evolution will deliver resources that will further enhance our understanding of the bassist's contribution to jazz.

The nuancing of previous scholarship, interviews, and musical transcriptions with technologically derived materials has been an important research method employed throughout this study. The research undertaken herein has been focused through a technological prism – whether waveform diagrams illustrating sonic peculiarities or Pro Tools session files displaying the flexibility of musical elements in the digital audio environment. In these and other ways technology has been used extensively to account for technology. Other areas might be investigated employing the same method and need not be limited in scope to one particular technique. No doubt a similar approach could be applied to other instruments within the jazz rhythm section, leading to new insights concerning, for example, the evolution of the drums, guitar or keyboard. The discoveries future research might uncover would serve to augment more conventional scholarship, which continues to contribute to the library of musical transcriptions and musicological discussion.

Digital audio tools have suggested new fields of musical research, based on empirical data derived from the sounds themselves at the granular level, rather than the traditional analysis of musical notes. The ability to scrutinize musical details at the microscopic level has brought new perspective to the analysis, enjoyment and interpretation of musical works. In the past this was only possible to do through the agency of a score, a representation poorly suited to jazz. These aspects are all easily investigated by means of digital audio technologies. Their graphical representations capture and reveal dimensions of musical performance difficult to appreciate in the course of real time auditioning alone. The evolution of recording technology has also generated many of its own conventions that are not accounted for in traditional methods of analysis. As was shown in the case study of 'Round Trip' in chapter 6 (p. 183), the

prominence of the bass (traditionally dependent on technological factors) and the manner in which it was presented (mix decisions) had a significant impact on how the musical work was interpreted. The spatial localization of the bass, whether it was subject to digital effects or double-tracked and its relative tonal quality all impacted on the meaning of the work.

In this study, technology has been used to substantiate and challenge previous scholarship; to provide empirical data to explain the evolution of bass performance; to illustrate the changes underlying the ways in which modern jazz and the bass within the ensemble is often recorded; to demonstrate the increased mediation by engineering personnel on the work of bassists. The study has prosecuted for an investigative strategy that exploits modern technology more comprehensively in examining and evaluating jazz. It also considers it imperative to recognize the contributive effects of technology on those very works under scrutiny. In short, technology has been employed to uncover how prevailing levels of technological sophistication influenced seminal recordings.

The study has investigated an ongoing evolutionary process and as a result its findings are necessarily open-ended. Given the expanding influence of technology in contemporary life, it is likely that future jazz works will exhibit a commensurate increase in technological exploitation, notwithstanding the efforts of those who have chosen to take a reactionary approach such as Chesky. The research embodied in this thesis suggests that the future holds many exciting developments for the bass player within the jazz ensemble and it is the success with which he or she comes to terms with these technological developments that will determine the fate of jazz.

Technology has exerted a pivotal role in the development of the jazz bass, the rhythm section and the jazz ensemble itself. Apart from affording bassists a greater voice in the ensemble, emerging technologies have, and will continue to redefine the very term 'jazz bass player'. Technology has broadened the scope of jazz by encouraging the incorporation of musical styles that would be impractical without its mediating influence. The original notion of a barely audible string bass player, satisfied to perform unobtrusive walking bass lines at the rear of an ensemble has been superseded. Now, armed with all the technological resources available today, the jazz bassist has been empowered to provide both sensitive accompaniment and an exciting solo contribution to the jazz

ensemble. A superior musician who, thanks to the availability of technologies that deliver organological, sonic and educational advantages unimaginable to his predecessors in 1900s New Orleans, will assure the continued evolution of jazz in all its artistic aspects.

APPENDIX A: LIST OF CD TRACKS

- Track 1. Louis Armstrong and the Hot 7, 'Gully Low Blues', Okeh 8474 (1927). p. 17.
- Track 2. Bill Johnson's bass solo on 'Bull Fiddle Blues', Victor 21552-A (1928), p. 24.
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APPENDIX B

A Case Study in the Shortcomings of Employing Old Technology

Technology when applied to the recorded jazz canon is also proving to be a great benefit to the understanding of the art, particularly in revealing previously hidden aspects of bass players' performances of the past. For example, the following transcription by the author represents the efforts of the seminal New Orleans bassist John Lindsay recorded on 15th September 1926 in Chicago with Jelly Roll Morton's band. Originally analyzed in detail by Schuller in his seminal 1960s work *Early Jazz*, modern technology reveals discrepancies between his account and the recorded facts. In particular, the following aspects involving the mistaken identification of Lindsay's bass part:

[Black Bottom Stomp] offers a special dividend, perhaps unique in diatonic music, 'classical' or otherwise: the first part, with its three separate themes, is in B flat, and yet no B flat chord (with the single exception of a passing-tone second inversion) ever appears; it is avoided and delayed until the ninety-sixth bar of the piece.⁴⁸⁵

A transcription executed with the aid of Pro Tools software shows in fact that root position B flat chords are present, if only momentarily, all through this section. It is only through the agency of superior playback equipment unavailable to the late 1960s researcher that these bass notes can be correctly identified. Further evidence of Schuller's inadequate reference equipment is apparent when he incorrectly ascribes the accompaniment to the first clarinet solo (bar 81) as being provided by banjo only, when the transcription of the recording clearly shows string bass is also playing.⁴⁸⁶ Considering Schuller's pre-eminence as a jazz authority and his obvious analytical skills, these misrepresentations speak volumes about the influence of technology on our understanding of the music. The implications are clear. Much of the historical research work considered authoritative is likely to prove flawed once reviewed with the more powerful techniques available to scholars today. Digital analysis tools can now reveal a wealth of previously concealed musical data.

⁴⁸⁵ Gunther Schuller, *Early Jazz*, p. 156.

⁴⁸⁶ Gunther Schuller, *Early Jazz*, p. 157. 'A3 features a clarinet sticking close to the written theme with banjo accompaniment only.'

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Figure 10.1 John Lindsay's bass line to Jelly Roll Morton's 'Black Bottom Stomp' Victor 20221-A (1926).

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